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SOLFATO DI ALLUMINIO

Sezione 1.: Identificazione della sostanza/miscela e della società/impresa

1.1 Identificatore prodotto: **SOLFATO DI ALLUMINIO**

Numero CAS: 10043-01-3, Numero EC: 233-135-0, Forma chimica: Al₂(SO4)₃ * 13,5-14,5 H₂O,

 $Al_2O_3 = 17$ %, Nome IUPAC: Solfato di alluminio, numero di registrazione REACH: 01-2119531538-36-0009 1.2 Usi pertinenti identificati della sostanza o della miscela:

Coagulante, flocculante nel trattamento dell'acqua potabile e delle acque reflue, nel trattamento delle acque reflue industriali/petrolifere/municipali, nell'industria cartaria. Uso industriale e professionale della sostanza. Conforme alla norma EN 878:2016 per i prodotti chimici per il trattamento dell'acqua potabile.

1.3 <u>Dati del fornitore della scheda di dati di sicurezza:</u>

EcoloChem Magyaróvár Kft.

H-9200 Mosonmagyaróvár,

Timföldgyári u. 13.B.ép.

Ungheria

Tel: +36 96 574 100

Telefax: +36 96 574 127 e-mail: office@ecm-kft.hu

1.3.1 Persona responsabile: Molnár Attila (+36-20) 985-4588

e-mail: molnar.a@ecm-kft.hu

1. 4 Numero di telefono di emergenza: Centro Antiveleni e Centro Nazionale di Informazione

Tossicologica di Pavi

Via Salvatore Maugeri 10

27100 Pavia

Telefono: +39 0382 24444

Fornito da:

Lista CAV Italiani segue in Sez. 16

ANDREA GALLO DI LUIGI S.r.l.u.

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Sezione 2.: Identificazione dei pericoli

2.1. Classificazione della sostanza o della miscela:

Pittogrammi:



Provoca gravi lesioni oculari: Cat 1

Indicazioni di pericolo:

H318 - Provoca gravi lesioni oculari

Consigli di prudenza:

P280 - Indossare guanti/proteggere gli occhi.

P305+P351+P338 - IN CASO DI CONTATTO CON GLI OCCHI: sciacquare accuratamente perparecchi minuti. Togliere le eventuali lenti a contatto se è agevole farlo. Continuare a sciacquare.

P310 - Contattare immediatamente un CENTRO ANTIVELENI o un medico.



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2.2. Elementi dell'etichetta

Pittogrammi:



Provoca gravi lesioni oculari: Cat 1

Indicazioni di pericolo:

H318 - Provoca gravi lesioni oculari

Consigli di prudenza:

P280 - Indossare guanti/proteggere gli occhi.

P305+P351+P338 - IN CASO DI CONTATTO CON GLI OCCHI: sciacquare accuratamente perparecchi minuti. Togliere le eventuali lenti a contatto se è agevole farlo. Continuare a sciacquare.

P310 - Contattare immediatamente un CENTRO ANTIVELENI o un medico.

2.3. Altri pericoli: nessun pericolo specifico per l'uomo o l'ambiente.

Sezione 3.: Composizione/informazioni sugli ingredienti

3.1 Sostanza: Forma chimica: Al₂(SO4)₃ * 13,5-14,5 H₂O

| Nome chimico | Concentrazione | EINECS No. | CAS No. | Frasi H: |
|--|----------------|---------------|------------|--------------------------------------|
| Solfato di alluminio, con acqua di cristallizzazione | | | | |
| Numero di registrazione REACH: 01- 2119531538-36-0009 | 99,9 % | 233-135-0 | 10043-01-3 | H318 - Provoca gravi lesioni oculari |

Ulteriore componente: inquinante pericoloso in tracce dell'ordine di grandezza ppm. Aspetto: solfato di alluminio tecnico in particelle in polvere, ben solubile in acqua. In caso di dispersione in acqua, è acida. Nome chimico: acido solforico, sale di alluminio (3:2). Formula: Al3/2H204S, Massa molare: >=215.06 <=342.14.

Sezione 4. Misure di primo soccorso

4.1 Descrizione delle misure di primo soccorso:

IN CASO DI INDESTION:

Misure:

- Rivolgersi immediatamente a un medico e mostrargli l'etichetta!
- Mettere l'infortunato in una posizione comoda!
- Non dare alla vittima nulla da mangiare o da bere e non indurre il vomito se la vittima è incosciente
- Non indurre il vomito.
- Sciacquare la bocca della vittima con acqua pulita.
- Dare alla vittima da bere 1-2 bicchieri di acqua o latte.



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IN CASO DI INALAZIONE:

Misure: - Portare la vittima all'aria aperta, allentare i vestiti e lasciarla riposare.

- Sciacquare bocca e naso con acqua.
- In caso di sintomi, consultare un medico!

IN CASO DI CONTATTO CON LA PELLE:

Misure: - Rimuovere gli indumenti contaminati e lavarli prima di riutilizzarli.

- Lavare l'area contaminata con abbondante acqua e sapone o con un detergente delicato (per 15 minuti)!
- In caso di sintomi, consultare un medico!

IN CASO DI CONTATTO CON GLI OCCHI:

Misure:

- In caso di contatto con gli occhi, sciacquare immediatamente con abbondante acqua corrente per 15 minuti, tenendo le palpebre divaricate (per almeno 15 minuti)!
- Rivolgersi immediatamente a un medico e mostrargli l'etichetta!
- 4.2 Sintomi ed effetti più importanti, sia acuti che ritardati:

Nessun dato disponibile.

4.3 Indicazione di eventuali cure mediche immediate e trattamenti speciali necessari: Nessun dato disponibile

Sezione 5.: Misure di lotta antincendio

- 5.1. Mezzi estinguenti:
- 5.1.1 <u>Mezzi di estinzione idonei:</u> Utilizzare misure di estinzione adeguate alle circostanze locali e all'ambiente circostante.
- 5.1.2 <u>Mezzi estinguenti non idonei:</u> Nessuno noto.
- 5.2 Pericoli particolari derivanti dalla sostanza o dalla miscela:

In caso di decomposizione: SOx.

5.3 Consigli per i vigili del fuoco:

Indossare indumenti protettivi completi e autorespiratori.

Sezione 6.: Misure in caso di rilascio accidentale

- 6.1 <u>Precauzioni personali, dispositivi di protezione e procedure di emergenza:</u>
- 6.1.1 Per il personale non addetto alle emergenze:

Tenere lontane le persone non protette, consentire solo a esperti ben addestrati che indossano indumenti protettivi adeguati di rimanere nel campo dell'incidente.

6.1.2 Per i soccorritori:

Precauzioni personali: Indossare stivali e guanti. In caso di formazione di polvere, aerosol o nebbia, utilizzare una semimaschera con filtro combinato B/P2 o indossare una maschera monouso una sola volta.

Precauzioni ambientali:



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Smaltire le fuoriuscite e i rifiuti (prodotto/imballaggio) in conformità con tutte le leggi ambientali applicabili. Non permettere l'ingresso in fognature/suolo/acque superficiali o sotterranee. Informare immediatamente le autorità competenti in conformità con le normative locali in caso di inquinamento ambientale

Metodi e materiali per il contenimento e la bonifica:

Raccogliere il materiale fuoriuscito con l'aspirapolvere, quindi metterlo in un contenitore per rifiuti chimici adatto, chiuso e adeguatamente etichettato per lo smaltimento. Durante lo smaltimento, indossare idonei dispositivi di protezione individuale. Diluire i residui con acqua e neutralizzare con calce o polvere di calcare.

6.4 Riferimento ad altre sezioni:

Per ulteriori e dettagliate informazioni, vedere le sezioni 8 e 13.

Sezione 7.: Manipolazione e immagazzinamento

7.1 <u>Precauzioni per una manipolazione sicura:</u>

Osservare le precauzioni igieniche convenzionali. Evitare il contatto diretto con il prodotto.

Il luogo di lavoro e i metodi di lavoro devono essere organizzati in modo tale da impedire o ridurre al minimo il contatto diretto con il prodotto. Indossare guanti in un materiale adatto come PVC, neoprene o gomma naturale. Si prega di osservare le istruzioni relative alla permeabilità e al tempo di penetrazione, fornite dal fornitore dei guanti. Considerare anche le condizioni locali specifiche in cui viene utilizzato il prodotto, come il pericolo di tagli, l'abrasione e il tempo di contatto.

È necessario indossare occhiali di sicurezza aderenti.

Misure tecniche: Garantire un'adeguata ventilazione!

Precauzioni contro il fuoco e l'esplosione: Nessuna prescrizione specifica

7.2 Condizioni per lo stoccaggio sicuro, comprese eventuali incompatibilità:

Conservare nel contenitore originale, chiuso ed etichettato. Il luogo di stoccaggio deve essere adeguatamente ventilato e sgomberabile. Conservare in luogo fresco e asciutto. Evitare il congelamento. Evitare le alte temperature. Seguire tutte le istruzioni riportate sull'etichetta. Tenere lontano da sostanze che provocano reazioni chimiche violente (vedere paragrafo 10).

Conservare in un luogo di stoccaggio asciutto e coperto in una confezione chiusa. Non conservare in strutture con elevata umidità.

Stabilità permanente: sensibile all'umidità, può causare la coagulazione del prodotto. In caso di corretta conservazione, conserva la qualità per un periodo di tempo indefinito.

Tenere fuori dalla portata dei bambini. Tenere lontano da cibi, bevande e mangimi per animali.

Materiali incompatibili: Metalli non resistenti agli acidi (come alluminio, rame e ferro) - Basi - Acciaio non legato - Superfici zincate. Tenere lontano da cloriti, ipocloriti e solfiti (vedere paragrafo 10).



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Materiale di imballaggio: Confezione originale: sacchetto di carta o PP + PE, sacco in PE o Big-Bag. Plastica (PE, PP, PVC), Poliestere rinforzato con fibra di vetro, Calcestruzzo rivestito con resina epossidica, Titanio, Acciaio resistente agli acidi o rivestito in gomma.

7.3 <u>Usi finali specifici:</u> Vedi scenario espositivo

Sezione 8.: Controlli dell'esposizione/della protezione individuale

8.1 Parametri di controllo:

| DNEL | Vie di esposizione | Frequenza di esposizione: | Osservazioni |
|-------------|--------------------|--|-----------------|
| | | | |
| | Dermico: | A breve termine (acuto): improbabile | NOAEL: 190,0 |
| Lavoratore: | | A lungo termine (ripetuto): 3,8 mg/kg | mg/kg di peso |
| | | | corporeo/giorno |
| | Per inalazione | A breve termine (acuto): non tipico | NOAEC: 168,0 |
| | | Lungo termine (ripetuto): 13,4 mg/m3 | mg/m3 |
| | Orale | A breve termine (acuto): non tipico | |
| | | A lungo termine (ripetuto): non tipico | |

| DNEL | Vie di esposizione | Frequenza di esposizione: | Osservazioni |
|--------------|--------------------|--|----------------------|
| | | | |
| | Dermico: | A breve termine (acuto): non tipico | NOAEL: 190,0 |
| Consumatore: | | A lungo termine (ripetuto): non tipico | mg/kg di peso |
| | | | corporeo/giorno |
| | Per inalazione | A breve termine (acuto): non tipico | NOAEC: 83 |
| | | Lungo termine (ripetuto): 3,3 mg/m3 | mg/m3 |
| | Orale | A breve termine (acuto): non tipico | NOAEL:340,0 mg/kg di |
| | | Lungo termine (ripetuto): 1,9 | peso corporeo/giorno |
| | | mg/kg/p.c./giorno | |

| PNEC | | | Frequenza di esposizione: | Osservazioni |
|------------------|-------|------|-----------------------------|-----------------------------|
| Acqua | Suolo | Aria | | |
| Acqua dolce: | | | Breve termine (uso singolo) | Fattori di valutazione:50 |
| 15/50=0,3 μg/l | | | A lungo termine (ripetuto) | |
| (alluminio | | | Pesce: NOAC: 15 μg/l | |
| disciolto) | | | | |
| Acqua di mare: | | | Breve termine (uso singolo) | Fattori di valutazione: 500 |
| 15/500=0,03 μg/l | | | A lungo termine (ripetuto) | |
| (alluminio | | | | |
| disciolto) | | | | |
| | | | Breve termine (uso singolo) | |
| | | | A lungo termine (ripetuto) | |

8.2 <u>Controlli dell'esposizione:</u>



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Nel caso di materiale pericoloso senza limiti di concentrazione controllati, è dovere del datore di lavoro mantenere il livello di concentrazione al livello minimo raggiungibile con i mezzi scientifici e tecnologici esistenti, laddove la sostanza pericolosa non rappresenti un danno per i lavoratori.

8.2.1 Controlli tecnici appropriati

Nel perseguimento del lavoro è necessaria un'adeguata accortezza per evitare di versarsi su vestiti e pavimenti ed evitare il contatto con gli occhi e la pelle. Il prodotto deve essere conservato in un deposito chiuso sotto il tetto. In prossimità del luogo di lavoro deve essere installata una doccia di sicurezza e una fontana per il lavaggio degli occhi. Osservare le precauzioni igieniche convenzionali. Garantire un'adeguata ventilazione.

- 8.2.2 Misure di protezione individuale, come i dispositivi di protezione individuale:
- 1. Protezione occhi/viso: utilizzare occhiali protettivi adeguati e ben sigillati.
- 2. Protezione della pelle: a.) Protezione delle mani: indossare guanti in un materiale adatto come PVC, neoprene o gomma naturale. Si prega di osservare le istruzioni relative alla permeabilità e al tempo di penetrazione, fornite dal fornitore dei guanti. Considerare anche le specifiche condizioni locali in cui viene utilizzato il prodotto, come il pericolo di tagli, abrasioni e il tempo di contatto.
- b.) Altro: maschera monouso o respiratori se si forma polvere

Protezione delle vie respiratorie: In caso di formazione di polvere, aerosol o nebbia, utilizzare semimaschere con filtro combinato B/P2 o maschera monouso.

- 3. Rischio termico.: Nessuno lo sa
- 8.2.3 Controlli dell'esposizione ambientale:

Nessuna prescrizione specifica. I requisiti descritti nella Sezione 8 presuppongono un lavoro qualificato in condizioni normali e un utilizzo del prodotto per scopi appropriati. Se le condizioni sono diverse dal normale o se il lavoro viene svolto in condizioni estreme, è necessario consultare un esperto prima di decidere ulteriori misure di protezione.

Sezione 9.: Proprietà fisiche e chimiche

9.1 <u>Informazioni sulle proprietà fisiche e chimiche di base:</u>

a) Stato físicob) Colorebianco

c) Odore non significativo

d) Punto di fusione/punto di congelamento non determinato

e) Punto di ebollizione o punto di ebollizione iniziale e intervallo di ebollizione non determinato

f) Infiammabilità non determinato

g) Limite inferiore e superiore di esplosività non determinato

i) Temperatura di autoaccensione non determinato



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j) Temperatura di decomposizione

3,0-3,5 (soluzione al 5 % al 20 % °C)

Distruzione termica: circa 400 °C

1) Viscosità

k) pH

non determinato

m) Solubilità

si dissolve, ma si idrolizza in piccole concentrazioni

n) Coefficiente di ripartizione n-ottanolo/acqua (valore logaritmico)

irrilevante (inorganico)

o) Tensione di vapore

non determinato

p) Densità e/o densità relativa

1,70 kg/dm3, circa 1,00 kg/dm3 (sfuso)

q) Densità relativa del vapore non determinato

r) Caratteristiche delle particelle

caratteristica, tipi principali: 0-0,5 mm, 1,0-3,0 mm, 3,0-8,0 mm, 8,0-40,0 mm

9.2. Altre informazioni

p) Corrosivo per i metalli

l'H290: Corrosivo per i metalli - può avere un effetto corrosivo per i metalli cat 1, ma. Questo vale solo per le soluzioni acquose (non più per lo stato solido).

Poiché la corrosività dipende dal pH/concentrazione, non è necessario applicare la classificazione se si può dimostrare che

i singoli prodotti non soddisfano i criteri

9.2 Altre informazioni:

Il solfato di alluminio è conforme ai requisiti della norma EN 878:2016 per le sostanze chimiche di tipo 1 utilizzate per il trattamento delle acque destinate al consumo umano.

Sezione 10.: Stabilità e reattività

- 10.1 Reattività: Nessuno noto
- Stabilità chimica: A temperatura normale: stabile in condizioni generali di lavoro 10.2
- 10.3 Possibilità di reazioni pericolose: Nessun dato disponibile
- 10.4 Condizioni da evitare: Conservare lontano da fonti di calore e congelamento. Il prodotto entra in reazioni violente con una superficie metallica speciale (ad esempio, metalli zincati, alluminio, rame, zinco e loro leghe). Reagisce con le basi durante gli avvisi. Tenere lontano da cloriti, ipoclorito e solfiti.
- Materiali incompatibili: Metalli non resistenti agli acidi (come alluminio, rame e ferro), cloriti, 10.5 ipocloriti, solfiti – Base – Acciaio non legato – Superficie zincata
- 10.6 Prodotti di decomposizione pericolosi: SO2, SO3

Sezione 11.: Informazioni tossicologiche

11.1 Informazioni sugli effetti tossicologici:

Tossicità acuta: Nessuno noto Irritazione cutanea: Nessuno noto Gravi danni agli occhi/irritazione oculare: Categoria 1 Sensibilizzazione respiratoria o cutanea: Nessuno noto. Mutagenità delle cellule germinali: Nessuno noto Cancerogenicità: Nessuno noto STOT-esposizione singola: Nessuno noto



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Esposizione ripetuta STOT: Nessuno noto Pericolo di aspirazione: Nessuno noto

11.1.1 Per le sostanze soggette a registrazione, brevi sintesi delle informazioni ricavate dalla prova effettuata: Informazioni basate sulla relazione sulla sicurezza chimica.

Studi sperimentali sulla tossicità acuta dopo esposizione orale e cutanea.

La tossicità orale dell'ACHS sembra essere bassa, molto probabilmente a causa dello scarso assorbimento del materiale dal tratto gastrointestinale. Per la tossicità cutanea acuta fare riferimento al solfato di idrossido di cloruro di alluminio (ACHS). Lo studio per inalazione viene eseguito con cloruro di idrossido di alluminio solfato. Testato come aerosol. Il diametro aerodinamico mediano di massa (MMAD) e la deviazione standard geometrica (gsd) sono stati determinati due volte. Il MMAD era di 4,0 e 5,0 mm e il GSD era di 1,7 in entrambe le occasioni. Sulla base della tossicità acuta per inalazione, l'ACHS come aerosol non presenta alcun rischio per la salute.

11.1.2 Proprietà tossicologiche rilevanti delle sostanze pericolose:

| LD50 | Orale | <5000 mg/kg di peso |
|------|------------|---------------------|
| | | corporeo |
| LD50 | Dermico | >5000 mg/kg di peso |
| | | corporeo |
| LC50 | Inalazione | >5000 mg/m3 aria |

11.1.3 Informazioni sulle probabili vie di esposizione:

La sostanza (soluzione) può causare possibili effetti cutanei e/o inalatori locali.

Sulla base della valutazione dei pericoli, sono possibili effetti sistemici a lungo termine dopo l'esposizione orale e inalatoria. L'esposizione orale non è una via di esposizione rilevante per i lavoratori.

- 11.1.4 Sintomi legati alle caratteristiche fisiche, chimiche e tossicologiche: Nessun dato disponibile
- 11.1.5 Effetti ritardati e immediati, nonché effetti cronici da esposizione a breve e lungo termine: Provoca gravi danni agli occhi.
- 11.1.6 Effetti interattivi: nessun dato disponibile
- 11.1.7 Assenza di dati specifici: Nessun dato disponibile
- 11.1.8 Altre informazioni: Nessun dato disponibile
- 11.2. Altre informazioni sui pericoli
- 11.2.1. Proprietà dannose per il sistema endocrino: non può essere classificato come dannoso per il sistema endocrino
- 11.2.2. Altre informazioni: Nessun dato disponibile

Sezione 12.: Informazioni ecologiche

12.1 <u>Tossicità</u>: I dati disponibili indicano che i sali di alluminio sono relativamente non tossici nella maggior parte delle acque con pH neutro. Non c'è bisogno di classificazione del solfato di alluminio

12.2 <u>Persistenza e degradabilità</u>:
12.3 <u>Potenziale di bioaccumulo:</u>
12.4. <u>Mobilità nel suolo:</u>
12.5 Risultati <u>della valutazione PBT e vPvB</u>:
Nessun dato disponibile
Nessun dato disponibile

12.6 <u>Proprietà di interferenza endocrina:</u> Non può essere classificato come dannoso per il sistema endocrino

12.7 Altri effetti avversi: WGK 1

Sezione 13.: Considerazioni sullo smaltimento

- 13.1 Metodi di trattamento dei rifiuti: Smaltimento secondo le normative locali.
- 13.1.1 Informazioni relative allo smaltimento del prodotto:

Diluire i residui con acqua e neutralizzare con calce o polvere di calcare.

Durante lo smaltimento del prodotto, dei suoi residui e del suo imballaggio è necessario osservare la prescrizione nazionale. I codici CAE indicati di seguito sono solo raccomandazioni, ma potrebbero dover essere modificati a causa di circostanze speciali, in tali casi potrebbe essere necessaria una nuova classificazione.

13.1.2 Informazioni relative allo smaltimento dell'imballaggio



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- 13.1.3 Devono essere specificate le proprietà fisico-chimiche che possono influire sulle opzioni di trattamento dei rifiuti: Nessuna nota
- 13.1.4 Smaltimento delle acque reflue: Nessuno noto
- 13.1.5 Precauzioni speciali per il trattamento dei rifiuti consigliato: Nessun dato disponibile.

Sezione 14.: Informazioni sul trasporto

Non è un bene per i pericoli nel senso delle norme di trasporto!

- Numero ONU: Nessun dato disponibile 14.1 14.2 Nome di spedizione corretto delle Nazioni Unite: Nessun dato disponibile 14.3 Classe/i di pericolo per il trasporto: Nessun dato disponibile Gruppo di imballaggio: Nessun dato disponibile 14.4 14.5. Pericoli per l'ambiente: Nessun dato disponibile Precauzioni speciali per l'uso: 14.6. Nessun dato disponibile
- 14.7. Trasporto marittimo alla rinfusa secondo gli strumenti dell'IMO: non contemplato dall'IMDG Nel caso di merci alla rinfusa, il nome di spedizione del carico alla rinfusa è: Solfato di alluminio. Non può essere considerato dannoso per l'ambiente marino.

Sezione 15.: informazioni sulla regolamentazione

- 15.1 Normative/legislazioni in materia di sicurezza, salute e ambiente specifiche per la sostanza o la miscela:
 - 1. REGOLAMENTO (UE) 2020/878 DELLA COMMISSIONE del 18 giugno 2020 che modifica l'allegato II del regolamento (CE) n. 1907/2006 del Parlamento europeo e del Consiglio concernente la registrazione, la valutazione, l'autorizzazione e la restrizione delle sostanze chimiche (REACH)
 - 2. REGOLAMENTO (CE) N. 790/2009 DELLA COMMISSIONE del 10 agosto 2009 che modifica, ai fini dell'adeguamento al progresso tecnico e scientifico, il regolamento (CE) n. 1272/2008 del Parlamento europeo e del Consiglio relativo alla classificazione, all'etichettatura e all'imballaggio delle sostanze e delle miscele.
 - 3. DIRETTIVA 1999/45/CE DEL PARLAMENTO EUROPEO E DEL CONSIGLIO del 31 maggio 1999 concernente il ravvicinamento delle disposizioni legislative, regolamentari e amministrative degli Stati membri relative alla classificazione, all'imballaggio e all'etichettatura dei preparati pericolosi
 - 4. REGOLAMENTO N ©. 1272/2008 DEL PARLAMENTO EUROPEO E DEL CONSIGLIO, del 16 dicembre 2008, relativo alla classificazione, all'etichettatura e all'imballaggio delle sostanze e delle miscele che modifica e abroga le direttive 67/548/CEE e 1999/45/CE e che modifica il regolamento (CE) n. 1907/2006
 - 5. REGOLAMENTO (UE) N. 453/2010 DELLA COMMISSIONE del 20 maggio 2010 che modifica il regolamento (CE) n. 1907/2006 del Parlamento europeo e del Consiglio concernente la registrazione, la valutazione, l'autorizzazione e la restrizione delle sostanze chimiche (REACH)
- 15.2 <u>Valutazioni della sicurezza chimica:</u> è stata preparata la valutazione della sicurezza chimica della sostanza.

Sezione 16. : Altre informazioni

Informazioni relative alla revisione della scheda di dati di sicurezza.: -

Testo completo delle abbreviazioni nella scheda di dati di sicurezza:

DNEL: Derivato nessun livello di effetto. **PNEC:** Concentrazione prevista senza effetto. Effetti CMR: cancerogenicità, mutagenicità e tossicità riproduttiva. PBT: Persistente, bioaccumulabile e tossico. N.D: Non definito.

H318 - Provoca gravi lesioni oculari

Istruzioni per l'allenamento: -

La presente scheda di dati di sicurezza è stata redatta sulla base delle informazioni fornite dal fabbricante. Le informazioni, i dati e le raccomandazioni contenute nel presente documento sono forniti in buona fede, ottenuti da fonti attendibili e ritenuti veritieri e accurati alla data di pubblicazione; Tuttavia, non viene fornita alcuna dichiarazione in merito alla completezza delle informazioni. La SDS deve essere utilizzata solo come guida per la manipolazione del prodotto, nel corso della manipolazione e dell'utilizzo del prodotto possono sorgere o essere necessarie altre considerazioni. Poiché le condizioni o la manipolazione, lo stoccaggio e lo smaltimento di questo prodotto descritti nella presente SDS devono essere creati o dedotti da qualsiasi dichiarazione nella presente SDS. Non si assume alcuna responsabilità in merito all'accuratezza, alla completezza o all'idoneità di tutte o parte delle informazioni contenute nel presente documento o ai risultati ottenibili dall'uso delle stesse al momento dell'utilizzo. In nessun modo il produttore, il distributore o il preparato del saranno responsabili per eventuali reclami, perdite o danni di terzi, lesioni personali, danni alla proprietà, perdita di profitti o qualsiasi danno speciale, diretto, indiretto, incidentale, consequenziale o esemplare derivante dall'uso o dall'affidamento su tali informazioni. Gli utenti sono invitati a determinare l'adeguatezza e l'applicabilità delle informazioni di cui sopra alle loro circostanze e scopi particolari e ad assumersi tutti i rischi associati all'uso di questo prodotto. È responsabilità dell'utente rispettare pienamente le normative locali, nazionali e internazionali relative all'uso di questo prodotto.



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Exposure scenario

Aluminium sulphate

EcoloChem Magyaróvár Kft. 2020.

EXPOSURE ASSESSMENT

Human exposure assessment

Exposure scenario 1: Manufacture of the substance

Aqueous solution:

| ES1 - Manufacture of Alumir 25% | nium salts – Aqueous solution – max Aluminium content = |
|---|---|
| Section 1 | Exposure Scenario Title |
| Title | Manufacture of Aluminium salts - aqueous solution; Aluminium content = max. 25% |
| Use Descriptor | Sector of Use: Industrial (SU8, SU9) |
| | Process Categories: PROC1: Use in a closed process, no likelihood of exposure PROC2: Use in a closed continuous process, with occasional controlled exposure PROC3: Use in a closed batch process (synthesis or formulation) PROC4: Use in a batch and other process (synthesis) where opportunity for exposure arises PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC15: Use as a laboratory reagent |
| | Environmental Release Categories: ERC1: Manufacture of substances |
| Processes, tasks, activities covered | Manufacture of substances Manufacture of the substance. Includes recycling/ recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities |
| Exposure criteria | DNEL, inhalation long term: 1.8 mg/m³ |
| Section 2 | Operational conditions and risk management measures |
| Section 2.1 | Control of worker exposure |
| Product characteristics | |
| Physical form of product | Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; Liquid, vapour pressure < 10 Pa [OC14] |
| Concentration of substance in product | Covers percentage substance in the product up to 25 % [G12]. |
| Amounts used | Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] |
| F | Covers daily exposures up to 8 hours (unless stated differently) [G2] |
| Frequency and duration of use | Covers daily exposures up to 8 hours (unless stated differently) [02] |
| Human factors not influenced by risk management | Not applicable |
| Human factors not influenced by | Not applicable Assumes use at not > 20oC above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. |
| Human factors not influenced by risk management Other Operational Conditions | Not applicable Assumes use at not > 20oC above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented |
| Human factors not influenced by risk management Other Operational Conditions affecting worker exposure Contributing Scenarios Below pH2 and above pH11 the subsequence suitable eye protection [PPE26] | Not applicable Assumes use at not > 20oC above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposures [EI19] Risk Management Measures ostance has corrosive properties: |
| Human factors not influenced by risk management Other Operational Conditions affecting worker exposure Contributing Scenarios Below pH2 and above pH11 the sub | Not applicable Assumes use at not > 20oC above ambient [G15]; Assumes a good basic standard of occupational hygiene is implement [G1]. Ensure operatives are trained to minimize exposures [EI19] Risk Management Measures ostance has corrosive properties: |

| Process sampling [CS2] (closed | {Ensure the system is closed} {Clear transfer lines prior to de-coupling |
|------------------------------------|--|
| systems) [CS107] | [E39]}. |
| PROC2: | No specific measures identified [EI18]. |
| General exposures [CS1]. | |
| Continuous process [CS54]. Process | Recommendations: |
| sampling [CS2] (open systems) | {Ensure the system is closed} {Clear transfer lines prior to de-coupling |
| [CS108] | [E39]}. {Clear spills immediately [C&H13]}. |
| PROC3: | No specific measures identified [EI18]. |
| General exposures [CS1]. Use in | |
| contained batch processes [CS37]. | Recommendations: |
| With sample collection [CS56]. | {Ensure the system is closed} |
| Equipment cleaning and | {Drain down and flush system prior to equipment break-in or |
| maintenance [CS39]. | maintenance [E55]}.{Clear spills immediately [C&H13]}. |
| PROC4: | No specific measures identified [EI18]. |
| General exposures (open systems) | |
| [CS16]. Batch process [CS55] (open | Recommendations: |
| systems) [CS108]; Drum/batch | {Drain down and flush system prior to equipment break-in or |
| transfers [CS8]. With sample | maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and |
| collection [CS56].; | the work area every day [C&H3]}. |
| Equipment cleaning and | {Clear spills immediately [C&H13]}. |
| maintenance [CS39]. | |
| PROC8b: | No specific measures identified [EI18]. |
| General exposures, open systems | |
| [CS16]. | Recommendations: |
| Dedicated facility [CS81] | {Drain down and flush system prior to equipment break-in or |
| Material transfers [CS3]. | maintenance [E55]}.{Use drum pumps [E53]}. {Clean equipment and |
| Equipment cleaning and | the work area every day [C&H3]} |
| maintenance [CS39]. | {Clear spills immediately [C&H13]}. |
| Bulk transfers [CS14]. | |
| PROC15: | No specific measures identified [EI18]. |
| General exposures [CS1]. | |
| Laboratory activities [CS36]. | Recommendations: |
| Small scale [CS61]. | {Drain down and flush system prior to equipment break-in or |
| | maintenance [E55]} {Clean equipment and the work area every day |
| | [C&H3]}. |
| | {Clear spills immediately [C&H13]}. |
| Section 2.2 | Control of environmental exposure |

Aluminum, aluminum powders, aluminum oxide and soluble aluminum compounds are non hazardous (not classified for the environment). Aluminum (Al) is the most commonly occurring metallic element, comprising eight percent of the earth's crust and is therefore found in great abundance in both the terrestrial and sediment environments. Concentrations of 3-8% (30,000-80,000 ppm) are not uncommon. The relative contributions of anthropogenic aluminum to the existing natural pools of aluminum in soils and sediments is very small, and therefore, not relevant either in terms of added amounts or in terms of toxicity.

Section 3 Exposure Estimation

3.1. Health

Predicted exposures are not expected to exceed the applicable exposure limits (given in section8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented [G29]

3.2. Environment

N.A.

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

The ECETOC TRA (V2.0) tool has been used to estimate workplace exposures unless otherwise indicated [G21]

4.2. Environment

N.A.

| Section 5 | Additional good practice advice beyond the REACH Chemical Safety Assessment - (Section Optional) |
|-------------------------|--|
| - | d in this section have not been taken into account in the exposure estimates related to the ey are not subject to obligation laid down in Article 37 (4) of REACH. |
| Control of Worker Expos | ure |
| Use of PPE | Skin protection: Gloves: - Observe breakthrough time of the gloves used Respiratory protection: Respirators: - Wear a disposable mask only once - Clean non-disposable masks after each use and store in a clean box in a clean area - Wear respirators ≤ 2 hrs/day |

Solid, high dustiness:

| Solid, high dustiness: | |
|--|--|
| | nium salts – solid – high dust; Aluminium content = max. |
| 25% Section 1 | Exposure Scenario Title |
| Title | Manufacture of Aluminium salts - solid - high dust; |
| | Aluminium content = max. 25% |
| Use Descriptor | Sector of Use: SU8, SU9 |
| Processes, tasks, activities covered | Process Categories: PROC1: Use in a closed process, no likelihood of exposure PROC2: Use in a closed continuous process, with occasional controlled exposure PROC3: Use in a closed batch process (synthesis or formulation) PROC4: Use in a batch and other process (synthesis) where opportunity for exposure arises PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC15: Use as a laboratory reagent Environmental Release Categories: ERC1: Manufacture of substances Manufacture of the substance. Includes recycling/ recovery, material |
| Trocesses, tasks, activities covered | transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities |
| Exposure criteria | DNEL, inhalation long term: 1.8 mg/m³ |
| Section 2 | Operational conditions and risk management measures |
| Section 2.1 | Control of worker exposure |
| Product characteristics | |
| Physical form of product | Solid, high dustiness [OC6] |
| Concentration of substance in product | Covers percentage substance in the product up to 25% [G12]. |
| Amounts used | Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] |
| Frequency and duration of use | Covers daily exposures up to 8 hours (unless stated differently) [G2] |
| Human factors not influenced by risk management | Not applicable |
| Other Operational Conditions affecting worker exposure | Assumes use at not > 20oC above ambient [G15] Assumes a good basic standard of occupational hygiene is implemented [G1]. |

| | Ensure operatives are trained to minimize exposures [EI19] |
|---|--|
| Contributing Scenarios | Risk Management Measures |
| | substance has corrosive properties: |
| Use suitable eye protection [PPE] | 26 e gloves tested to EN374 [PPE15] |
| PROC1: | No specific measures identified [EI18]. |
| General exposures (closed systems | |
| [CS15]. Continuous process | Recommendations: |
| [CS54]. Process sampling [CS2] (closed systems) [CS107] | {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. |
| PROC2: | Industrial workers: |
| General exposures [CS1]. Continuous process [CS54]. | No specific measures identified [EI18]. |
| Process sampling [CS2] (open systems) [CS108] | Professional workers: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. |
| | Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. |
| | Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]} |
| PROC3: | Industrial workers: |
| General exposures [CS1]. Use in contained batch processes [CS37]. | No specific measures identified [EI18]. |
| With sample collection [CS56]. | Professional workers: |
| Equipment cleaning and maintenance [CS39]. | Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. |
| manicelance [esss]. | Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82] |
| | Recommendations: |
| | {Ensure the system is closed} |
| | {Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Clear spills immediately [C&H13]}. |
| PROC4: | Industrial workers: |
| General exposures (open systems) | 5-25%: |
| [CS16]. Batch process [CS55] (open | Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. |
| systems) [CS108]; Drum/batch transfers [CS8]. With | Provide extract ventilation to material transfer points and other openings (90% efficiency) [E82]. |
| sample collection [CS56]. Equipment cleaning and | Professional workers: |
| maintenance [CS39]. | 5-25%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. |
| | Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. |
| | Avoid carrying out operation for more than 1 hour [OC11] Or: |
| | Avoid carrying out operation for more than 4 hours [OC12] plus Wear a respirator conforming to EN140 with Type A/P2 filter or better {PPE29] |
| | 1-5%: Avoid carrying out operation for more than 15 minutes [OC10] <1%: |
| | Avoid carrying out operation for more than 1 hour [OC11] |

| Section 2.2 | Control of environmental exposure |
|---|---|
| | [C&H3]}. {Clear spills immediately [C&H13]}. |
| | maintenance [E55]]. {Clean equipment and the work area every day |
| Small scale [CS61]. | Recommendations: {Drain down and flush system prior to equipment break-in or |
| Laboratory activities [CS36]. | Decommendations. |
| General exposures [CS1]. | [E57]. |
| PROC15: | Carry out in a vented booth or extracted enclosure (80% efficiency) |
| | {Clear spills immediately [C&H13]}. |
| | {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. |
| | maintenance [E55]} |
| | {Drain down and flush system prior to equipment break-in or |
| | Recommendations: |
| | Avoid carrying out operation for more than 1 hour [OC11] |
| | <1%: |
| | 1-5%: Avoid carrying out operation for more than 15 minutes [OC10] |
| | [PPE29] |
| | Wear a respirator conforming to EN140 with Type A/P2 filter or better |
| | Or: Avoid carrying out operation for more than 4 hours [OC12] plus |
| | Discharge sacks via suitable vented charge chute [E44]. |
| | Use bulk or semi-bulk handling systems [E43]. |
| | (80% efficiency) [E82]. Avoid carrying out operation for more than 1 hour [OC11] |
| | Provide extract ventilation to material transfer points and other opening |
| | (80% efficiency) [E66].; |
| | 5-25%: Ensure material transfers are under containment or extract ventilation |
| | Professional workers: |
| | Discharge sacks via suitable vented charge chute [244]. |
| Bulk transfers [CS14]. | Use bulk or semi-bulk handling systems [E43]. Discharge sacks via suitable vented charge chute [E44]. |
| maintenance [CS39]. | |
| Material transfers [CS3]. Equipment cleaning and | Provide extract ventilation to material transfer points and other opening (90% efficiency) [E82]. |
| Dedicated facility [CS81] | (90% efficiency) [E66] |
| [CS16]. | Ensure material transfers are under containment or extract ventilation |
| PROC8b: General exposures, open systems | Industrial workers: 5-25%: |
| PD 0 C01 | |
| | the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. |
| | maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and |
| | {Drain down and flush system prior to equipment break-in or |
| | Recommendations: |

classified for the environment). Aluminum (Al) is the most commonly occurring metallic element, comprising eight percent of the earth's crust and is therefore found in great abundance in both the terrestrial and sediment environments. Concentrations of 3-8% (30,000-80,000 ppm) are not uncommon. The relative contributions of anthropogenic aluminum to the existing natural pools of aluminum in soils and sediments is very small, and therefore, not relevant either in terms of added amounts or in terms of toxicity.

Section 3 Exposure Estimation

3.1. Health

Predicted exposures are not expected to exceed the applicable exposure limits (given in section8 of the SDS)

| when the operational conditions/risk | management measures given in section 2 are implemented [G29] | |
|---|--|--|
| 3.2. Environment | management measures given in section 2 are implemented [625] | |
| N.A. | | |
| Section 4 | Guidance to check compliance with the Exposure Scenario | |
| 4.1. Health | | |
| The ECETOC TRA (V2.0) tool has b | been used to estimate workplace exposures unless otherwise indicated | |
| 4.2. Environment | | |
| N.A. | | |
| Section 5 | Additional good practice advice beyond the REACH Chemical Safety Assessment - (Section Optional) | |
| Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH. | | |
| Control of Worker Exposure | | |
| Use of PPE | Skin protection: Gloves: - Observe breakthrough time of the gloves used Respiratory protection: Respirators: - Wear a disposable mask only once - Clean non-disposable masks after each use and store in a clean box in a clean area - Wear respirators ≤ 2 hrs/day | |

Solid, low dustiness:

| Solid, low dustiness: | |
|--------------------------------------|--|
| ES1 - Manufacture of Alumi | nium salts - solid - low dust; Aluminium content= max. |
| 25% | |
| Section 1 | Exposure Scenario Title |
| Title | Manufacture of Aluminium salts - solid - low dust; |
| | Aluminium content = max. 25% |
| Use Descriptor | Sector of Use: Industrial (SU8, SU9) |
| | Process Categories: |
| | PROC1: Use in a closed process, no likelihood of exposure |
| | PROC2: Use in a closed continuous process, with occasional controlled exposure |
| | PROC3: Use in a closed batch process (synthesis or formulation) |
| | PROC4: Use in a batch and other process (synthesis) where opportunity |
| | for exposure arises |
| | PROC8b: Transfer of substance or preparation (charging/discharging) |
| | from/to vessels/large containers at dedicated facilities |
| | PROC15: Use as a laboratory reagent |
| | Environmental Release Categories: |
| | ERC1: Manufacture of substances |
| Processes, tasks, activities covered | Manufacture of the substance. Includes recycling/ recovery, material |
| | transfers, storage, maintenance and loading (including marine |
| | vessel/barge, road/rail car and bulk container), sampling and associated |
| | laboratory activities |
| Exposure criteria | DNEL, inhalation long term: 1.8 mg/m³ |
| Section 2 | Operational conditions and risk management measures |
| Section 2.1 | Control of worker exposure |
| Product characteristics | |
| Physical form of product | Solid, low dustiness [OC1] |
| | • |

| Concentration of substance in product | Covers percentage substance in the product up to 25% [G12]. |
|---|---|
| Amounts used | Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] |
| Frequency and duration of use | Covers daily exposures up to 8 hours (unless stated differently) [G2] |
| Human factors not influenced by risk management | Not applicable |
| Other Operational Conditions affecting worker exposure | Assumes use at not > 20oC above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposures [EI19] |
| Contributing Scenarios | Risk Management Measures |
| Below pH2 and above pH11 the sul Use suitable eye protection [PPE26 Avoid skin contact: Wear suitable | |
| PROC1: | No specific measures identified [EI18]. |
| General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] | Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. |
| PROC2: General exposures [CS1]. | No specific measures identified [EI18]. |
| Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108] | Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. |
| PROC3: | No specific measures identified [EI18]. |
| General exposures [CS1]. Use in contained batch processes [CS37]. With sample collection [CS56]. Equipment cleaning and maintenance [CS39]. | Recommendations: {Ensure the system is closed} {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Clear spills immediately [C&H13]}. |
| PROC4: | No specific measures identified [EI18]. |
| General exposures (open systems) [CS16]. Batch process [CS55] (open systems) [CS108]; Drum/batch transfers [CS8]. With sample collection [CS56]. Equipment cleaning and | Recommendations: {Ensure the system is closed}; {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Clear spills immediately [C&H13]}. |
| maintenance [CS39]. PROC8b: | No specific measures identified [EI18]. |
| General exposures, open systems [CS16]. Dedicated facility [CS81] Material transfers [CS3]. Equipment cleaning and maintenance [CS39]. Bulk transfers [CS14]. | Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]} {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. |
| PROC15: | No specific measures identified [EI18]. |
| General exposures [CS1]. Laboratory activities [CS36]. Small scale [CS61]. | Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. |
| Section 2.2 | Control of environmental exposure |

eight percent of the earth's crust and is therefore found in great abundance in both the terrestrial and sediment environments. Concentrations of 3-8% (30,000-80,000 ppm) are not uncommon. The relative contributions of anthropogenic aluminum to the existing natural pools of aluminum in soils and sediments is very small, and therefore, not relevant either in terms of added amounts or in terms of toxicity.

| Section 3 | Exposure Estimation |
|-----------|----------------------------|
|-----------|----------------------------|

3.1. Health

Predicted exposures are not expected to exceed the applicable exposure limits (given in section8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented [G29]

3.2. Environment

N.A.

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

The ECETOC TRA (V2.0) tool has been used to estimate workplace exposures unless otherwise indicated [G21]

4.2. Environment

N.A.

| Section 5 | Additional good practice advice beyond the REACH |
|-----------|--|
| | Chemical Safety Assessment - (Section Optional) |

Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.

| Contro | l of V | Vorker | Exposure |
|--------|--------|--------|----------|
|--------|--------|--------|----------|

| Control of World Empor | |
|------------------------|--|
| Use of PPE | Skin protection: |
| | Gloves: |
| | Observe breakthrough time of the gloves used |
| | Respiratory protection: |
| | Respirators: |
| | - Wear a disposable mask only once |
| | - Clean non-disposable masks after each use and store in a |
| | clean box in a clean area |
| | - Wear respirators ≤ 2 hrs/day |

9.1.2 Exposure Scenario 2: Formulation and Distribution

Aqueous solution:

| ES2 - Formulation and Distribution of Aluminium salts (aqueous solutions); Max | |
|--|--|
| Aluminium content = 25% | |

| Section 1 | Exposure Scenario Title |
|-----------------|---|
| Title | Formulation and Distribution of Aluminium salts |
| | (aqueous solutions); Max. Aluminium content = 25% |
| Use Descriptors | Sector of Use: Industrial (SU10) |

| | · |
|---|---|
| | Process Categories: |
| | PROC1: Use in a closed process, no likelihood of exposure |
| | PROC2: Use in a closed continuous process, with occasional controlled |
| | PROC3: Use in a closed batch process (synthesis or formulation) |
| | PROC4: Use in batch and other process (synthesis) where opportunity for |
| | exposure arises |
| | PROC5: Mixing or blending in batch processes for formulation of |
| | preparations and articles (multistage and/or significant contact) |
| | PROC8a: Transfer of substance or preparation (charging/discharging) |
| | from/to vessels/large containers at non-dedicated facilities |
| | PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities |
| | PROC9: Transfer of substance or preparation into small containers |
| | (dedicated filling line, including weighing) |
| | PROC14: Production of preparations or articles by tabletting, |
| | compression, extrusion, pelletization |
| | PROC15: Use as a laboratory reagent |
| | PROC19: Hand-mixing with intimate contact and only PPE available |
| | |
| | |
| | |
| | Environmental Release Categories: |
| Processes, tasks, activities covered | ERC2: Formulation of preparations Adding Alu salts to liquid and solid formulations; includes distribution |
| Trocesses, tasks, activities covered | and associated laboratory activities (aqueous solutions, max Alu content |
| | = 25%). Distribution: loading and (re)packing of the substances. |
| GES exposure criteria | DNEL, inhalation long term: 1.8 mg/m3 |
| Section 2 | Operational conditions and risk management measures |
| Continue 2.1 | 2 |
| Section 2.1 | Control of worker exposure |
| | Control of worker exposure |
| Product characteristics Physical form of product | Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; |
| Product characteristics Physical form of product | Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; Liquid, vapour pressure < 10 Pa [OC14]. |
| Product characteristics Physical form of product Concentration of substance in | Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; |
| Product characteristics Physical form of product Concentration of substance in product | Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; Liquid, vapour pressure < 10 Pa [OC14]. Covers percentage substance in the product up to 25% [G12]. |
| Product characteristics Physical form of product Concentration of substance in | Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; Liquid, vapour pressure < 10 Pa [OC14]. Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material |
| Product characteristics Physical form of product Concentration of substance in product Amounts used | Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; Liquid, vapour pressure < 10 Pa [OC14]. Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] |
| Product characteristics Physical form of product Concentration of substance in product Amounts used Frequency and duration of use | Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; Liquid, vapour pressure < 10 Pa [OC14]. Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] |
| Product characteristics Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by | Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; Liquid, vapour pressure < 10 Pa [OC14]. Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] |
| Product characteristics Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management | Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; Liquid, vapour pressure < 10 Pa [OC14]. Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable |
| Product characteristics Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions | Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; Liquid, vapour pressure < 10 Pa [OC14]. Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20°C above ambient [G15]; |
| Product characteristics Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management | Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; Liquid, vapour pressure < 10 Pa [OC14]. Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented |
| Product characteristics Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions | Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; Liquid, vapour pressure < 10 Pa [OC14]. Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20°C above ambient [G15]; |
| Product characteristics Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions | Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; Liquid, vapour pressure < 10 Pa [OC14]. Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. |
| Product characteristics Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions affecting worker exposure Contributing Scenarios | Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; Liquid, vapour pressure < 10 Pa [OC14]. Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures |
| Product characteristics Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions affecting worker exposure Contributing Scenarios Below pH2 and above pH11 the substance in product Contribution of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions | Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; Liquid, vapour pressure < 10 Pa [OC14]. Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures |
| Product characteristics Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions affecting worker exposure Contributing Scenarios | Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; Liquid, vapour pressure < 10 Pa [OC14]. Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures Stance has corrosive properties: J. loves tested to EN374 [PPE15] |
| Product characteristics Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions affecting worker exposure Contributing Scenarios Below pH2 and above pH11 the substance used in product in | Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; Liquid, vapour pressure < 10 Pa [OC14]. Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures Ostance has corrosive properties: |
| Product characteristics Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions affecting worker exposure Contributing Scenarios Below pH2 and above pH11 the substance in product Use suitable eye protection [PPE26] Avoid skin contact: wear suitable gPROC1: General exposures (closed systems) | Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; Liquid, vapour pressure < 10 Pa [OC14]. Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures Destance has corrosive properties: |
| Product characteristics Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions affecting worker exposure Contributing Scenarios Below pH2 and above pH11 the sul Use suitable eye protection [PPE26 Avoid skin contact: wear suitable gPROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. | Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; Liquid, vapour pressure < 10 Pa [OC14]. Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures Destance has corrosive properties: |
| Product characteristics Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions affecting worker exposure Contributing Scenarios Below pH2 and above pH11 the sul Use suitable eye protection [PPE26 Avoid skin contact: wear suitable g PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed | Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; Liquid, vapour pressure < 10 Pa [OC14]. Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures stance has corrosive properties: |
| Product characteristics Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions affecting worker exposure Contributing Scenarios Below pH2 and above pH11 the substance in product wear suitable general exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] | Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; Liquid, vapour pressure < 10 Pa [OC14]. Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures ostance has corrosive properties: |
| Product characteristics Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions affecting worker exposure Contributing Scenarios Below pH2 and above pH11 the sul Use suitable eye protection [PPE26 Avoid skin contact: wear suitable g PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed | Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; Liquid, vapour pressure < 10 Pa [OC14]. Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures stance has corrosive properties: |
| Product characteristics Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions affecting worker exposure Contributing Scenarios Below pH2 and above pH11 the subuse suitable eye protection [PPE26 Avoid skin contact: wear suitable gPROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2: | Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; Liquid, vapour pressure < 10 Pa [OC14]. Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures ostance has corrosive properties: |

| sampling [CS2] (open systems) | {Ensure the system is closed} {Clear transfer lines prior to de-coupling |
|---------------------------------------|--|
| [CS108] | [E39]}. {Clear spills immediately [C&H13]}. |
| | |
| PROC3: | No specific measures identified [EI18]. |
| General exposures [CS1]. Use in | |
| contained batch processes [CS37]. | Recommendations: |
| With sample collection [CS56]. | {Ensure the system is closed} |
| Equipment cleaning and | {Drain down and flush system prior to equipment break-in or |
| maintenance [CS39]. | maintenance [E55]}.{Clear spills immediately [C&H13]}. |
| PROC4: | No specific measures identified [EI18]. |
| General exposures (open systems) | |
| [CS16]. Batch process [CS55] (open | Recommendations: |
| systems) [CS108]; Drum/batch | {Drain down and flush system prior to equipment break-in or |
| transfers [CS8]. With sample | maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and |
| collection [CS56].; | the work area every day [C&H3]}. |
| Equipment cleaning and | {Clear spills immediately [C&H13]}. |
| maintenance [CS39]. | |
| PROC5: | No specific measures identified [EI18]. |
| General exposures (open systems) | |
| [CS16]. Mixing operations (open | Recommendations: |
| systems) [CS30]. Material transfers | {Drain down and flush system prior to equipment break-in or |
| [CS3]. | maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and |
| Batch process [CS55]. | the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. |
| Cleaning [CS47]. | |
| PROC8a: | No specific measures identified [EI18]. |
| General exposures (open systems) | |
| [CS16]; Non-dedicated facility | Recommendations: |
| [CS82]; | {Drain down and flush system prior to equipment break-in or |
| Material transfers [CS3]. | maintenance [E55]}. {Use drum pumps [E53]}. {Clean equipment and |
| Equipment cleaning and | the work area every day [C&H3]}.{Clear spills immediately [C&H13]}. |
| maintenance [CS39]. | |
| Bulk transfers [CS14]. PROC8b: | No specific measures identified [EI18]. |
| General exposures, open systems | No specific measures identified [E116]. |
| [CS16]. | Recommendations: |
| Dedicated facility [CS81] Material | {Drain down and flush system prior to equipment break-in or |
| transfers [CS3]. | maintenance [E55]}. {Use drum pumps [E53]}. {Clean equipment and |
| Equipment cleaning and | the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. |
| maintenance [CS39]. | |
| Bulk transfers [CS14]. | |
| PROC9: | No specific measures identified [EI18]. |
| General exposures [CS1]. | 1 |
| Dedicated facility [CS81] | Recommendations: |
| Drum and small package filling | {Drain down and flush system prior to equipment break-in or |
| [CS6]. | maintenance [E55]}. {Clean equipment and the work area every day |
| Equipment cleaning and | [C&H3]} {Clear spills immediately [C&H13]}. |
| maintenance [CS39]. | |
| PROC14: | No specific measures identified [EI18]. |
| General exposures (open systems) | Recommendations: |
| [CS16] | {Drain down and flush system prior to equipment break-in or |
| Production or preparation or articles | maintenance [E55]} {Clean equipment and the work area every day |
| by tabletting, compression, | [C&H3]}. {Clear spills immediately [C&H13]}. |
| extrusion or pelletisation [CS100] | |
| PROC15: | No specific measures identified [EI18]. |
| General exposures [CS1]. | 1.0 specific measures identified [Diffe]. |
| Laboratory activities [CS36]. | Recommendations: |
| Small scale [CS61]. | {Drain down and flush system prior to equipment break-in or |
| | maintenance [E55]} {Clean equipment and the work area every day |
| | [C&H3]}.{Clear spills immediately [C&H13]}. |

PROC19:

General exposures [CS1]. Mixing operations (open systems) [CS30]. Manual [CS34].

Industrial workers:

5-25%:

Avoid carrying out operation for more than 1 hour [OC11]

<5%:

Avoid carrying out operation for more than 4 hours [OC12]

<1%:

No specific measures identified [EI18]

Professional workers:

5-25%:

Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29]

Or:

Avoid carrying out operation for more than 15 minutes [OC10]{

<5%:

Avoid carrying out operation for more than 1 hour [OC11]

<1%:

Avoid carrying out operation for more than 4 hours [OC12]

Recommendations:

{Clean equipment and the work area every day [C&H3]}

{Clear spills immediately [C&H13]}

{Stay upwind/keep distance from source [EI22]}.

Section 2.2

Control of environmental exposure

Aluminum, aluminum powders, aluminum oxide and soluble aluminum compounds are non hazardous (not classified for the environment). Aluminum (Al) is the most commonly occurring metallic element, comprising eight percent of the earth's crust and is therefore found in great abundance in both the terrestrial and sediment environments. Concentrations of 3-8% (30,000-80,000 ppm) are not uncommon. The relative contributions of anthropogenic aluminum to the existing natural pools of aluminum in soils and sediments is very small, and therefore, not relevant either in terms of added amounts or in terms of toxicity.

Section 3

Exposure Estimation

3.1. Health

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented [G29]

3.2. Environment

N.A.

Section 4

Guidance to check compliance with the Exposure Scenario

4.1. Health

The ECETOC TRA (V2.0) tool has been used to estimate workplace exposures unless otherwise indicated [G21]

4.2. Environment

N.A.

Section 5

Additional good practice advice beyond the REACH Chemical Safety Assessment - (Section Optional)

Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.

Control of Worker Exposure

Use of PPE

Skin protection:

Gloves:

- Observe breakthrough time of the gloves used Respiratory protection:

Respirators:

- Wear a disposable mask only once
- Clean non-disposable masks after each use and store in a clean

| - Wear respirators ≤ 2 hrs/day | | box in a clean area - Wear respirators ≤ 2 hrs/day | |
|--------------------------------|--|---|--|
|--------------------------------|--|---|--|

Solid, high dustiness:

| Aluminium content = 25% Section 1 | Exposure Scenario Title |
|--|---|
| Title | |
| Title | Formulation and Distribution of Aluminium salts; max. Aluminium content = 25% |
| Use Descriptor | Sector of Use: SU10 |
| Use Descriptor | Process Categories: |
| | PROC1: Use in a closed process, no likelihood of exposure PROC2: Use in a closed continuous process, with occasional controlled exposure PROC3: Use in a closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity fo exposure arises PROC5: Mixing or blending in batch processes for formulation of |
| | preparations and articles (multistage and/or significant contact) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletization PROC15: Use as a laboratory reagent PROC19: Hand-mixing with intimate contact and only PPE available |
| | Environmental Release Categories: ERC2: Formulation of preparations |
| Processes, tasks, activities covered | Adding Alu salts (Alu content = max. 25%) to liquid and solid formulations; includes distribution and associated laboratory activities. Distribution: loading and (re)packing of the substances. |
| GES exposure criteria | DNEL, inhalation long term: 1.8 mg/m3 |
| Section 2 | Operational conditions and risk management measures |
| Section 2.1 | Control of worker exposure |
| Product characteristics | |
| Physical form of product | Solid, high dustiness [OC6] |
| Concentration of substance in product | Covers percentage substance in the product up to 25% [G12]. |
| Amounts used | Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] |
| Frequency and duration of use | Covers daily exposures up to 8 hours (unless stated differently) [G2] |
| Human factors not influenced by risk management | Not applicable |
| Other Operational Conditions affecting worker exposure | Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] |
| Contributing Scenarios | Risk Management Measures |

| Avoid skin contact: wear chemicall activity training [PPE17] | y resistant gloves (tested to EN374) in combination with specific |
|--|--|
| PROC1: | No specific measures identified [EI18]. |
| General exposures (closed systems) | Two specific measures racinifica [E110]. |
| [CS15]. Continuous process | Recommendations: |
| [CS54]. Process sampling [CS2] | {Ensure the system is closed} {Clear transfer lines prior to de-coupling |
| (closed systems) [CS107] | [E39]}. |
| PROC2: | Industrial workers: |
| General exposures [CS1]. | No specific measures identified [EI18]. |
| Continuous process [CS54]. | |
| Process sampling [CS2] (open | Professional workers: |
| systems) [CS108] | Ensure material transfers are under containment or extract ventilation |
| | (80% efficiency) [E66]. |
| | Provide extract ventilation to material transfer points and other openings |
| | (80% efficiency) [E82]. |
| | Recommendations: |
| | {Ensure the system is closed} {Clear transfer lines prior to de-coupling |
| | [E39]}. {Clear spills immediately [C&H13]} |
| PROC3: | Industrial workers: |
| General exposures [CS1]. Use in | No specific measures identified [EI18]. |
| contained batch processes [CS37]. | The specific measures residual (2110). |
| With sample collection [CS56]. | Professional workers: |
| Equipment cleaning and | Ensure material transfers are under containment or extract ventilation |
| maintenance [CS39]. | (80% efficiency) [E66]. |
| | Provide extract ventilation to material transfer points and other openings |
| | (80% efficiency) [E82] |
| | Recommendations: |
| | {Ensure the system is closed} |
| | {Drain down and flush system prior to equipment break-in or |
| | maintenance [E55]}. {Clear spills immediately [C&H13]}. |
| PROC4: | Industrial workers: |
| General exposures (open systems) | 5-25%: |
| [CS16]. | Ensure material transfers are under containment or extract ventilation |
| Batch process [CS55] (open | (90% efficiency) [E66]. |
| systems) [CS108]; | Provide extract ventilation to material transfer points and other openings |
| Drum/batch transfers [CS8]. With | (90% efficiency) [E82]. |
| sample collection [CS56]. | Des Constructions |
| Equipment cleaning and | Professional workers: 5-25%: |
| maintenance [CS39]. | Ensure material transfers are under containment or extract ventilation |
| | (80% efficiency) [E66]. |
| | Provide extract ventilation to material transfer points and other openings |
| | (80% efficiency) [E82]. |
| | Avoid carrying out operation for more than 1 hour [OC11] |
| | Or: |
| | Avoid carrying out operation for more than 4 hours [OC12] plus |
| | Wear a respirator conforming to EN140 with Type A/P2 filter or better |
| | {PPE29] |
| | 1-5%: |
| | Avoid carrying out operation for more than 15 minutes [OC10] |
| | <1%: |
| | Avoid carrying out operation for more than 1 hour [OC11] |
| | Recommendations: |
| | {Drain down and flush system prior to equipment break-in or |
| | maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and |
| | the work area every day [C&H3]}. |
| | {Clear spills immediately [C&H13]}. |

PROC5:

General exposures (open systems) [CS16]. Mixing operations (open systems) [CS30]. Material transfers [CS3].

Batch process [CS55]. Cleaning [CS47].

Industrial workers:

Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66].

Provide extract ventilation to material transfer points and other openings (90% efficiency) [E82].

Professional workers:

5-25%:

Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66].

Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82].

Avoid carrying out operation for more than 1 hour [OC11]

OR:

Avoid carrying out operation for more than 4 hours [OC12] plus Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] 1-5%:

Avoid carrying out operation for more than 15 minutes [OC10] <1%:

Avoid carrying out operation for more than 1 hour [OC11]

Recommendations:

{Drain down and flush system prior to equipment break-in or maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.

PROC8a:

General exposures (open systems) [CS16];

Non-dedicated facility [CS82]; Material transfers [CS3]. Equipment cleaning and maintenance [CS39]. Bulk transfers [CS14]. 5-25%:

Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66].

Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82].

Avoid carrying out operation for more than 1 hour [OC11]

OR

Avoid carrying out operation for more than 4 hours [OC12] plus Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29]

1-5%:

Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66].

Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82].

Avoid carrying out operation for more than 4 hours [OC12]

Recommendations:

Use bulk or semi-bulk handling systems [E43].;

Discharge sacks via suitable vented charge chute [E44].{Drain down and flush system prior to equipment break-in or maintenance [E55]}.; {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}.

PROC8b:

General exposures, open systems [CS16].

Dedicated facility [CS81] Material transfers [CS3]. Equipment cleaning and maintenance [CS39]. Bulk transfers [CS14].

Industrial workers:

5-25%:

Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]

Provide extract ventilation to material transfer points and other openings (90% efficiency) [E82].

Use bulk or semi-bulk handling systems [E43].

Discharge sacks via suitable vented charge chute [E44].

Professional workers:

5-25%:

| | Ensure material transfers are under containment or extract ventilation |
|---|--|
| | (80% efficiency) [E66].; Provide extract ventilation to material transfer points and other openings |
| | (80% efficiency) [E82]. |
| | Avoid carrying out operation for more than 1 hour [OC11] Use bulk or semi-bulk handling systems [E43]. |
| | Discharge sacks via suitable vented charge chute [E44]. |
| | Or: |
| | Avoid carrying out operation for more than 4 hours [OC12] plus Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] |
| | 1-5%: |
| | Avoid carrying out operation for more than 15 minutes [OC10] <1%: |
| | Avoid carrying out operation for more than 1 hour [OC11] |
| | Recommendations: |
| | {Drain down and flush system prior to equipment break-in or maintenance [E55]} |
| | {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. |
| | {Clear spills immediately [C&H13]}. |
| PROC9: General exposures [CS1]. | Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. |
| Dedicated facility [CS81] | Provide extract ventilation to material transfer points and other openings |
| Drum and small package filling | (80% efficiency) [E82]. |
| [CS6]. Equipment cleaning and | Avoid carrying out operation for more than 4 hours [OC12]{ |
| maintenance [CS39]. | |
| | Recommendations: |
| | Use bulk or semi-bulk handling systems [E43].; Discharge sacks via suitable vented charge chute [E44].Drain down and |
| | flush system prior to equipment break-in or maintenance [E55]}. {Clean |
| | equipment and the work area every day [C&H3]}. |
| PROC14 | {Clear spills immediately [C&H13]}. Industrial: |
| General exposures (open systems) | Ensure material transfers are under containment or extract ventilation |
| [CS16] | (90% efficiency) [E66]. |
| Production or preparation or articles by tabletting, compression, | Provide extract ventilation to material transfer points and other openings (90% efficiency) [E82]. |
| extrusion or pelletization [CS100] | Or: |
| | Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] |
| | Or: |
| | Avoid carrying out operation for more than 1 hour [OC11] 1-5%: |
| | Avoid carrying out operation for more than 4 hours [OC12 <1%: |
| | No specific measures identified [EI18]. |
| | Professional: |
| | 5-25%: |
| | Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66].; |
| | Provide extract ventilation to material transfer points and other openings |
| | (80% efficiency) [E82]. Avoid carrying out operation for more than 1 hour [OC11] |
| | Or: |
| | Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66].; |

| | Avoid carrying out operation for more than 15 minutes [OC10] <1%: |
|--|--|
| | <1%: Avoid carrying out operation for more than 1 hour [OC11] |
| | Recommendations: |
| | {Drain down and flush system prior to equipment break-in or |
| | maintenance [E55]}.{Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. |
| PROC15: General exposures [CS1]. Laboratory activities [CS36]. | Carry out in a vented booth or extracted enclosure (80% efficiency) [E57]. |
| Small scale [CS61]. | Recommendations: |
| | {Drain down and flush system prior to equipment break-in or |
| | maintenance [E55]}. {Clean equipment and the work area every day [C&H3]}. |
| | {Clear spills immediately [C&H13]}. |
| PROC19 General exposures [CS1]. Mixing | Industrial workers: 5-25%: |
| operations (open systems) [CS30]. Manual [CS34]. | Wear a respirator conforming to EN140 with Type A/P2 filter or better {PPE29] |
| | Avoid carrying out operation for more than 1 hour [OC11] <1%: |
| | Avoid carrying out operation for more than 4 hours [OC12 |
| | Professional workers:: |
| | 5-25%: Avoid carrying out operation for more than 4 hours [OC12] Wear a respirator conforming to EN140 with Type A/P2 filter or better |
| | [PPE29] < 5%: |
| | < 5%: Avoid carrying out operation for more than 15 minutes [OC10] |
| | <5%: |
| | <5%: Avoid carrying out operation for more than 15 minutes [OC10] <1%: |
| Section 2.2 | <5%: Avoid carrying out operation for more than 15 minutes [OC10] <1%: Avoid carrying out operation for more than 1 hour [OC11]{ Recommendations: {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]} |

Aluminum, aluminum powders, aluminum oxide and soluble aluminum compounds are non hazardous (not classified for the environment). Aluminum (Al) is the most commonly occurring metallic element, comprising eight percent of the earth's crust and is therefore found in great abundance in both the terrestrial and sediment environments. Concentrations of 3-8% (30,000-80,000 ppm) are not uncommon. The relative contributions of anthropogenic aluminum to the existing natural pools of aluminum in soils and sediments is very small, and therefore, not relevant either in terms of added amounts or in terms of toxicity.

Section 3 Exposure Estimation

3.1. Health

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented [G29]

| 3.2. Environment | |
|-------------------------|---|
| N.A. | |
| Section 4 | Guidance to check compliance with the Exposure Scenario |
| 4.1. Health | |
| The ECETOC TRA (V [G21] | 2.0) tool has been used to estimate workplace exposures unless otherwise indicated |
| 4.2. Environment | |
| N.A. | |
| Section 5 | Additional good practice advice beyond the REACH |
| | Chemical Safety Assessment - (Section Optional) |
| | |
| | rted in this section have not been taken into account in the exposure estimates related to the They are not subject to obligation laid down in Article 37 (4) of REACH. |
| | rted in this section have not been taken into account in the exposure estimates related to the They are not subject to obligation laid down in Article 37 (4) of REACH. |

Solid. low dustiness:

| Exposure Scenario Title |
|--|
| |
| Formulation and Distribution of Aluminium salts (solid, low dust); Max. Aluminium content = 25% |
| Sector of Use: SU10 |
| Process Categories: PROC1: Use in a closed process, no likelihood of exposure PROC2: Use in a closed continuous process, with occasional controlled exposure PROC3: Use in a closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletization PROC15: Use as a laboratory reagent PROC19: Hand-mixing with intimate contact and only PPE available Environmental Release Categories: |
| ERC2: Formulation of preparations Adding Alu salts (solid, low dust) to liquid and solid formulations; includes distribution and associated laboratory activities (max Alu content = 25%). Distribution: loading and (re)packing of the substances. |
| |

| GES exposure criteria | DNEL, inhalation long term: 1.8 mg/m3 |
|--|--|
| Section 2 | Operational conditions and risk management measures |
| Section 2.1 | Control of worker exposure |
| Product characteristics | |
| Physical form of product | Solid, low dustiness [OC1] |
| Concentration of substance in | Covers percentage substance in the product up to 25% [G12]. |
| product | |
| Amounts used | Varies between milliliters (sampling) and cubic meters (material |
| F | transfers) [OC13] |
| Frequency and duration of use | Covers daily exposures up to 8 hours (unless stated differently) [G2] |
| Human factors not influenced by risk management | Not applicable |
| Other Operational Conditions | Assumes use at not > 20oC above ambient [G15]; |
| affecting worker exposure | Assumes a good basic standard of occupational hygiene is implemented |
| | [G1]. |
| | Ensure operatives are trained to minimize exposure [EI19] |
| Contributing Scenarios | Risk Management Measures |
| Below pH2 and above pH11 the sul | ostance has corrosive properties: |
| Use suitable eye protection [PPE26 | |
| | y resistant gloves (tested to EN374) in combination with specific |
| activity training [PPE17] | |
| PROC1: | No specific measures identified [EI18]. |
| General exposures (closed systems) | |
| [CS15]. Continuous process | Recommendations: |
| [CS54]. Process sampling [CS2] | {Ensure the system is closed} {Clear transfer lines prior to de-coupling |
| (closed systems) [CS107] | [E39]}. |
| PROC2: | No specific measures identified [EI18]. |
| General exposures [CS1]. | n t.c |
| Continuous process [CS54]. | Recommendations: |
| Process sampling [CS2] (open systems) [CS108] | {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}. |
| PROC3: | No specific measures identified [EI18]. |
| General exposures [CS1]. Use in | Two specific incasures identified [E116]. |
| contained batch processes [CS37].; | Recommendations: |
| With sample collection [CS56]. | {Ensure the system is closed}; |
| Equipment cleaning and | {Drain down and flush system prior to equipment break-in or |
| maintenance [CS39]. | maintenance [E55]}.{Clear spills immediately [C&H13]}. |
| PROC4: | No specific measures identified [EI18]. |
| General exposures (open systems) | |
| [CS16]. | Recommendations: |
| Batch process [CS55] (open | {Drain down and flush system prior to equipment break-in or |
| systems) [CS108]; | maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and |
| Drum/batch transfers [CS8]. With | the work area every day [C&H3]}.; |
| sample collection [CS56]. | {Clear spills immediately [C&H13]}. |
| Equipment cleaning and | |
| maintenance [CS39]. | No specific measures identified [EI19] |
| PROC5: | No specific measures identified [EI18]. |
| General exposures (open systems) [CS16]. Mixing operations (open | Recommendations: |
| systems) [CS30]. Material transfers | {Drain down and flush system prior to equipment break-in or |
| [CS3].; | maintenance [E55]} {Use drum pumps [E53]}. {Clean equipment and |
| Batch process [CS55].; | the work area every day [C&H3]}. {Clear spills immediately [C&H13]} |
| Cleaning [CS47]. | with the street of any [CCC115]]. (Cital spins inintendictly [CCC1115]] |
| PROC8a: | No specific measures identified [EI18]. |
| General exposures (open systems) | 1 |
| [CS16]; Non-dedicated facility | Recommendations: |

| 255-155-0 | 10043-01-3 |
|--|--|
| | |
| [CS82]; Material transfers [CS3].; | {Drain down and flush system prior to equipment break-in or |
| Equipment cleaning and | maintenance [E55]}. {Use drum pumps [E53]}. {Clean equipment and |
| maintenance [CS39].; | the work area every day [C&H3]}. {Clear spills immediately [C&H13]} |
| Bulk transfers [CS14]. | |
| PROC8b: | No specific measures identified [EI18]. |
| General exposures, open systems | |
| [CS16]. | {Drain down and flush system prior to equipment break-in or |
| Dedicated facility [CS81] | maintenance [E55]}. {Use drum pumps [E53]}. {Clean equipment and |
| Material transfers [CS3]. | the work area every day [C&H3]}. {Clear spills immediately [C&H13]} |
| Equipment cleaning and | |
| maintenance [CS39] | |
| Bulk transfers [CS14]. | |
| PROC9: | No specific measures identified [EI18]. |
| General exposures [CS1]. | Two specific incustres identified [E110]. |
| Dedicated facility [CS81] | Recommendations: |
| | |
| Drum and small package filling | {Drain down and flush system prior to equipment break-in or |
| [CS6]. Equipment cleaning and | maintenance [E55]} .{Clean equipment and the work area every day |
| maintenance [CS39]. | [C&H3]}.{Clear spills immediately [C&H13]}. |
| PROC14: | No specific measures identified [EI18]. |
| General exposures (open systems) | |
| [CS16] | Recommendations: |
| Production or preparation or | {Drain down and flush system prior to equipment break-in or |
| articles by tabletting, compression, | maintenance [E55]}.{Clean equipment and the work area every day |
| extrusion or pelletization [CS100] | [C&H3]}. {Clear spills immediately [C&H13]}. |
| PROC15: | No specific measures identified [EI18]. |
| General exposures [CS1]. | |
| Laboratory activities [CS36]. | Recommendations: |
| Small scale [CS61]. | {Drain down and flush system prior to equipment break-in or |
| | maintenance [E55]}.{Clean equipment and the work area every day |
| | [C&H3]}. {Clear spills immediately [C&H13]}. |
| PROC19: | No specific measures identified [EI18]. |
| General exposures [CS1]. Mixing | |
| operations (open systems) [CS30]. | Recommendations: |
| Manual [CS34]. | {Clean equipment and the work area every day [C&H3]}.; |
| | {Clear spills immediately [C&H13]} |
| Section 2.2 | Control of environmental exposure |
| | Control of the monimum tapooned |
| | inum oxide and soluble aluminum compounds are non hazardous (not |
| | ninum (Al) is the most commonly occurring metallic element, comprising |
| eight percent of the earth's crust and i | is therefore found in great abundance in both the terrestrial and sediment |
| | % (30,000-80,000 ppm) are not uncommon. The relative contributions of |
| anthropogenic aluminum to the existi | ng natural pools of aluminum in soils and sediments is very small, and |
| therefore, not relevant either in terms | of added amounts or in terms of toxicity. |
| Section 3 | Exposure Estimation |
| 3.1. Health | |
| | to exceed the applicable exposure limits (given in section 8 of the SDS) |
| | management measures given in section 2 are implemented [G29] |
| | management measures given in section 2 are implemented [G29] |
| 3.2. Environment | |
| N.A. | |
| | |

| Section 4 | Guidance to check comphance with the Exposure Scenario |
|---------------------------|---|
| 4.1. Health | |
| The ECETOC TRA (V2.0) too | ol has been used to estimate workplace exposures unless otherwise indicated |
| [G21] | |
| 4.2. Environment | |
| N.A. | |
| Section 5 | Additional good practice advice beyond the REACH |

Chemical Safety Assessment - (Section Optional)

Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.

| Control of Worker Expo | osure |
|------------------------|--|
| Use of PPE | Skin protection: |
| | Gloves: |
| | - Observe breakthrough time of the gloves used |
| | Respiratory protection: |
| | Respirators: |
| | - Wear a disposable mask only once |
| | - Clean non-disposable masks after each use and store in a clean |
| | box in a clean area |
| | - Wear respirators ≤ 2 hrs/day |

9.1.3 Exposure Scenario 3: Use in synthesis and as Intermediate

Aqueous solution:

| ES3 – Use of Aluminium salts as an intermediate; Max. Alu | s (aqueous solutions) in synthesis as a process chemical and minium content = 25% |
|---|---|
| Section 1 | Exposure Scenario Title |
| Title | Use of Aluminium salts (aqueous solutions) in synthesis as a process chemical and as an intermediate; Max. Aluminium content = 25% |
| Use Descriptors | Sector of Use: SU6b, SU8, SU9, SU14 |
| | Process Categories: PROC1: Use in a closed process, no likelihood of exposure PROC2: Use in a closed continuous process, with occasional controlled exposure PROC3: Use in a closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC15: Use as a laboratory reagent |
| | Environmental Release Categories: ERC1: Manufacture of substances ERC2: Formulation of preparations ERC4: Industrial use |
| | ERC5: Industrial use resulting in inclusion into or onto a matrix ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates) ERC8a: Wide dispersive indoor use of processing aids in open systems |
| Processes, tasks, activities covered | Use of Aluminium salts (aqueous solutions) in synthesis as a process chemical and as an intermediate. Includes material transfers and associated laboratory activities. Max. Aluminium content = 25% |
| GES exposure criteria | DNEL, inhalation long term: 1.8 mg/m3 |
| Section 2 | Operational conditions and risk management measures |
| Section 2.1 | Control of worker exposure |

| Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; Liquid, vapour pressure < 10 Pa [OC14]. |
|--|
| Covers percentage substance in the product up to 25% [G12]. |
| Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] |
| Covers daily exposures up to 8 hours (unless stated differently) [G2] |
| Not applicable |
| Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. |
| Ensure operatives are trained to minimize exposure [EI19] |
| Risk Management Measures |
| ostance has corrosive properties: |
| Loves tested to EN274 (DDE15) |
| No specific measures identified [EI18]. |
| The specific measures identified [Diffe]. |
| Recommendations: |
| {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. |
| No specific measures identified [EI18]. |
| The specific measures identified [E110]. |
| Recommendations: |
| {Ensure the system is closed} {Clear transfer lines prior to de-coupling |
| [E39]}. {Clear spills immediately [C&H13]}. |
| No specific measures identified [EI18]. |
| |
| Recommendations: |
| {Ensure the system is closed} |
| {Drain down and flush system prior to equipment break-in or |
| maintenance [E55]}.{Clear spills immediately [C&H13]}. No specific measures identified [E118]. |
| The specific incasures includica [E116]. |
| Recommendations: |
| {Drain down and flush system prior to equipment break-in or |
| maintenance [E55]; {Use drum pumps [E53]}. {Clean equipment and |
| the work area every day [C&H3]}. |
| {Clear spills immediately [C&H13]}. |
| |
| No specific measures identified [EI18]. |
| D |
| Recommendations: |
| {Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Use drum pumps [E53]}. {Clean equipment and |
| the work area every day [C&H3]}.{Clear spills immediately [C&H13]}. |
| wien every any feetings, feetin spins ininculating feetings. |
| |
| No specific measures identified [EI18]. |
| |
| Recommendations: |
| {Drain down and flush system prior to equipment break-in or |
| maintenance [E55]}. {Use drum pumps [E53]}. {Clean equipment and |
| the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. |
| |

| PROC9: | No specific measures identified [EI18]. |
|---|--|
| General exposures [CS1]. | |
| Dedicated facility [CS81] | Recommendations: |
| Drum and small package filling | {Drain down and flush system prior to equipment break-in or |
| [CS6]. | maintenance [E55]}. {Clean equipment and the work area every day |
| Equipment cleaning and | [C&H3]} {Clear spills immediately [C&H13]}. |
| maintenance [CS39]. | |
| PROC15: | No specific measures identified [EI18]. |
| General exposures [CS1]. | |
| Laboratory activities [CS36]. | Recommendations: |
| Small scale [CS61]. | {Drain down and flush system prior to equipment break-in or |
| | maintenance [E55]} {Clean equipment and the work area every day |
| | [C&H3]}.{Clear spills immediately [C&H13]}. |
| Section 2.2 | Control of environmental exposure |
| | |
| eight percent of the earth's crust and | minum (Al) is the most commonly occurring metallic element, comprising is therefore found in great abundance in both the terrestrial and sediment |
| classified for the environment). Alueight percent of the earth's crust and environments. Concentrations of 3-3 anthropogenic aluminum to the exist | minum (Al) is the most commonly occurring metallic element, comprising |
| classified for the environment). Alueight percent of the earth's crust and environments. Concentrations of 3-3 anthropogenic aluminum to the exist | minum (Al) is the most commonly occurring metallic element, comprising is therefore found in great abundance in both the terrestrial and sediment 3% (30,000-80,000 ppm) are not uncommon. The relative contributions of ting natural pools of aluminum in soils and sediments is very small, and |
| classified for the environment). Alueight percent of the earth's crust and environments. Concentrations of 3-5 anthropogenic aluminum to the exist therefore, not relevant either in term. Section 3 | minum (Al) is the most commonly occurring metallic element, comprising is therefore found in great abundance in both the terrestrial and sediment 3% (30,000-80,000 ppm) are not uncommon. The relative contributions of ting natural pools of aluminum in soils and sediments is very small, and is of added amounts or in terms of toxicity. |
| classified for the environment). Alu eight percent of the earth's crust and environments. Concentrations of 3-8 anthropogenic aluminum to the exist herefore, not relevant either in term Section 3 3.1. Health | minum (Al) is the most commonly occurring metallic element, comprising is therefore found in great abundance in both the terrestrial and sediment 3% (30,000-80,000 ppm) are not uncommon. The relative contributions of ting natural pools of aluminum in soils and sediments is very small, and is of added amounts or in terms of toxicity. Exposure Estimation |
| classified for the environment). Alu eight percent of the earth's crust and environments. Concentrations of 3-8 anthropogenic aluminum to the exist herefore, not relevant either in term Section 3 3.1. Health Predicted exposures are not expected. | minum (Al) is the most commonly occurring metallic element, comprising is therefore found in great abundance in both the terrestrial and sediment 3% (30,000-80,000 ppm) are not uncommon. The relative contributions of ting natural pools of aluminum in soils and sediments is very small, and is of added amounts or in terms of toxicity. |
| classified for the environment). Alu eight percent of the earth's crust and environments. Concentrations of 3-8 anthropogenic aluminum to the exist herefore, not relevant either in term Section 3 3.1. Health Predicted exposures are not expected. | minum (Al) is the most commonly occurring metallic element, comprising is therefore found in great abundance in both the terrestrial and sediment 3% (30,000-80,000 ppm) are not uncommon. The relative contributions of ting natural pools of aluminum in soils and sediments is very small, and is of added amounts or in terms of toxicity. Exposure Estimation ed to exceed the applicable exposure limits (given in section 8 of the SDS) |
| classified for the environment). Alueight percent of the earth's crust and environments. Concentrations of 3-3 anthropogenic aluminum to the exist therefore, not relevant either in term. Section 3 3.1. Health Predicted exposures are not expected when the operational conditions/risk | minum (Al) is the most commonly occurring metallic element, comprising is therefore found in great abundance in both the terrestrial and sediment 3% (30,000-80,000 ppm) are not uncommon. The relative contributions of ting natural pools of aluminum in soils and sediments is very small, and is of added amounts or in terms of toxicity. Exposure Estimation ed to exceed the applicable exposure limits (given in section 8 of the SDS) |
| classified for the environment). Alueight percent of the earth's crust and environments. Concentrations of 3-8 anthropogenic aluminum to the exist therefore, not relevant either in term Section 3 3.1. Health Predicted exposures are not expected when the operational conditions/risk 3.2. Environment N.A. | minum (Al) is the most commonly occurring metallic element, comprising is therefore found in great abundance in both the terrestrial and sediment 3% (30,000-80,000 ppm) are not uncommon. The relative contributions of ting natural pools of aluminum in soils and sediments is very small, and is of added amounts or in terms of toxicity. Exposure Estimation ed to exceed the applicable exposure limits (given in section 8 of the SDS) |
| classified for the environment). Alueight percent of the earth's crust and environments. Concentrations of 3-8 anthropogenic aluminum to the exist therefore, not relevant either in term Section 3 3.1. Health Predicted exposures are not expected when the operational conditions/risk 3.2. Environment N.A. | minum (Al) is the most commonly occurring metallic element, comprising is therefore found in great abundance in both the terrestrial and sediment 3% (30,000-80,000 ppm) are not uncommon. The relative contributions of ting natural pools of aluminum in soils and sediments is very small, and is of added amounts or in terms of toxicity. Exposure Estimation ed to exceed the applicable exposure limits (given in section 8 of the SDS) is management measures given in section 2 are implemented [G29] |
| classified for the environment). Alueight percent of the earth's crust and environments. Concentrations of 3-3 anthropogenic aluminum to the exist therefore, not relevant either in term. Section 3 3.1. Health Predicted exposures are not expecte when the operational conditions/risk 3.2. Environment N.A. Section 4 4.1. Health | minum (Al) is the most commonly occurring metallic element, comprising is therefore found in great abundance in both the terrestrial and sediment 3% (30,000-80,000 ppm) are not uncommon. The relative contributions of ting natural pools of aluminum in soils and sediments is very small, and is of added amounts or in terms of toxicity. Exposure Estimation ed to exceed the applicable exposure limits (given in section 8 of the SDS) is management measures given in section 2 are implemented [G29] |
| classified for the environment). Alueight percent of the earth's crust and environments. Concentrations of 3-3 anthropogenic aluminum to the exist therefore, not relevant either in term. Section 3 3.1. Health Predicted exposures are not expecte when the operational conditions/risk 3.2. Environment N.A. Section 4 4.1. Health | minum (Al) is the most commonly occurring metallic element, comprising is therefore found in great abundance in both the terrestrial and sediment 3% (30,000-80,000 ppm) are not uncommon. The relative contributions of ting natural pools of aluminum in soils and sediments is very small, and is of added amounts or in terms of toxicity. Exposure Estimation Exposure Estimation Ed to exceed the applicable exposure limits (given in section 8 of the SDS) amonagement measures given in section 2 are implemented [G29] Guidance to check compliance with the Exposure Scenario |
| classified for the environment). Alueight percent of the earth's crust and environments. Concentrations of 3-8 anthropogenic aluminum to the exist therefore, not relevant either in term Section 3 3.1. Health Predicted exposures are not expecte when the operational conditions/risk 3.2. Environment N.A. Section 4 4.1. Health The ECETOC TRA (V2.0) tool has | minum (Al) is the most commonly occurring metallic element, comprising is therefore found in great abundance in both the terrestrial and sediment 3% (30,000-80,000 ppm) are not uncommon. The relative contributions of ting natural pools of aluminum in soils and sediments is very small, and is of added amounts or in terms of toxicity. Exposure Estimation Exposure Estimation Ed to exceed the applicable exposure limits (given in section 8 of the SDS) is management measures given in section 2 are implemented [G29] Guidance to check compliance with the Exposure Scenario |

| Section 5 | Additional good practice advice beyond the REACH |
|-----------|--|
| | Chemical Safety Assessment - (Section Optional) |

Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.

Control of Worker Exposure

| Control of Worker Exposure | |
|----------------------------|--|
| Use of PPE | Skin protection: |
| | Gloves: |
| | - Observe breakthrough time of the gloves used |
| | Respiratory protection: |
| | Respirators: |
| | - Wear a disposable mask only once |
| | - Clean non-disposable masks after each use and store in a clean |
| | box in a clean area |
| | - Wear respirators ≤ 2 hrs/day |

Solid, high dustiness:

| ES3 – Use of Aluminium salts (solid, high dustiness) in synthesis as a process chemical and as an intermediate; Aluminium content = max. 25% | |
|--|---|
| Section 1 | Exposure Scenario Title |
| Title | Use of Aluminium salts (solid, high dustiness) in synthesis |

| | as a process chemical and as an intermediate; Aluminium |
|---|---|
| | content = max. 25% |
| Use Descriptor | Sector of Use: SU6b, SU8, SU9, SU14 |
| | Process Categories: PROC1: Use in a closed process, no likelihood of exposure PROC2: Use in a closed continuous process, with occasional controlled exposure PROC3: Use in a closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC15: Use as a laboratory reagent |
| | Environmental Release Categories: ERC1: Manufacture of substances |
| | ERC1: Maintracture of substances ERC2: Formulation of preparations ERC4: Industrial use ERC5: Industrial use resulting in inclusion into or onto a matrix |
| | ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates) ERC8a: Wide dispersive indoor use of processing aids in open systems |
| Processes, tasks, activities covered | Use of Aluminium salts (solid, high dustiness) in synthesis as a process chemical and as an intermediate. Includes material transfers and associated laboratory activities. Max. Aluminium content = 25% |
| GES exposure criteria | DNEL, inhalation long term: 1.8 mg/m3 |
| Section 2 | Operational conditions and risk management measures |
| Section 2.1 | Control of worker exposure |
| Product characteristics | 0.1:11:11.6 FOOG |
| Physical form of product Concentration of substance in product | Solid, high dustiness [OC6] Covers percentage substance in the product up to 25% [G12]. |
| Amounts used | Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] |
| Frequency and duration of use | Covers daily exposures up to 8 hours (unless stated differently) [G2] |
| Human factors not influenced by risk management | Not applicable |
| Other Operational Conditions affecting worker exposure | Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] |
| Contributing Scenarios | Risk Management Measures |
| Below pH2 and above pH11 the substance has corrosive properties: Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistant gloves (tested to EN374) in combination with specific | |
| PROC1: General exposures (closed systems) | No specific measures identified [EI18]. |

| [CS15]. Continuous process | Recommendations: |
|--|--|
| [CS54]. Process sampling [CS2] | {Ensure the system is closed} {Clear transfer lines prior to de-coupling |
| (closed systems) [CS107] | [E39]}. |
| PROC2: | Industrial workers: |
| General exposures [CS1]. | No specific measures identified [EI18]. |
| Continuous process [CS54]. | |
| Process sampling [CS2] (open | Professional workers: |
| systems) [CS108] | Ensure material transfers are under containment or extract ventilation |
| | (80% efficiency) [E66]. |
| | Provide extract ventilation to material transfer points and other openings |
| | (80% efficiency) [E82]. |
| | (|
| | Recommendations: |
| | {Ensure the system is closed} {Clear transfer lines prior to de-coupling |
| | [E39]}. {Clear spills immediately [C&H13]} |
| PDOC2 | |
| PROC3: | Industrial workers: |
| General exposures [CS1]. Use in | No specific measures identified [EI18]. |
| contained batch processes [CS37]. | D., C., |
| With sample collection [CS56]. | Professional workers: |
| Equipment cleaning and | Ensure material transfers are under containment or extract ventilation |
| maintenance [CS39]. | (80% efficiency) [E66]. |
| | Provide extract ventilation to material transfer points and other openings |
| | (80% efficiency) [E82] |
| | D 1. |
| | Recommendations: |
| | {Ensure the system is closed} |
| | {Drain down and flush system prior to equipment break-in or |
| PD-0-C4 | maintenance [E55]}. {Clear spills immediately [C&H13]}. |
| PROC4: | Industrial workers: |
| General exposures (open systems) | 5-25%: |
| [CS16]. | Ensure material transfers are under containment or extract ventilation |
| Batch process [CS55] (open systems) [CS108]; | (90% efficiency) [E66]. |
| Drum/batch transfers [CS8]. With | Provide extract ventilation to material transfer points and other openings |
| sample collection [CS56]. | (90% efficiency) [E82]. |
| Equipment cleaning and | Professional workers: |
| maintenance [CS39]. | 5-25%: |
| maintenance [C339]. | Ensure material transfers are under containment or extract ventilation |
| | (80% efficiency) [E66]. |
| | Provide extract ventilation to material transfer points and other openings |
| | (80% efficiency) [E82]. |
| | Avoid carrying out operation for more than 1 hour [OC11] |
| | Or: |
| | Avoid carrying out operation for more than 4 hours [OC12] plus |
| | Wear a respirator conforming to EN140 with Type A/P2 filter or better |
| | {PPE29] |
| | 1-5%: |
| | Avoid carrying out operation for more than 15 minutes [OC10] |
| | <1%: |
| | Avoid carrying out operation for more than 1 hour [OC11] |
| | 21 void carrying out operation for more than 1 flour [OC11] |
| | Recommendations: |
| | {Drain down and flush system prior to equipment break-in or |
| | maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and |
| | the work area every day [C&H3]}. |
| | {Clear spills immediately [C&H13]}. |
| PROC8a: | 5-25%: |
| General exposures (open systems) | Ensure material transfers are under containment or extract ventilation |
| [CS16]; | (80% efficiency) [E66]. |
| Non-dedicated facility [CS82]; | Provide extract ventilation to material transfer points and other openings |
| 11011-dedicated facility [C502], | 1 10 vide extract venturation to material transfer points and other openings |

| | (000/ 0%;) [500] |
|--|---|
| Material transfers [CS3]. Equipment cleaning and | (80% efficiency) [E82]. Avoid carrying out operation for more than 1 hour [OC11] |
| maintenance [CS39]. | OR: |
| Bulk transfers [CS14]. | Avoid carrying out operation for more than 4 hours [OC12] plus Wear |
| Bulk transfers [CS14]. | a respirator conforming to EN140 with Type A/P2 filter or better |
| | [PPE29] |
| | 1-5%: |
| | Ensure material transfers are under containment or extract ventilation |
| | (80% efficiency) [E66].; |
| | Provide extract ventilation to material transfer points and other openings |
| | (80% efficiency) [E82]. |
| | Avoid carrying out operation for more than 4 hours [OC12] |
| | |
| | Recommendations: |
| | Use bulk or semi-bulk handling systems [E43].; |
| | Discharge sacks via suitable vented charge chute [E44].{Drain down |
| | and flush system prior to equipment break-in or maintenance [E55]}.; |
| | {Use drum pumps [E53]}. {Clean equipment and the work area every |
| | day [C&H3]} .{Clear spills immediately [C&H13]}. |
| PROC8b: | Industrial workers: |
| General exposures, open systems | 5-25%: |
| [CS16]. | Ensure material transfers are under containment or extract ventilation |
| Dedicated facility [CS81] | (90% efficiency) [E66] |
| Material transfers [CS3]. | Provide extract ventilation to material transfer points and other openings |
| Equipment cleaning and | (90% efficiency) [E82]. |
| maintenance [CS39]. Bulk transfers [CS14]. | Use bulk or semi-bulk handling systems [E43]. |
| Duik transfers [CS14]. | Discharge sacks via suitable vented charge chute [E44]. |
| | Discharge sacks via suitable vented charge chare [E77]. |
| | Professional workers: |
| | 5-25%: |
| | Ensure material transfers are under containment or extract ventilation |
| | (80% efficiency) [E66].; |
| | Provide extract ventilation to material transfer points and other openings |
| | (80% efficiency) [E82]. |
| | Avoid carrying out operation for more than 1 hour [OC11] |
| | Use bulk or semi-bulk handling systems [E43]. |
| | Discharge sacks via suitable vented charge chute [E44]. |
| | Or: Avoid carrying out operation for more than 4 hours [OC12] plus |
| | Wear a respirator conforming to EN140 with Type A/P2 filter or better |
| | [PPE29] |
| | 1-5%: |
| | Avoid carrying out operation for more than 15 minutes [OC10] |
| | 17 of a carrying out operation for more than 15 minutes [5 c f o] 1%: |
| | Avoid carrying out operation for more than 1 hour [OC11] |
| | |
| | Recommendations: |
| | {Drain down and flush system prior to equipment break-in or |
| | maintenance [E55]} |
| | {Use drum pumps [E53]}. {Clean equipment and the work area every |
| | day [C&H3]}. |
| PROC9: | {Clear spills immediately [C&H13]}. Ensure material transfers are under containment or extract ventilation |
| General exposures [CS1]. | (80% efficiency) [E66]. |
| Dedicated facility [CS81] | Provide extract ventilation to material transfer points and other openings |
| Drum and small package filling | (80% efficiency) [E82]. |
| [CS6]. | Avoid carrying out operation for more than 4 hours [OC12] { |
| Equipment cleaning and |) |
| maintenance [CS39]. | Recommendations: |
| L 3 | · |

| | Use bulk or semi-bulk handling systems [E43].; Discharge sacks via suitable vented charge chute [E44].Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. |
|---|--|
| PROC15: General exposures [CS1]. Laboratory activities [CS36]. Small scale [CS61]. | Carry out in a vented booth or extracted enclosure (80% efficiency) [E57]. Recommendations: |
| | {Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. |
| Section 2.2 | Control of environmental exposure |
| Aluminum, aluminum powders, aluminum oxide and soluble aluminum compounds are non hazardous (not classified for the environment). Aluminum (Al) is the most commonly occurring metallic element, comprising eight percent of the earth's crust and is therefore found in great abundance in both the terrestrial and sediment environments. Concentrations of 3-8% (30,000-80,000 ppm) are not uncommon. The relative contributions of anthropogenic aluminum to the existing natural pools of aluminum in soils and sediments is very small, and therefore, not relevant either in terms of added amounts or in terms of toxicity. | |

Section 3 Exposure Estimation

3.1. Health

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented [G29]

3.2. Environment

N.A.

| Section 4 | Guidance to check compliance with the Exposure Scenario |
|------------|---|
| 4.1 Haalth | |

The ECETOC TRA (V2.0) tool has been used to estimate workplace exposures unless otherwise indicated [G21]

4.2. Environment

N.A.

| Section 5 | Additional good practice advice beyond the REACH |
|-----------|--|
| | Chemical Safety Assessment - (Section Optional) |

Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.

Control of Worker Exposure

| Use of PPE | Skin protection: |
|------------|--|
| | Gloves: |
| | - Observe breakthrough time of the gloves used |
| | Respiratory protection: |
| | Respirators: |
| | - Wear a disposable mask only once |
| | - Clean non-disposable masks after each use and store in a |
| | clean box in a clean area |
| | - Wear respirators ≤ 2 hrs/day |

Solid, low dustiness:

| ES3 - Use of Aluminium salts (solid, high dustiness) in synthesis as a process chemical | |
|---|-------------------------|
| and as an intermediate; Aluminium content = max. 25% | |
| Section 1 | Exposure Scenario Title |

| Title | Use of Aluminium salts (solid, high dustiness) in synthesis as a process chemical and as an intermediate; Aluminium content = max. 25% |
|---|---|
| Use Descriptors | Sector of Use: SU6b, SU8, SU9, SU14 |
| | Process Categories: PROC1: Use in a closed process, no likelihood of exposure PROC2: Use in a closed continuous process, with occasional controlled exposure PROC3: Use in a closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) |
| | PROC15: Use as a laboratory reagent Environmental Release Categories: ERC1: Manufacture of substances ERC2: Formulation of preparations ERC4: Industrial use ERC5: Industrial use resulting in inclusion into or onto a matrix ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates) ERC8a: Wide dispersive indoor use of processing aids in open systems |
| Processes, tasks, activities covered | Use of Aluminium salts (solid, high dustiness) in synthesis as a process chemical and as an intermediate. Includes material transfers and associated laboratory activities. Max. Aluminium content = 25% |
| GES exposure criteria | DNEL, inhalation long term: 1.8 mg/m3 |
| | |
| Section 2 | Operational conditions and risk management measures |
| Section 2.1 | Operational conditions and risk management measures Control of worker exposure |
| Section 2.1 Product characteristics | Control of worker exposure |
| Product characteristics Physical form of product Concentration of substance in | |
| Product characteristics Physical form of product Concentration of substance in product Amounts used | Control of worker exposure Solid, low dustiness [OC1] Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] |
| Product characteristics Physical form of product Concentration of substance in product | Control of worker exposure Solid, low dustiness [OC1] Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material |
| Product characteristics Physical form of product Concentration of substance in product Amounts used | Control of worker exposure Solid, low dustiness [OC1] Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] |
| Product characteristics Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions affecting worker exposure | Control of worker exposure Solid, low dustiness [OC1] Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20oC above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] |
| Product characteristics Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions | Control of worker exposure Solid, low dustiness [OC1] Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20oC above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. |
| Product characteristics Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions affecting worker exposure Contributing Scenarios Below pH2 and above pH11 the suluse suitable eye protection [PPE26 Avoid skin contact: wear chemicall activity training [PPE17] | Control of worker exposure Solid, low dustiness [OC1] Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20oC above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures Ostance has corrosive properties: J. resistant gloves (tested to EN374) in combination with specific |
| Product characteristics Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions affecting worker exposure Contributing Scenarios Below pH2 and above pH11 the suluse suitable eye protection [PPE26 Avoid skin contact: wear chemical] | Control of worker exposure Solid, low dustiness [OC1] Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20oC above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures |

| PROC2: | No specific measures identified [EI18]. |
|------------------------------------|--|
| General exposures [CS1]. | No specific measures identified [E116]. |
| Continuous process [CS54]. | Recommendations: |
| | |
| Process sampling [CS2] (open | {Ensure the system is closed} {Clear transfer lines prior to de-coupling |
| systems) [CS108] | [E39]}. {Clear spills immediately [C&H13]}. |
| PROC3: | No specific measures identified [EI18]. |
| General exposures [CS1]. Use in | n t e |
| contained batch processes [CS37].; | Recommendations: |
| With sample collection [CS56]. | {Ensure the system is closed}; |
| Equipment cleaning and | {Drain down and flush system prior to equipment break-in or |
| maintenance [CS39]. | maintenance [E55]}.{Clear spills immediately [C&H13]}. |
| PROC4: | No specific measures identified [EI18]. |
| General exposures (open systems) | |
| [CS16]. | Recommendations: |
| Batch process [CS55] (open | {Drain down and flush system prior to equipment break-in or |
| systems) [CS108]; | maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and |
| Drum/batch transfers [CS8]. With | the work area every day [C&H3]}.; |
| sample collection [CS56]. | {Clear spills immediately [C&H13]}. |
| Equipment cleaning and | |
| maintenance [CS39]. | |
| PROC8a: | No specific measures identified [EI18]. |
| General exposures (open systems) | |
| [CS16]; Non-dedicated facility | Recommendations: |
| [CS82]; Material transfers [CS3].; | {Drain down and flush system prior to equipment break-in or |
| Equipment cleaning and | maintenance [E55]}. {Use drum pumps [E53]}. {Clean equipment and |
| maintenance [CS39].; | the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. |
| Bulk transfers [CS14]. | |
| PROC8b: | No specific measures identified [EI18]. |
| General exposures, open systems | |
| [CS16]. | {Drain down and flush system prior to equipment break-in or |
| Dedicated facility [CS81] | maintenance [E55]}.{Use drum pumps [E53]}. {Clean equipment and |
| Material transfers [CS3]. | the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. |
| Equipment cleaning and | |
| maintenance [CS39] | |
| Bulk transfers [CS14]. | |
| PROC9: | No specific measures identified [EI18]. |
| General exposures [CS1]. | |
| Dedicated facility [CS81] | Recommendations: |
| Drum and small package filling | {Drain down and flush system prior to equipment break-in or |
| [CS6]. Equipment cleaning and | maintenance [E55]} .{Clean equipment and the work area every day |
| maintenance [CS39]. | [C&H3]}.{Clear spills immediately [C&H13]}. |
| PROC15: | No specific measures identified [EI18]. |
| General exposures [CS1]. | _ |
| Laboratory activities [CS36]. | Recommendations: |
| Small scale [CS61]. | {Drain down and flush system prior to equipment break-in or |
| | maintenance [E55]}.{Clean equipment and the work area every day |
| | [C&H3]}. {Clear spills immediately [C&H13]}. |
| Section 2.2 | Control of environmental exposure |
| | inum anida and salubla aluminum aamnaunda ara nan hazardaya (nat |

Aluminum, aluminum powders, aluminum oxide and soluble aluminum compounds are non hazardous (not classified for the environment). Aluminum (Al) is the most commonly occurring metallic element, comprising eight percent of the earth's crust and is therefore found in great abundance in both the terrestrial and sediment environments. Concentrations of 3-8% (30,000-80,000 ppm) are not uncommon. The relative contributions of anthropogenic aluminum to the existing natural pools of aluminum in soils and sediments is very small, and therefore, not relevant either in terms of added amounts or in terms of toxicity.

Section 3 Exposure Estimation

3.1. Health

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented [G29]

| 3.2. Environment | | |
|---|---|--|
| N.A. | | |
| Section 4 | Guidance to check compliance with the Exposure Scenario | |
| 4.1. Health | | |
| [G21] | (V2.0) tool has been used to estimate workplace exposures unless otherwise indicated | |
| 4.2. Environment | | |
| N.A. | | |
| Section 5 | Additional good practice advice beyond the REACH Chemical Safety Assessment - (Section Optional) | |
| Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH. | | |
| Control of Worker I | Exposure | |
| Use of PPE | Skin protection: Gloves: - Observe breakthrough time of the gloves used Respiratory protection: | |

9.1.4 Exposure Scenario 4: Use in spraying Formulations

Aqueous solution:

| ES4 – Industrial and Professional use of Aluminium salts in spraying formulations |
|---|
| (aqueous solutions); Max. aluminium content = 25% |

| Section 1 | Exposure Scenario Title |
|----------------|--|
| Title | Industrial and Professional Use of Aluminium salts in |
| | spraying formulations (aqueous solutions) – Max. |
| | Aluminium content = 25% |
| Use Descriptor | Sector of Use: Industrial (SU5, SU6b, SU7) |
| | Process Categories: |
| | PROC1: Use in a closed process, no likelihood of exposure |
| | PROC2: Use in a closed continuous process, with occasional controlled exposure |
| | PROC3: Use in a closed batch process (synthesis or formulation) |
| | PROC5: Mixing or blending in batch processes for formulation of |
| | preparations and articles (multistage and/or significant contact) |
| | PROC7: Industrial spraying |
| | PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities |
| | PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities |
| | PROC9: Transfer of substance or preparation into small containers |
| | (dedicated filling line, including weighing) |
| | PROC11: Non industrial spraying |
| | PROC19: Hand-mixing with intimate contact and only PPE available |
| | |
| | |
| | |

| | Environmental Release Categories: |
|--|---|
| | ERC3: Formulation in materials |
| | ERC4: Industrial use |
| | ERC5: Industrial use resulting in inclusion into or onto a matrix |
| | ERC6a: Industrial use resulting in manufacture of another substance (use |
| | of intermediates) EPC(h) Industrial was of recetive processing side |
| | ERC6b: Industrial use of reactive processing aids |
| | ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8b: Wide dispersive indoor use of reactive substances in open |
| | systems |
| | ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a |
| | matrix |
| | ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a |
| | matrix |
| | ERC10a: Wide dispersive outdoor use of long-life articles and materials |
| | with low release |
| | ERC11a: Wide dispersive indoor use of long-life articles and materials |
| | with low release |
| Processes, tasks, activities covered | Industrial and Professional use of Aluminium salts in spraying |
| | formulations (aqueous solutions, max Aluminium content = 25%). |
| and | Includes equipment cleaning and maintenance. |
| GES exposure criteria | DNEL, inhalation long term: 1.8 mg/m3 |
| Section 2 | Operational conditions and risk management measures |
| Section 2.1 | Control of worker exposure |
| Product characteristics | |
| Physical form of product | Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; |
| | Liquid, vapour pressure < 10 Pa [OC14]. |
| Concentration of substance in | Covers percentage substance in the product up to 25% [G12]. |
| product | |
| Amounts used | Varies between milliliters (sampling) and cubic meters (material |
| E 11 C | transfers) [OC13] |
| Frequency and duration of use | Covers daily exposures up to 8 hours (unless stated differently) [G2] |
| Human factors not influenced by | Not applicable |
| risk management | |
| Other Operational Conditions | Assumes use at not > 20°C above ambient [G15]; |
| affecting worker exposure | Assumes a good basic standard of occupational hygiene is implemented |
| | [G1]. Indoor [OC8]. |
| | Ensure operatives are trained to minimize exposure [EI19] |
| Contributing Scenarios | Risk Management Measures |
| Below pH2 and above pH11 the sul | ostance has corrosive properties: |
| Use suitable eye protection [PPE26 | • • |
| Avoid skin contact: wear suitable g | |
| PROC1: | No specific measures identified [EI18]. |
| General exposures (closed systems) | |
| [CS15]. Continuous process [CS54]. | Recommendations: |
| Process sampling [CS2] (closed | {Ensure the system is closed} {Clear transfer lines prior to de-coupling |
| systems) [CS107] | [E39]}. |
| PROC2: | No specific measures identified [EI18]. |
| General exposures [CS1]. | D t c |
| L ANTINITORIC PROCESS IL SSALL Process | Recommendations: |
| Continuous process [CS54]. Process | |
| sampling [CS2] (open systems) [CS108] | {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}. |

| PROC3: | No specific measures identified [EI18]. |
|---|--|
| General exposures [CS1]. Use in | |
| contained batch processes [CS37]. | Recommendations: |
| With sample collection [CS56]. | {Ensure the system is closed} |
| Equipment cleaning and | {Drain down and flush system prior to equipment break-in or |
| maintenance [CS39]. | maintenance [E55]}.{Clear spills immediately [C&H13]}. |
| PROC5: | No specific measures identified [EI18]. |
| General exposures (open systems) | |
| [CS16]. Mixing operations (open | Recommendations: |
| systems) [CS30]. Material transfers | {Drain down and flush system prior to equipment break-in or |
| [CS3]. | maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and |
| Batch process [CS55]. | the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. |
| Cleaning [CS47]. | the work area every day [excits]). (elear spins immediately [excits]). |
| PROC7: | 5-25%: |
| | |
| General exposures [CS1]. Spraying [CS10]. | Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings (90% efficiency) [E60]. Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20 (90% efficiency) [E70]. Wear a respirator conforming to EN140 with Type A/P2 filter or better {PPE29} Or: |
| | Avoid carrying out operation for more than 1 hour [OC11] Plus: Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] Or: |
| | Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings (90% efficiency) [E60]. Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20 (90% efficiency) [E70]. Plus: Avoid carrying out operation for more than 1 hour [OC11] <5%: Avoid carrying out operation for more than 4 hours [OC12] |
| | Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] <1%: |
| | Limit the substance content in the product to 1% [OC16]. Avoid carrying out operation for more than 15 minutes [OC10] { |
| | Recommendations: {Clean equipment and the work area every day [C&H3]} {Clear spills immediately [C&H13]}. |
| PROC8a: | No specific measures identified [EI18]. |
| General exposures (open systems) [CS16]; Non-dedicated facility [CS82]; Material transfers [CS3]. Equipment cleaning and maintenance [CS39]. Bulk transfers [CS14]. | Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}.{Clear spills immediately [C&H13]}. |
| PROC8b: | No specific measures identified [EI18]. |
| General exposures, open systems | |
| [CS16]. | Recommendations: |
| Dedicated facility [CS81] Material | {Drain down and flush system prior to equipment break-in or |
| transfers [CS3]. | maintenance [E55]}. {Use drum pumps [E53]}. {Clean equipment and |
| Equipment cleaning and maintenance [CS39]. Bulk transfers [CS14]. | the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. |
| Duix transicis [CS14]. | <u> </u> |

| PROC9: | No specific measures identified [EI18]. |
|--|--|
| General exposures [CS1]. | The specific measures racinimea (Effe). |
| Dedicated facility [CS81] | Recommendations: |
| Drum and small package filling | {Drain down and flush system prior to equipment break-in or |
| [CS6]. | maintenance [E55]}. {Clean equipment and the work area every day |
| Equipment cleaning and | [C&H3]} {Clear spills immediately [C&H13]}. |
| maintenance [CS39]. | |
| PROC11: General exposures [CS1]. Spraying [CS10]. | 5-25%: Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings (80% efficiency) [E60]. Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20 (80% efficiency) [E70]. Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] Or: Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings (80% efficiency) [E60].; Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20 (80% efficiency) [E70]. Avoid carrying out operation for more than 15 minutes [OC10] <5%: Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings (80% efficiency) [E60]. Apply within a vented cab supplied with filtered air under positive |
| | pressure and with a protection factor of >20 (80% efficiency) [E70]. Avoid carrying out operation for more than 1 hour [OC11] <1%: Avoid carrying out operation for more than 15 minutes [OC10] Recommendations: |
| | {Clean equipment and the work area every day [C&H3]} {Clear spills immediately [C&H13]}. |
| PROC19: | Industrial workers: |
| General exposures [CS1]. Mixing operations (open systems) [CS30]. Manual [CS34]. | 5-25%: Avoid carrying out operation for more than 1 hour [OC11]{ <5%: |
| | Avoid carrying out operation for more than 4 hours [OC12] <1%: |
| | No specific measures identified [EI18] |
| | Professional workers: 5-25%: |
| | Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] Or: |
| | Avoid carrying out operation for more than 15 minutes [OC10] { <5%: |
| | Avoid carrying out operation for more than 1 hour [OC11] <1%: |
| | Avoid carrying out operation for more than 4 hours [OC12] |
| | Recommendations: {Clean equipment and the work area every day [C&H3]} {Clear spills immediately [C&H13]} {Stay upwind/keep distance from source [E122]}. |
| Section 2.2 | Control of environmental exposure |
| Aluminum, aluminum powders, alum | inum oxide and soluble aluminum compounds are non hazardous (not |

eight percent of the earth's crust and is therefore found in great abundance in both the terrestrial and sediment

classified for the environment). Aluminum (Al) is the most commonly occurring metallic element, comprising

environments. Concentrations of 3-8% (30,000-80,000 ppm) are not uncommon. The relative contributions of anthropogenic aluminum to the existing natural pools of aluminum in soils and sediments is very small, and therefore, not relevant either in terms of added amounts or in terms of toxicity.

Exposure Estimation Section 3

3.1. Health

Section 4

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented [G29]

Guidance to check compliance with the Exposure Scenario

3.2. Environment

N.A.

| 4.1. Health |
|--|
| The ECETOC TRA (V2.0) tool has been used to estimate workplace exposures unless otherwise indicate |

[G21]

4.2. Environment

N.A.

| Section 5 | Additional good practice advice beyond the REACH |
|-----------|--|
| | Chemical Safety Assessment - (Section Optional) |

Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.

| Control of Worker Exposure | |
|----------------------------|--|
| Use of PPE | Skin protection: |
| | Gloves: |
| | - Observe breakthrough time of the gloves used |
| | Respiratory protection: |
| | Respirators: |
| | - Wear a disposable mask only once |
| | - Clean non-disposable masks after each use and store in a |
| | clean box in a clean area |
| | - Wear respirators ≤ 2 hrs/day |

Solid, high dustiness:

| ES4 – Industrial and Professional use of Aluminium salts in spraying formulations – solid, high dustiness; max. Aluminium content = 25% | |
|---|--|
| Section 1 | Exposure Scenario Title |
| Title | Industrial and Professional use of Aluminium salts in spraying formulations - solid, high dustiness; max. Aluminium content = 25% |
| Use Descriptor | Sector of Use: SU5, SU6b, SU7 |

| | , |
|--|---|
| | Process Categories: PROC1: Use in a closed process, no likelihood of exposure PROC2: Use in a closed continuous process, with occasional controlled exposure PROC3: Use in a closed batch process (synthesis or formulation) PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC11: Non industrial spraying PROC19: Hand-mixing with intimate contact and only PPE available |
| | Environmental Release Categories: ERC3: Formulation in materials ERC4: Industrial use ERC5: Industrial use resulting in inclusion into or onto a matrix ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates) ERC6b: Industrial use of reactive processing aids ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8b: Wide dispersive indoor use of reactive substances in open systems |
| | ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix ERC10a: Wide dispersive outdoor use of long-life articles and materials with low release ERC11a: Wide dispersive indoor use of long-life articles and materials |
| Processes, tasks, activities covered | with low release Industrial and Professional use of Aluminium salts in spraying formulations - solid - high dustiness. Includes equipment cleaning and maintenance. |
| GES exposure criteria | DNEL, inhalation long term: 1.8 mg/m3 |
| Section 2 | Operational conditions and risk management measures |
| Section 2.1 | Control of worker exposure |
| Product characteristics | |
| Physical form of product | Solid, high dustiness [OC6] |
| Concentration of substance in product | Covers percentage substance in the product up to 25% [G12]. |
| Amounts used | Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] |
| Frequency and duration of use | Covers daily exposures up to 8 hours (unless stated differently) [G2] |
| Human factors not influenced by risk management | Not applicable |
| Other Operational Conditions affecting worker exposure | Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] |

| Contributing Scenarios | Risk Management Measures |
|---|---|
| Below pH2 and above pH11 the sul | |
| | y resistant gloves (tested to EN374) in combination with specific |
| activity training [PPE17] PROC1: | No specific measures identified [EI18]. |
| General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] | Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. |
| PROC2: General exposures [CS1]. Continuous process [CS54]. | Industrial workers: No specific measures identified [EI18]. |
| Process sampling [CS2] (open systems) [CS108] | Professional workers: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. |
| | Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]} |
| PROC3: General exposures [CS1]. Use in contained batch processes [CS37]. | Industrial workers: No specific measures identified [EI18]. |
| With sample collection [CS56]. Equipment cleaning and maintenance [CS39]. | Professional workers: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings |
| | (80% efficiency) [E82] Recommendations: |
| | {Ensure the system is closed} {Drain down and flush system prior to equipment break-in or |
| PROC5: | maintenance [E55]}. {Clear spills immediately [C&H13]}. Industrial workers: |
| General exposures (open systems) [CS16]. Mixing operations (open | Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. |
| systems) [CS30]. Material transfers [CS3]. | Provide extract ventilation to material transfer points and other openings (90% efficiency) [E82]. |
| Batch process [CS55]. Cleaning [CS47]. | Professional workers: 5-25%: |
| | Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. |
| | Avoid carrying out operation for more than 1 hour [OC11] OR: |
| | Avoid carrying out operation for more than 4 hours [OC12] plus Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] 1-5%: |
| | Avoid carrying out operation for more than 15 minutes [OC10] <1%: Avoid carrying out operation for more than 1 hour [OC11] |
| | |
| | Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and |

| | the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. |
|--|---|
| PD-0-C# | 7.250/ |
| PROC7: General exposures [CS1]. Spraying [CS10]. | 5-25%: Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. |
| | Provide extract ventilation to material transfer points and other openings (90% efficiency) [E82]. |
| | Wear a respirator conforming to EN140 with Type A/P2 filter or better {PPE29] OR: |
| | Avoid carrying out operation for more than 1 hour [OC11] 1-5%: |
| | Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. |
| | Provide extract ventilation to material transfer points and other openings (90% efficiency) [E82]. |
| | Avoid carrying out operation for more than 4 hours [OC12] <1%: |
| | Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. |
| | Provide extract ventilation to material transfer points and other openings (90% efficiency) [E82]. |
| | Recommendations: {Clean equipment and the work area every day [C&H3]}.; |
| PROC8a: | {Clear spills immediately [C&H13]}. 5-25%: |
| General exposures (open systems) [CS16]; | Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. |
| Non-dedicated facility [CS82]; Material transfers [CS3]. Equipment cleaning and maintenance [CS39]. Bulk transfers [CS14]. | Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. |
| | Avoid carrying out operation for more than 1 hour [OC11] OR: |
| | Avoid carrying out operation for more than 4 hours [OC12] plus Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] 1-5%: |
| | Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66].; |
| | Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. |
| | Avoid carrying out operation for more than 4 hours [OC12] |
| | Recommendations: Use bulk or semi-bulk handling systems [E43].; Discharge sacks via suitable vented charge chute [E44].{Drain down |
| | and flush system prior to equipment break-in or maintenance [E55].; {Use drum pumps [E53]}. {Clean equipment and the work area every |
| | day [C&H3]} .{Clear spills immediately [C&H13]}. |
| PROC8b: General exposures, open systems | Industrial workers: 5-25%: |
| [CS16]. | Ensure material transfers are under containment or extract ventilation |
| Dedicated facility [CS81] Material transfers [CS3]. Equipment cleaning and | (90% efficiency) [E66] Provide extract ventilation to material transfer points and other openings (90% efficiency) [E82]. |
| maintenance [CS39]. Bulk transfers [CS14]. | Use bulk or semi-bulk handling systems [E43]. Discharge sacks via suitable vented charge chute [E44]. |

| | Professional workers: 5-25%: |
|-----------------------------------|--|
| | Ensure material transfers are under containment or extract ventilation |
| | (80% efficiency) [E66].; |
| | Provide extract ventilation to material transfer points and other openings |
| | (80% efficiency) [E82]. |
| | Avoid carrying out operation for more than 1 hour [OC11] |
| | Use bulk or semi-bulk handling systems [E43]. |
| | Discharge sacks via suitable vented charge chute [E44]. |
| | Or: |
| | Avoid carrying out operation for more than 4 hours [OC12] plus |
| | Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] |
| | 1-5%: |
| | Avoid carrying out operation for more than 15 minutes [OC10] |
| | <1%: |
| | Avoid carrying out operation for more than 1 hour [OC11] |
| | Recommendations: |
| | {Drain down and flush system prior to equipment break-in or maintenance [E55]} |
| | {Use drum pumps [E53]}. {Clean equipment and the work area every |
| | day [C&H3]}. |
| | {Clear spills immediately [C&H13]}. |
| PROC9: | Ensure material transfers are under containment or extract ventilation |
| General exposures [CS1]. | (80% efficiency) [E66]. |
| Dedicated facility [CS81] | Provide extract ventilation to material transfer points and other openings |
| Drum and small package filling | (80% efficiency) [E82]. |
| [CS6]. Equipment cleaning and | Avoid carrying out operation for more than 4 hours [OC12]{ |
| maintenance [CS39]. | |
| mamenance [8837]. | Recommendations: |
| | Use bulk or semi-bulk handling systems [E43].; |
| | Discharge sacks via suitable vented charge chute [E44].Drain down and |
| | flush system prior to equipment break-in or maintenance [E55]}. {Clean |
| | equipment and the work area every day [C&H3]}. |
| | {Clear spills immediately [C&H13]}. |
| PROC11: | 5-25%: |
| General exposures [CS1]. Spraying | Minimize exposure by partial enclosure of the operation or equipment |
| [CS10]. | and provide extract ventilation at openings (80% efficiency) [E60]. |
| | Apply within a vented cab supplied with filtered air under positive |
| | pressure and with a protection factor of >20 [E70]. |
| | Avoid carrying out operation for more than 4 hours [OC12] Wear a respirator conforming to EN140 with Type A/P2 filter or better |
| | [PPE29] |
| | 1-5%: |
| | Minimize exposure by partial enclosure of the operation or equipment |
| | and provide extract ventilation at openings (80% efficiency) [E60].; |
| | Apply within a vented cab supplied with filtered air under positive |
| | pressure and with a protection factor of >20 [E70]. |
| | Avoid carrying out operation for more than 1 hour [OC11] |
| | Recommendations; |
| | {Clean equipment and the work area every day [C&H3]}.; |
| | {Clear spills immediately [C&H13]}. |

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PROC19

General exposures [CS1]. Mixing operations (open systems) [CS30].; Manual [CS34].

Industrial workers:

5-25%:

Wear a respirator conforming to EN140 with Type A/P2 filter or better {PPE29]

<5%:

Avoid carrying out operation for more than 1 hour [OC11]

<1%:

Avoid carrying out operation for more than 4 hours [OC12]

Professional workers::

5-25%:

Avoid carrying out operation for more than 4 hours [OC12]

Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29]

<5%:

Avoid carrying out operation for more than 15 minutes [OC10]

<1%:

Avoid carrying out operation for more than 1 hour [OC11]{

Recommendations:

{Clean equipment and the work area every day [C&H3]}.

{Clear spills immediately [C&H13]}

{Stay upwind/keep distance from source [EI22]}

Section 2.2

Control of environmental exposure

Aluminum, aluminum powders, aluminum oxide and soluble aluminum compounds are non hazardous (not classified for the environment). Aluminum (Al) is the most commonly occurring metallic element, comprising eight percent of the earth's crust and is therefore found in great abundance in both the terrestrial and sediment environments. Concentrations of 3-8% (30,000-80,000 ppm) are not uncommon. The relative contributions of anthropogenic aluminum to the existing natural pools of aluminum in soils and sediments is very small, and therefore, not relevant either in terms of added amounts or in terms of toxicity.

Section 3

Exposure Estimation

3.1. Health

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented [G29]

3.2. Environment

N.A.

Section 4

Guidance to check compliance with the Exposure Scenario

4.1. Health

The ECETOC TRA (V2.0) tool has been used to estimate workplace exposures unless otherwise indicated [G21]

4.2. Environment

N.A.

Section 5

Additional good practice advice beyond the REACH Chemical Safety Assessment - (Section Optional)

Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.

Control of Worker Exposure

Use of PPE

Skin protection:

Gloves:

- Observe breakthrough time of the gloves used Respiratory protection:

Respirators:

- Wear a disposable mask only once
- Clean non-disposable masks after each use and store in a

| clean box in a clean area - Wear respirators ≤ 2 hrs/day | |
|--|--|
|--|--|

Solid, low dustiness:

| ES4 - Industrial and Professional use of Aluminium salts - solid, low dust - in spraying formulations; Aluminium content: max. 25% | |
|--|---|
| Section 1 | Exposure Scenario Title |
| Title | Industrial and Professional use of Aluminium salts - solid, low dust - in spraying formulations; Aluminium content: max. 25% |
| Use Descriptor | Sector of Use: Industrial (SU5, SU6b, SU7) |
| | Process Categories: PROC1: Use in a closed process, no likelihood of exposure PROC2: Use in a closed continuous process, with occasional controlled exposure PROC3: Use in a closed batch process (synthesis or formulation) PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/discharging) |
| | from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC11: Non industrial spraying |
| | PROC19: Hand-mixing with intimate contact and only PPE available Environmental Release Categories: ERC3: Formulation in materials ERC4: Industrial use ERC5: Industrial use resulting in inclusion into or onto a matrix ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates) ERC6b: Industrial use of reactive processing aids |
| | ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8b: Wide dispersive indoor use of reactive substances in open systems ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix |
| | ERC10a: Wide dispersive outdoor use of long-life articles and materials with low release ERC11a: Wide dispersive indoor use of long-life articles and materials with low release |
| Processes, tasks, activities covered | Industrial and Professional use of Aluminium salts - solid, low dust - in spraying formulations |
| GES exposure criteria | DNEL, inhalation long term: 1.8 mg/m3 |
| Section 2 | Operational conditions and risk management measures |
| Section 2.1 | Control of worker exposure |
| Product characteristics | |
| Physical form of product | Solid, low dustiness [OC1] |
| Concentration of substance in product | Covers percentage substance in the product up to 25% [G12]. |

| Amounts used | Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] | | |
|---|---|--|--|
| Frequency and duration of use | Covers daily exposures up to 8 hours (unless stated differently) [G2] | | |
| Human factors not influenced by risk management | Not applicable | | |
| Other Operational Conditions affecting worker exposure | Assumes use at not > 20oC above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] | | |
| Contributing Scenarios | Risk Management Measures | | |
| Use suitable eye protection [PPE26 Avoid skin contact: wear chemicall activity training [PPE17] | Below pH2 and above pH11 the substance has corrosive properties: Use suitable eye protection [PPE26]. Avoid skin contact: wear chemically resistant gloves (tested to EN374) in combination with specific activity training [PPE17] | | |
| PROC1: General exposures (closed systems) | No specific measures identified [EI18]. | | |
| [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] | Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. | | |
| PROC2: | No specific measures identified [EI18]. | | |
| General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108] | Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}. | | |
| PROC3: | No specific measures identified [EI18]. | | |
| General exposures [CS1]. Use in contained batch processes [CS37].; With sample collection [CS56]. Equipment cleaning and maintenance [CS39]. | Recommendations: {Ensure the system is closed}; {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Clear spills immediately [C&H13]}. | | |
| PROC5: | No specific measures identified [EI18]. | | |
| General exposures (open systems) [CS16]. Mixing operations (open systems) [CS30]. Material transfers [CS3].; Batch process [CS55].; Cleaning [CS47]. | Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]} {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. | | |
| PROC7: | No specific measures identified [EI18]. | | |
| General exposures [CS1]. Spraying [CS10]. | Recommendations: {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. | | |
| PROC8a: | No specific measures identified [EI18]. | | |
| General exposures (open systems) [CS16]; Non-dedicated facility [CS82]; Material transfers [CS3].; Equipment cleaning and maintenance [CS39].; Bulk transfers [CS14]. | Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. | | |
| PROC8b: | No specific measures identified [EI18]. | | |
| General exposures, open systems [CS16].; Dedicated facility [CS81]Material transfers [CS3].; Equipment cleaning and maintenance [CS39].; Bulk transfers [CS14]. | {Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. | | |

| PROC9: | No specific measures identified [EI18]. |
|--|---|
| General exposures [CS1].; | No specific incasures identified [E116]. |
| Dedicated facility [CS81]Drum ar | d Recommendations: |
| small package filling [CS6].; | {Drain down and flush system prior to equipment break-in or |
| Equipment cleaning and | maintenance [E55]} .{Clean equipment and the work area every day |
| maintenance [CS39]. | [C&H3]}.{Clear spills immediately [C&H13]}. |
| PROC11: | No specific measures identified [EI18]. |
| General exposures [CS1]. Sprayin | |
| [CS10]. | Recommendations: |
| [6510]. | {Clean equipment and the work area every day [C&H3]}.; |
| | {Clear spills immediately [C&H13]}. |
| PROC19: | No specific measures identified [EI18]. |
| General exposures [CS1]. Mixing | No specific ineasures identified [E118]. |
| operations (open systems) [CS30] | Recommendations: |
| Manual [CS34]. | {Clean equipment and the work area every day [C&H3]}.; |
| | {Clear spills immediately [C&H13]} |
| Section 2.2 | Control of environmental exposure |
| | • |
| - Aiummum, aiummum powders, a | uminum oxide and soluble aluminum compounds are non hazardous (not |
| classified for the environment). A eight percent of the earth's crust at environments. Concentrations of 3 anthropogenic aluminum to the extherefore, not relevant either in terms. | uminum oxide and soluble aluminum compounds are non hazardous (not uminum (Al) is the most commonly occurring metallic element, comprising and is therefore found in great abundance in both the terrestrial and sediment -8% (30,000-80,000 ppm) are not uncommon. The relative contributions of isting natural pools of aluminum in soils and sediments is very small, and ms of added amounts or in terms of toxicity. |
| classified for the environment). A eight percent of the earth's crust at environments. Concentrations of 3 anthropogenic aluminum to the ex | uminum (Al) is the most commonly occurring metallic element, comprising and is therefore found in great abundance in both the terrestrial and sediment -8% (30,000-80,000 ppm) are not uncommon. The relative contributions of isting natural pools of aluminum in soils and sediments is very small, and |
| classified for the environment). A eight percent of the earth's crust at environments. Concentrations of 3 anthropogenic aluminum to the extherefore, not relevant either in terms. | uminum (Al) is the most commonly occurring metallic element, comprising and is therefore found in great abundance in both the terrestrial and sediment -8% (30,000-80,000 ppm) are not uncommon. The relative contributions of isting natural pools of aluminum in soils and sediments is very small, and ms of added amounts or in terms of toxicity. |
| classified for the environment). A eight percent of the earth's crust at environments. Concentrations of 3 anthropogenic aluminum to the extherefore, not relevant either in terms Section 3 3.1. Health | uminum (Al) is the most commonly occurring metallic element, comprising and is therefore found in great abundance in both the terrestrial and sediment -8% (30,000-80,000 ppm) are not uncommon. The relative contributions of isting natural pools of aluminum in soils and sediments is very small, and ms of added amounts or in terms of toxicity. |
| classified for the environment). A eight percent of the earth's crust at environments. Concentrations of 3 anthropogenic aluminum to the extherefore, not relevant either in terms at the extension of 3.1. Health Predicted exposures are not expecting the environments. | uminum (Al) is the most commonly occurring metallic element, comprising and is therefore found in great abundance in both the terrestrial and sediment -8% (30,000-80,000 ppm) are not uncommon. The relative contributions of isting natural pools of aluminum in soils and sediments is very small, and ms of added amounts or in terms of toxicity. Exposure Estimation ted to exceed the applicable exposure limits (given in section 8 of the SDS) |
| classified for the environment). A eight percent of the earth's crust at environments. Concentrations of 3 anthropogenic aluminum to the extherefore, not relevant either in terms at the extension of 3.1. Health Predicted exposures are not expecting the environments. | uminum (Al) is the most commonly occurring metallic element, comprising and is therefore found in great abundance in both the terrestrial and sediment -8% (30,000-80,000 ppm) are not uncommon. The relative contributions of isting natural pools of aluminum in soils and sediments is very small, and ms of added amounts or in terms of toxicity. Exposure Estimation |
| classified for the environment). A eight percent of the earth's crust at environments. Concentrations of 3 anthropogenic aluminum to the extherefore, not relevant either in terms at the extension of 3.1. Health Predicted exposures are not expect when the operational conditions/ris | uminum (Al) is the most commonly occurring metallic element, comprising and is therefore found in great abundance in both the terrestrial and sediment -8% (30,000-80,000 ppm) are not uncommon. The relative contributions of isting natural pools of aluminum in soils and sediments is very small, and ms of added amounts or in terms of toxicity. Exposure Estimation ted to exceed the applicable exposure limits (given in section 8 of the SDS) |
| classified for the environment). A eight percent of the earth's crust at environments. Concentrations of 3 anthropogenic aluminum to the extherefore, not relevant either in terms at the extension of 3.1. Health Predicted exposures are not expect when the operational conditions/risplace. Environment N.A. | uminum (Al) is the most commonly occurring metallic element, comprising and is therefore found in great abundance in both the terrestrial and sediment -8% (30,000-80,000 ppm) are not uncommon. The relative contributions of isting natural pools of aluminum in soils and sediments is very small, and ms of added amounts or in terms of toxicity. Exposure Estimation ted to exceed the applicable exposure limits (given in section 8 of the SDS) |
| classified for the environment). A eight percent of the earth's crust at environments. Concentrations of 3 anthropogenic aluminum to the extherefore, not relevant either in terms at the extension of 3.1. Health Predicted exposures are not expect when the operational conditions/risplace. Environment N.A. | uminum (Al) is the most commonly occurring metallic element, comprising and is therefore found in great abundance in both the terrestrial and sediment -8% (30,000-80,000 ppm) are not uncommon. The relative contributions of isting natural pools of aluminum in soils and sediments is very small, and ms of added amounts or in terms of toxicity. Exposure Estimation ted to exceed the applicable exposure limits (given in section 8 of the SDS) sk management measures given in section 2 are implemented [G29] |
| classified for the environment). A eight percent of the earth's crust an environments. Concentrations of 3 anthropogenic aluminum to the extherefore, not relevant either in terms at the extension of 3.1. Health Predicted exposures are not expect when the operational conditions/ris. 2.2. Environment N.A. Section 4 4.1. Health | uminum (Al) is the most commonly occurring metallic element, comprising and is therefore found in great abundance in both the terrestrial and sediment -8% (30,000-80,000 ppm) are not uncommon. The relative contributions of isting natural pools of aluminum in soils and sediments is very small, and ms of added amounts or in terms of toxicity. Exposure Estimation ted to exceed the applicable exposure limits (given in section 8 of the SDS) ask management measures given in section 2 are implemented [G29] Guidance to check compliance with the Exposure Scenario |
| classified for the environment). A eight percent of the earth's crust at environments. Concentrations of 3 anthropogenic aluminum to the extherefore, not relevant either in terms at the extension of 3.1. Health Predicted exposures are not expect when the operational conditions/ris. 3.2. Environment N.A. Section 4 4.1. Health The ECETOC TRA (V2.0) tool by the eight percent and the extension of 3.2. The extension of 3.2. The eight percent and the extensio | uminum (Al) is the most commonly occurring metallic element, comprising and is therefore found in great abundance in both the terrestrial and sediment -8% (30,000-80,000 ppm) are not uncommon. The relative contributions of isting natural pools of aluminum in soils and sediments is very small, and ms of added amounts or in terms of toxicity. Exposure Estimation ted to exceed the applicable exposure limits (given in section 8 of the SDS) sk management measures given in section 2 are implemented [G29] |
| classified for the environment). A eight percent of the earth's crust an environments. Concentrations of 3 anthropogenic aluminum to the extherefore, not relevant either in terms at the extension of 3.1. Health Predicted exposures are not expect when the operational conditions/ris. 2.2. Environment N.A. Section 4 4.1. Health | uminum (Al) is the most commonly occurring metallic element, comprising and is therefore found in great abundance in both the terrestrial and sediment -8% (30,000-80,000 ppm) are not uncommon. The relative contributions of isting natural pools of aluminum in soils and sediments is very small, and ms of added amounts or in terms of toxicity. Exposure Estimation ted to exceed the applicable exposure limits (given in section 8 of the SDS) ask management measures given in section 2 are implemented [G29] Guidance to check compliance with the Exposure Scenario |

N.A.

| Section 5 | Additional good practice advice beyond the REACH |
|-----------|--|
| | Chemical Safety Assessment - (Section Optional) |

Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.

Control of Worker Exposure

| Use of PPE | Skin protection: |
|------------|--|
| | Gloves: |
| | - Observe breakthrough time of the gloves used |
| | Respiratory protection: |
| | Respirators: |
| | - Wear a disposable mask only once |
| | - Clean non-disposable masks after each use and store in a clean |
| | box in a clean area |
| | - Wear respirators ≤ 2 hrs/day |

9.1.5 Exposure Scenario 5: Use in non-spraying Formulations

Aqueous solution:

Worker – ES5 – Industrial and Professional use of Aluminium salts in non-spraying formulations (aqueous solutions); Max. Aluminium content = 25%

| Section 1 | Exposure Scenario Title |
|--------------------------------------|---|
| Title | |
| Title | Industrial and Professional Use of Aluminium salts in |
| | non-spraying formulations (aqueous solutions) – Max. |
| | Aluminium content = 25% |
| Use Descriptor | Sector of Use: Industrial (SU1, SU5, SU6b, SU7, SU13, SU19) |
| | Process Categories: |
| | PROC1: Use in a closed process, no likelihood of exposure |
| | PROC2: Use in a closed continuous process, with occasional controlled |
| | exposure PROC3: Use in a closed batch process (synthesis or formulation) |
| | PROC4: Use in batch and other process (synthesis) where opportunity for |
| | exposure arises |
| | PROC5: Mixing or blending in batch processes for formulation of |
| | preparations and articles (multistage and/or significant contact) |
| | PROC6: Calendering operations |
| | PROC8a: Transfer of substance or preparation (charging/discharging) |
| | from/to vessels/large containers at non-dedicated facilities |
| | PROC8b: Transfer of substance or preparation (charging/discharging) |
| | from/to vessels/large containers at dedicated facilities |
| | PROC9: Transfer of substance or preparation into small containers |
| | (dedicated filling line, including weighing) |
| | PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring |
| | PROC13. Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tabletting, |
| | compression, extrusion, pelletization |
| | PROC15: Use as a laboratory reagent |
| | PROC19: Hand-mixing with intimate contact and only PPE available |
| | Environmental Release Categories: |
| | ERC2: Formulation of preparations |
| | ERC3: Formulation in materials |
| | ERC4: Industrial use |
| | ERC5: Industrial use resulting in inclusion into or onto a matrix |
| | ERC6a: Industrial use resulting in manufacture of another substance (use |
| | of intermediates) |
| | ERC6b: Industrial use of reactive processing aids |
| | ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8b: Wide dispersive indoor use of reactive substances in open |
| | systems |
| | ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a |
| | matrix |
| | ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a |
| | matrix |
| | ERC10a: Wide dispersive outdoor use of long-life articles and materials |
| | with low release |
| | ERC11a: Wide dispersive indoor use of long-life articles and materials |
| D (1 (2.2) | with low release |
| Processes, tasks, activities covered | Industrial and Professional use of Aluminium salts in non-spraying |
| | formulations (aqueous solutions, max Alu content = 25%). Includes |
| GES exposure criteria | equipment cleaning and maintenance. DNEL, inhalation long term: 1.8 mg/m3 |
| OES exposure emena | DIVEL, initiation long term. 1.6 mg/m3 |
| Section 2 | Operational conditions and risk management measures |
| Section 2.1 | Control of worker exposure |
| Product characteristics | |

| Physical form of product | Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; |
|---|--|
| | Liquid, vapour pressure < 10 Pa [OC14]. |
| Concentration of substance in product | Covers percentage substance in the product up to 25% [G12]. |
| Amounts used | Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] |
| Frequency and duration of use | Covers daily exposures up to 8 hours (unless stated differently) [G2] |
| Human factors not influenced by risk management | Not applicable |
| Other Operational Conditions | Assumes use at not > 20°C above ambient [G15]; |
| affecting worker exposure | Assumes a good basic standard of occupational hygiene is implemented [G1]. |
| | Ensure operatives are trained to minimize exposure [EI19] |
| Contributing Scenarios | Risk Management Measures |
| Below pH2 and above pH11 the sul | |
| Use suitable eye protection [PPE26 | |
| Avoid skin contact: wear suitable g | |
| PROC1: | No specific measures identified [EI18]. |
| General exposures (closed systems) | |
| [CS15]. Continuous process [CS54]. | Recommendations: |
| Process sampling [CS2] (closed | {Ensure the system is closed} {Clear transfer lines prior to de-coupling |
| systems) [CS107] PROC2: | [E39]}. No specific measures identified [EI18]. |
| General exposures [CS1]. | No specific measures identified [E118]. |
| Continuous process [CS54]. Process | Recommendations: |
| sampling [CS2] (open systems) | {Ensure the system is closed} {Clear transfer lines prior to de-coupling |
| [CS108] | [E39]}. {Clear spills immediately [C&H13]}. |
| PROC3: | No specific measures identified [EI18]. |
| General exposures [CS1]. Use in | Two specific incusares ruchanica [Erro]. |
| contained batch processes [CS37]. | Recommendations: |
| With sample collection [CS56]. | {Ensure the system is closed} |
| Equipment cleaning and | {Drain down and flush system prior to equipment break-in or |
| maintenance [CS39]. | maintenance [E55]}.{Clear spills immediately [C&H13]}. |
| PROC4: | No specific measures identified [EI18]. |
| General exposures (open systems) | and the state of t |
| [CS16]. Batch process [CS55] (open | Recommendations: |
| systems) [CS108]; Drum/batch | {Drain down and flush system prior to equipment break-in or |
| transfers [CS8]. With sample | maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and |
| collection [CS56].; | the work area every day [C&H3]}. |
| Equipment cleaning and | {Clear spills immediately [C&H13]}. |
| maintenance [CS39]. | |
| PROC5: | No specific measures identified [EI18]. |
| General exposures (open systems) | |
| [CS16]. Mixing operations (open | Recommendations: |
| systems) [CS30]. Material transfers | {Drain down and flush system prior to equipment break-in or |
| [CS3]. | maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and |
| Batch process [CS55]. | the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. |
| Cleaning [CS47]. | |
| PROC6: | No specific measures identified [EI18]. |
| General exposures (open systems) | Recommendations: |
| [CS16] | {Clean equipment and the work area every day [C&H3]}.; |
| Mixing operations (open systems) | {Clear spills immediately [C&H13]}. |
| [CS30]. Material transfers [CS3].; | |
| Batch process [CS55].; | |
| Cleaning [CS47]. | |

| PROC8a: | No specific measures identified [EI18]. |
|------------------------------------|--|
| General exposures (open systems) | |
| [CS16]; Non-dedicated facility | Recommendations: |
| [CS82]; | {Drain down and flush system prior to equipment break-in or |
| Material transfers [CS3]. | maintenance [E55]}. {Use drum pumps [E53]}. {Clean equipment and |
| Equipment cleaning and | the work area every day [C&H3]}.{Clear spills immediately [C&H13]}. |
| maintenance [CS39]. | |
| Bulk transfers [CS14]. | |
| PROC8b: | No specific measures identified [EI18]. |
| General exposures, open systems | |
| [CS16]. | Recommendations: |
| Dedicated facility [CS81] Material | {Drain down and flush system prior to equipment break-in or |
| transfers [CS3]. | maintenance [E55]}. {Use drum pumps [E53]}. {Clean equipment and |
| Equipment cleaning and | the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. |
| maintenance [CS39]. | |
| Bulk transfers [CS14]. | |
| PROC9: | No specific measures identified [EI18]. |
| General exposures [CS1]. | |
| Dedicated facility [CS81] | Recommendations: |
| Drum and small package filling | {Drain down and flush system prior to equipment break-in or |
| [CS6]. | maintenance [E55]}. {Clean equipment and the work area every day |
| Equipment cleaning and | [C&H3]} {Clear spills immediately [C&H13]}. |
| maintenance [CS39]. | |

by tabletting, compression.

extrusion or pelletisation [CS100]

PROC10: Industrial workers: General exposures (open systems) 5-25%: [CS16]. Rolling, Brushing [CS51] Minimise exposure by partial enclosure of the operation or equipment Equipment cleaning and and provide extract ventilation at openings (80% efficiency) [E60]. maintenance [CS39]. Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20 (80% efficiency) [E70]. Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] Or: Avoid carrying out operation for more than 1 hour [OC11] Avoid carrying out operation for more than 4 hours [OC12] <1%: No specific measures identified [EI18] **Professional workers:** 5-25%: Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings (80% efficiency) [E60]. Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20 (80% efficiency) [E70]. Plus: Avoid carrying out operation for more than 1 hour [OC11] Avoid carrying out operation for more than 4 hours [OC12] Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] <5%: Avoid carrying out operation for more than 1 hour [OC11] Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings (80% efficiency) [E60]. Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20 (80% efficiency) [E70]. <1%: Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings (80% efficiency) [E60].; Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20 (80% efficiency) [E70]. Recommendations: {Use long handled tools where possible [E50]}. {Clean equipment and *the work area every day [C&H3]*}. {Clear spills immediately [C&H13]} {Avoid splashing [C&H15]} PROC13: No specific measures identified [EI18]. General exposures, open systems Recommendations: [CS16]. Dipping, immersion and pouring {Drain down and flush system prior to equipment break-in or [CS4] maintenance [E55]}.{Clean equipment and the work area every day [C&H3]}.; {Clear spills immediately [C&H13]}. PROC14: No specific measures identified [EI18]. General exposures (open systems) Recommendations: {Drain down and flush system prior to equipment break-in or Production or preparation or articles maintenance [E55]}.{Clean equipment and the work area every day

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[C&H3]}. {Clear spills immediately [C&H13]}.

| PROC15: | No specific measures identified [EI18]. |
|-----------------------------------|---|
| General exposures [CS1]. | |
| Laboratory activities [CS36]. | Recommendations: |
| Small scale [CS61]. | {Drain down and flush system prior to equipment break-in or |
| | maintenance [E55]} {Clean equipment and the work area every day |
| | [C&H3]}. |
| | {Clear spills immediately [C&H13]}. |
| PROC19: | Industrial workers: |
| General exposures [CS1]. Mixing | 5-25%: |
| operations (open systems) [CS30]. | Avoid carrying out operation for more than 1 hour [OC11] |
| Manual [CS34]. | <5%: |
| | Avoid carrying out operation for more than 4 hours [OC12] |
| | <1%: |
| | No specific measures identified [EI18] |
| | |
| | Professional workers: |
| | 5-25%: |
| | Wear a respirator conforming to EN140 with Type A/P2 filter or better |
| | [PPE29] |
| | Or: |
| | Avoid carrying out operation for more than 15 minutes [OC10]{ |
| | <5%: |
| | Avoid carrying out operation for more than 1 hour [OC11] |
| | <1%: |
| | Avoid carrying out operation for more than 4 hours [OC12] |
| | Recommendations: |
| | {Clean equipment and the work area every day [C&H3]} |
| | {Clear spills immediately [C&H13]} |
| | {Ctear spitts immediately [C&H15]} {Stay upwind/keep distance from source [EI22]}. |
| G. J. AA | |
| Section 2.2 | Control of environmental exposure |
| | |

Aluminum, aluminum powders, aluminum oxide and soluble aluminum compounds are non hazardous (not classified for the environment). Aluminum (Al) is the most commonly occurring metallic element, comprising eight percent of the earth's crust and is therefore found in great abundance in both the terrestrial and sediment environments. Concentrations of 3-8% (30,000-80,000 ppm) are not uncommon. The relative contributions of anthropogenic aluminum to the existing natural pools of aluminum in soils and sediments is very small, and therefore, not relevant either in terms of added amounts or in terms of toxicity.

Section 3 Exposure Estimation

3.1. Health

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented [G29]

3.2. Environment

N.A.

| Section 4 | Guidance to check compliance with the Exposure Scenario |
|------------|---|
| 4.1 Health | |

4.1. Health

The ECETOC TRA (V2.0) tool has been used to estimate workplace exposures unless otherwise indicated [G21]

4.2. Environment

N.A.

| Section 5 | Additional good practice advice beyond the REACH |
|-----------|--|
| | Chemical Safety Assessment - (Section Optional) |

Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.

Control of Worker Exposure

| Use of PPE | Skin protection: |
|------------|--|
| | Gloves: |
| | - Observe breakthrough time of the gloves used |
| | Respiratory protection: |
| | Respirators: |
| | - Wear a disposable mask only once |
| | - Clean non-disposable masks after each use and store in a clean |
| | box in a clean area |
| | - Wear respirators ≤ 2 hrs/day |

Solid, high dustiness:

| ES5 – Industrial and Profess – solid, high dustiness; max. | ional use of Aluminium salts in non-spraying formulations Aluminium content = 25% |
|--|--|
| Section 1 | Exposure Scenario Title |
| Title | Industrial and Professional use of Aluminium salts in non-spraying formulations - solid, high dustiness; max. Aluminium content = 25% |
| Use Descriptor | Sector of Use: SU1, SU5, SU6b, SU7, SU13, SU19 |
| | Process Categories: PROC1: Use in a closed process, no likelihood of exposure PROC2: Use in a closed continuous process, with occasional controlled exposure PROC3: Use in a closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC6: Calendering operations PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletization PROC15: Use as a laboratory reagent PROC19: Hand-mixing with intimate contact and only PPE available |

| | Environmental Release Categories: |
|--|---|
| | ERC2: Formulation of preparations |
| | ERC3: Formulation in materials |
| | ERC4: Industrial use |
| | ERC5: Industrial use resulting in inclusion into or onto a matrix |
| | ERC6a: Industrial use resulting in manufacture of another substance (use |
| | of intermediates) |
| | ERC6b: Industrial use of reactive processing aids |
| | ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8b: Wide dispersive indoor use of reactive substances in open systems |
| | ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix |
| | ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix |
| | ERC10a: Wide dispersive outdoor use of long-life articles and materials with low release |
| | ERC11a: Wide dispersive indoor use of long-life articles and materials with low release |
| Processes, tasks, activities covered | Industrial and Professional use of Aluminium salts in non-spraying formulations - solid - high dustiness. Includes equipment cleaning and maintenance. |
| CEC '.' | |
| GES exposure criteria | DNEL, inhalation long term: 1.8 mg/m3 |
| Section 2 | Operational conditions and risk management measures |
| Section 2.1 | Control of worker exposure |
| | - |
| Product characteristics | • |
| Product characteristics Physical form of product | Solid, high dustiness [OC6] |
| Physical form of product Concentration of substance in | Solid, high dustiness [OC6] Covers percentage substance in the product up to 25% [G12]. |
| Physical form of product | Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material |
| Physical form of product Concentration of substance in product | Covers percentage substance in the product up to 25% [G12]. |
| Physical form of product Concentration of substance in product Amounts used | Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] |
| Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by | Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] |
| Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management | Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable |
| Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions | Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented |
| Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions | Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. |
| Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions affecting worker exposure | Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures |
| Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions affecting worker exposure Contributing Scenarios Below pH2 and above pH11 the sul Use suitable eye protection [PPE26] | Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures bstance has corrosive properties: |
| Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions affecting worker exposure Contributing Scenarios Below pH2 and above pH11 the sul Use suitable eye protection [PPE26] | Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures betance has corrosive properties: |
| Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions affecting worker exposure Contributing Scenarios Below pH2 and above pH11 the suluse suitable eye protection [PPE26] Avoid skin contact: wear chemicall activity training [PPE17] | Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures bstance has corrosive properties: J. y resistant gloves (tested to EN374) in combination with specific |
| Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions affecting worker exposure Contributing Scenarios Below pH2 and above pH11 the su Use suitable eye protection [PPE26 Avoid skin contact: wear chemical activity training [PPE17] PROC1: | Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures bstance has corrosive properties: |
| Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions affecting worker exposure Contributing Scenarios Below pH2 and above pH11 the suluse suitable eye protection [PPE26 Avoid skin contact: wear chemicall activity training [PPE17] PROC1: General exposures (closed systems) | Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures betance has corrosive properties: y resistant gloves (tested to EN374) in combination with specific No specific measures identified [EI18]. |
| Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions affecting worker exposure Contributing Scenarios Below pH2 and above pH11 the suluse suitable eye protection [PPE26 Avoid skin contact: wear chemicall activity training [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process | Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures Destance has corrosive properties: J. v resistant gloves (tested to EN374) in combination with specific No specific measures identified [EI18]. Recommendations: |
| Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions affecting worker exposure Contributing Scenarios Below pH2 and above pH11 the suluse suitable eye protection [PPE26 Avoid skin contact: wear chemicall activity training [PPE17] PROC1: General exposures (closed systems) | Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20°C above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures betance has corrosive properties: y resistant gloves (tested to EN374) in combination with specific No specific measures identified [EI18]. |

PROC2: Industrial workers: General exposures [CS1]. No specific measures identified [EI18]. Continuous process [CS54]. Process sampling [CS2] (open Professional workers: systems) [CS108] Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]} PROC3: **Industrial workers:** General exposures [CS1]. Use in No specific measures identified [EI18]. contained batch processes [CS37]. With sample collection [CS56]. **Professional workers:** Equipment cleaning and Ensure material transfers are under containment or extract ventilation maintenance [CS39]. (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82] Recommendations: {Ensure the system is closed} {Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Clear spills immediately [C&H13]}. PROC4: **Industrial workers:** General exposures (open systems) 5-25%: [CS16]. Ensure material transfers are under containment or extract ventilation Batch process [CS55] (open (90% efficiency) [E66]. systems) [CS108]; Provide extract ventilation to material transfer points and other openings Drum/batch transfers [CS8]. With (90% efficiency) [E82]. sample collection [CS56]. Equipment cleaning and **Professional workers:** maintenance [CS39]. 5-25%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 1 hour [OC11] Avoid carrying out operation for more than 4 hours [OC12] plus Wear a respirator conforming to EN140 with Type A/P2 filter or better {PPE29] 1-5%: Avoid carrying out operation for more than 15 minutes [OC10] Avoid carrying out operation for more than 1 hour [OC11] Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. PROC5: **Industrial workers:** General exposures (open systems) Ensure material transfers are under containment or extract ventilation [CS16]. Mixing operations (open (90% efficiency) [E66]. systems) [CS30]. Material transfers Provide extract ventilation to material transfer points and other openings [CS3]. (90% efficiency) [E82]. Batch process [CS55]. Cleaning [CS47]. **Professional workers:**

| _ | |
|---|--|
| | 5-25%: |
| | Ensure material transfers are under containment or extract ventilation |
| | (80% efficiency) [E66]. |
| | Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. |
| | Avoid carrying out operation for more than 1 hour [OC11] OR: |
| | Avoid carrying out operation for more than 4 hours [OC12] plus Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] 1-5%: |
| | Avoid carrying out operation for more than 15 minutes [OC10] <1%: |
| | Avoid carrying out operation for more than 1 hour [OC11] |
| | Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. |
| PROC6: | Industrial worker: |
| General exposures (open systems) [CS16] Mixing operations (open systems) [CS30]. Material transfers [CS3]. Batch process [CS55].; | 5-25%: Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. Provide extract ventilation to material transfer points and other openings (90% efficiency) [[E82]. |
| Cleaning [CS47] | Or: Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] |
| | 1-5%: Avoid carrying out operation for more than 1 hour [OC11] |
| | <1%: Avoid carrying out operation for more than 4 hours [OC12] |
| | Professional worker: 5-25%: |
| | Ensure material transfers are under containment or extract ventilation (80% efficiency)[[E66]. Provide extract ventilation to material transfer points and other openings (80% efficiency) [[E82]. |
| | Plus: Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] |
| | 1-5%: Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] |
| | <1%: Avoid carrying out operation for more than 1 hour [OC11] |
| | Recommendations: {Clean equipment and the work area every day [C&H3]} {Clear spills immediately [C&H13]}. |
| PROC8a: General exposures (open systems) [CS16]; | 5-25%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. |
| Non-dedicated facility [CS82]; Material transfers [CS3]. | Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. |
| Equipment cleaning and | Avoid carrying out operation for more than 1 hour [OC11] |
| maintenance [CS39]. Bulk transfers [CS14]. | OR: Avoid carrying out operation for more than 4 hours [OC12] plus Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] |
| | 1-5%: |

| | Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66].; |
|--|--|
| | Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. |
| | Avoid carrying out operation for more than 4 hours [OC12] |
| | Recommendations: |
| | Use bulk or semi-bulk handling systems [E43].; |
| | Discharge sacks via suitable vented charge chute [E44].{Drain down |
| | and flush system prior to equipment break-in or maintenance [E55]}.; {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. |
| PROC8b: | Industrial workers: |
| General exposures, open systems | 5-25%: |
| [CS16]. Dedicated facility [CS81] | Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66] |
| Material transfers [CS3]. | Provide extract ventilation to material transfer points and other openings |
| Equipment cleaning and maintenance [CS39]. | (90% efficiency) [E82]. |
| Bulk transfers [CS14]. | Use bulk or semi-bulk handling systems [E43]. |
| | Discharge sacks via suitable vented charge chute [E44]. |
| | Professional workers: |
| | 5-25%: |
| | Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66].; |
| | Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. |
| | Avoid carrying out operation for more than 1 hour [OC11] |
| | Use bulk or semi-bulk handling systems [E43]. |
| | Discharge sacks via suitable vented charge chute [E44]. Or: |
| | Avoid carrying out operation for more than 4 hours [OC12] plus |
| | Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] |
| | 1-5%: |
| | Avoid carrying out operation for more than 15 minutes [OC10] <1%: |
| | Avoid carrying out operation for more than 1 hour [OC11] |
| | Recommendations: |
| | {Drain down and flush system prior to equipment break-in or maintenance [E55]} |
| | {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. |
| | {Clear spills immediately [C&H13]}. |
| PROC9: | Ensure material transfers are under containment or extract ventilation |
| General exposures [CS1]. | (80% efficiency) [E66]. |
| Dedicated facility [CS81] | Provide extract ventilation to material transfer points and other openings |
| Drum and small package filling [CS6]. | (80% efficiency) [E82]. Avoid carrying out operation for more than 4 hours [OC12]{ |
| Equipment cleaning and maintenance [CS39]. | Trota carrying out operation for more than 4 hours [OC12] |
| [2557]. | Recommendations: |
| | Use bulk or semi-bulk handling systems [E43].; |
| | Discharge sacks via suitable vented charge chute [E44].Drain down and |
| | flush system prior to equipment break-in or maintenance [E55]}. {Clean |
| | equipment and the work area every day [C&H3]}. |
| | {Clear spills immediately [C&H13]}. |

PROC10 5-25%: General exposures (open systems) Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. [CS16] Rolling, Brushing [CS51].; Provide extract ventilation to material transfer points and other openings Equipment cleaning and (80% efficiency) [E82]. maintenance [CS39] Or: Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] 1-5%: Avoid carrying out operation for more than 4 hours [OC12] <1%: No specific measures identified [EI18]. Recommendations: {Use long handled tools where possible [E50]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. {Avoid splashing [C&H15]}. Minimize exposure by partial enclosure of the operation or equipment PROC13 and provide extract ventilation at openings (80% efficiency) [E60]. General exposures, open systems Apply within a vented cab supplied with filtered air under positive Dipping, immersion and pouring pressure and with a protection factor of >20 [E70]. [CS4] Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. PROC14 **Industrial:** General exposures (open systems) Ensure material transfers are under containment or extract ventilation [CS16] (90% efficiency) [E66]. Production or preparation or Provide extract ventilation to material transfer points and other openings articles by tabletting, compression, (90% efficiency) [E82]. extrusion or pelletization [CS100] Or: Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] Or: Avoid carrying out operation for more than 1 hour [OC11] 1-5%: Avoid carrying out operation for more than 4 hours [OC12] No specific measures identified [EI18]. **Professional:** 5-25%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66].; Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Avoid carrying out operation for more than 1 hour [OC11] Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66].; Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] 1-5%: Avoid carrying out operation for more than 15 minutes [OC10]

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Avoid carrying out operation for more than 1 hour [OC11]

| | Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. |
|--|--|
| PROC15: General exposures [CS1]. Laboratory activities [CS36]. Small scale [CS61]. | Carry out in a vented booth or extracted enclosure (80% efficiency) [E57]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. |
| PROC19 General exposures [CS1]. Mixing operations (open systems) [CS30].; Manual [CS34]. | Industrial workers: 5-25%: Wear a respirator conforming to EN140 with Type A/P2 filter or better {PPE29] <5%: Avoid carrying out operation for more than 1 hour [OC11] <1%: Avoid carrying out operation for more than 4 hours [OC12 Professional workers:: 5-25%: Avoid carrying out operation for more than 4 hours [OC12] Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] <5%: Avoid carrying out operation for more than 15 minutes [OC10] <1%: Avoid carrying out operation for more than 1 hour [OC11]{ Recommendations: {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]} {Stay upwind/keep distance from source [E122]} |
| Section 2.2 | Control of environmental exposure |

Aluminum, aluminum powders, aluminum oxide and soluble aluminum compounds are non hazardous (not classified for the environment). Aluminum (Al) is the most commonly occurring metallic element, comprising eight percent of the earth's crust and is therefore found in great abundance in both the terrestrial and sediment environments. Concentrations of 3-8% (30,000-80,000 ppm) are not uncommon. The relative contributions of anthropogenic aluminum to the existing natural pools of aluminum in soils and sediments is very small, and therefore, not relevant either in terms of added amounts or in terms of toxicity.

Section 3 Exposure Estimation

Section 3

3.1. Health

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented [G29]

3.2. Environment

N.A.

| Section 4 | Guidance to check compliance with the Exposure Scenario |
|-----------|---|
| | • |

4.1. Health

The ECETOC TRA (V2.0) tool has been used to estimate workplace exposures unless otherwise indicated [G21]

4.2. Environment

N.A.

| Section 5 | Additional good practice advice beyond the REACH Chemical Safety Assessment - (Section Optional) | |
|---|---|--|
| Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH. | | |
| Control of Worker Exposure | | |
| Use of PPE | Skin protection: Gloves: Observe breakthrough time of the gloves used Respiratory protection: Respirators: Wear a disposable mask only once Clean non-disposable masks after each use and store in a clean box in a clean area Wear respirators ≤ 2 hrs/day | |

| Solid, low dustiness: | |
|---|--|
| ES5 - Industrial and | Professional use of Aluminium salts - solid, low dust - |
| In non-spraying formulations; Aluminium content: max. 25% | |
| Section 1 | Exposure Scenario Title |
| Title | Industrial and Professional use of Aluminium salts - |
| | solid, low dust - in non-spraying formulations; |
| | Aluminium content: max. 25% |
| Use Descriptor | Sector of Use: SU1, SU5, SU6b, SU7, SU13, SU19 |
| Ose Descriptor | Sector of Use. SU1, SU3, SU00, SU7, SU13, SU19 |
| | Process Categories: |
| | PROC1: Use in a closed process, no likelihood of exposure |
| | PROC2: Use in a closed continuous process, with occasional controlled |
| | exposure |
| | PROC3: Use in a closed batch process (synthesis or formulation) |
| | PROC4: Use in batch and other process (synthesis) where opportunity for |
| | exposure arises |
| | PROC5: Mixing or blending in batch processes for formulation of |
| | preparations and articles (multistage and/or significant contact) |
| | PROC6: Calendering operations |
| | PROC8a: Transfer of substance or preparation (charging/discharging) |
| | from/to vessels/large containers at non-dedicated facilities |
| | PROC8b: Transfer of substance or preparation (charging/discharging) |
| | from/to vessels/large containers at dedicated facilities |
| | PROC9: Transfer of substance or preparation into small containers |
| | (dedicated filling line, including weighing) |
| | PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring |
| | PROC13. Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tabletting, |
| | compression, extrusion, pelletization |
| | PROC15: Use as a laboratory reagent |
| | PROC19: Hand-mixing with intimate contact and only PPE available |
| | Environmental Release Categories: |
| | ERC2: Formulation of preparations |
| | ERC3: Formulation in materials |
| | ERC4: Industrial use |
| | ERC5: Industrial use resulting in inclusion into or onto a matrix |
| | ERC6a: Industrial use resulting in manufacture of another substance (use |
| | of intermediates) |
| | ERC6b: Industrial use of reactive processing aids |
| | ERC8a: Wide dispersive indoor use of processing aids in open systems |
| | ERC8b: Wide dispersive indoor use of reactive substances in open |
| | systems |

| | ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a |
|---|--|
| | matrix ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a |
| | matrix |
| | ERC10a: Wide dispersive outdoor use of long-life articles and materials with low release |
| | ERC11a: Wide dispersive indoor use of long-life articles and materials with low release |
| Processes, tasks, activities covered | Industrial and Professional use of Aluminium salts - solid, low dust - in non-spraying formulations; Alu-content max. 25% |
| GES exposure criteria | DNEL, inhalation long term: 1.8 mg/m3 |
| Section 2 | Operational conditions and risk management measures |
| Section 2.1 | Control of worker exposure |
| Product characteristics | |
| Physical form of product | Solid, low dustiness [OC1] |
| Concentration of substance in product | Covers percentage substance in the product up to 25% [G12]. |
| Amounts used | Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] |
| Frequency and duration of use | Covers daily exposures up to 8 hours (unless stated differently) [G2] |
| Human factors not influenced by risk management | Not applicable |
| Other Operational Conditions | Assumes use at not > 20oC above ambient [G15]; |
| г | Assumes a good basic standard of occupational hygiene is implemented |
| affecting worker exposure | |
| | [G1]. |
| affecting worker exposure | [G1]. Ensure operatives are trained to minimize exposure [EI19] |
| affecting worker exposure Contributing Scenarios | [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures |
| affecting worker exposure Contributing Scenarios Below pH2 and above pH11 the su | [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures bstance has corrosive properties: |
| Contributing Scenarios Below pH2 and above pH11 the su Use suitable eye protection [PPE26] | [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures bstance has corrosive properties: |
| Contributing Scenarios Below pH2 and above pH11 the su Use suitable eye protection [PPE26] | [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures bstance has corrosive properties: |
| Contributing Scenarios Below pH2 and above pH11 the su Use suitable eye protection [PPE26 Avoid skin contact: wear chemical | [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures bstance has corrosive properties: [6]. ly resistant gloves (tested to EN374) in combination with specific |
| Contributing Scenarios Below pH2 and above pH11 the su Use suitable eye protection [PPE26 Avoid skin contact: wear chemical activity training [PPE17] | [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures bstance has corrosive properties: 6]. ly resistant gloves (tested to EN374) in combination with specific No specific measures identified [EI18]. |
| Contributing Scenarios Below pH2 and above pH11 the su Use suitable eye protection [PPE26 Avoid skin contact: wear chemical activity training [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process | [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures bstance has corrosive properties: [6]. ly resistant gloves (tested to EN374) in combination with specific No specific measures identified [EI18]. Recommendations: |
| Contributing Scenarios Below pH2 and above pH11 the su Use suitable eye protection [PPE26 Avoid skin contact: wear chemical activity training [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] | [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures bstance has corrosive properties: [S]. ly resistant gloves (tested to EN374) in combination with specific No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling |
| Contributing Scenarios Below pH2 and above pH11 the su Use suitable eye protection [PPE26 Avoid skin contact: wear chemical activity training [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] | [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures bstance has corrosive properties: [S]. ly resistant gloves (tested to EN374) in combination with specific No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. |
| Contributing Scenarios Below pH2 and above pH11 the su Use suitable eye protection [PPE26 Avoid skin contact: wear chemical activity training [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2: General exposures [CS1]. | [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures bstance has corrosive properties: [S]. ly resistant gloves (tested to EN374) in combination with specific No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling |
| Contributing Scenarios Below pH2 and above pH11 the su Use suitable eye protection [PPE26 Avoid skin contact: wear chemical activity training [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2: General exposures [CS1]. Continuous process [CS54]. | [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures bstance has corrosive properties: [6]. Ity resistant gloves (tested to EN374) in combination with specific No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. No specific measures identified [EI18]. Recommendations: |
| Contributing Scenarios Below pH2 and above pH11 the su Use suitable eye protection [PPE26 Avoid skin contact: wear chemical activity training [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open | [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures bstance has corrosive properties: [S]. ly resistant gloves (tested to EN374) in combination with specific No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E118]]. |
| Contributing Scenarios Below pH2 and above pH11 the su Use suitable eye protection [PPE26 Avoid skin contact: wear chemical activity training [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108] | [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures bstance has corrosive properties: []. Ity resistant gloves (tested to EN374) in combination with specific No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}. |
| Contributing Scenarios Below pH2 and above pH11 the su Use suitable eye protection [PPE26 Avoid skin contact: wear chemical activity training [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108] PROC3: | [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures bstance has corrosive properties: [S]. ly resistant gloves (tested to EN374) in combination with specific No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E118]]. |
| Contributing Scenarios Below pH2 and above pH11 the su Use suitable eye protection [PPE26 Avoid skin contact: wear chemical activity training [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108] PROC3: General exposures [CS1]. Use in | [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures bstance has corrosive properties: []. Ity resistant gloves (tested to EN374) in combination with specific No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}. |
| Contributing Scenarios Below pH2 and above pH11 the su Use suitable eye protection [PPE26 Avoid skin contact: wear chemical activity training [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108] PROC3: | [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures bstance has corrosive properties:]. ly resistant gloves (tested to EN374) in combination with specific No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}. No specific measures identified [EI18]. |
| Contributing Scenarios Below pH2 and above pH11 the su Use suitable eye protection [PPE26 Avoid skin contact: wear chemical activity training [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108] PROC3: General exposures [CS1]. Use in contained batch processes [CS37].; With sample collection [CS56]. Equipment cleaning and | [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures bstance has corrosive properties: []. In resistant gloves (tested to EN374) in combination with specific No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}. No specific measures identified [EI18]. Recommendations: {Ensure the system is closed}; {Drain down and flush system prior to equipment break-in or |
| Contributing Scenarios Below pH2 and above pH11 the su Use suitable eye protection [PPE26 Avoid skin contact: wear chemical activity training [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108] PROC3: General exposures [CS1]. Use in contained batch processes [CS37].; With sample collection [CS56]. Equipment cleaning and maintenance [CS39]. | [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures bstance has corrosive properties: ly resistant gloves (tested to EN374) in combination with specific No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}. No specific measures identified [EI18]. Recommendations: {Ensure the system is closed}; {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Clear spills immediately [C&H13]}. |
| Contributing Scenarios Below pH2 and above pH11 the su Use suitable eye protection [PPE26 Avoid skin contact: wear chemical activity training [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108] PROC3: General exposures [CS1]. Use in contained batch processes [CS37].; With sample collection [CS56]. Equipment cleaning and maintenance [CS39]. PROC4: | [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures bstance has corrosive properties: []. In resistant gloves (tested to EN374) in combination with specific No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}. No specific measures identified [EI18]. Recommendations: {Ensure the system is closed}; {Drain down and flush system prior to equipment break-in or |
| Contributing Scenarios Below pH2 and above pH11 the su Use suitable eye protection [PPE26 Avoid skin contact: wear chemical activity training [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108] PROC3: General exposures [CS1]. Use in contained batch processes [CS37].; With sample collection [CS56]. Equipment cleaning and maintenance [CS39]. PROC4: General exposures (open systems) | [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures bstance has corrosive properties: [I. It resistant gloves (tested to EN374) in combination with specific No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}. No specific measures identified [EI18]. Recommendations: {Ensure the system is closed}; {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Clear spills immediately [C&H13]}. No specific measures identified [EI18]. |
| Contributing Scenarios Below pH2 and above pH11 the su Use suitable eye protection [PPE26 Avoid skin contact: wear chemical activity training [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108] PROC3: General exposures [CS1]. Use in contained batch processes [CS37].; With sample collection [CS56]. Equipment cleaning and maintenance [CS39]. PROC4: General exposures (open systems) [CS16]. | [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures bstance has corrosive properties: [I. It resistant gloves (tested to EN374) in combination with specific No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}. No specific measures identified [EI18]. Recommendations: {Ensure the system is closed}; {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Clear spills immediately [C&H13]}. No specific measures identified [EI18]. Recommendations: |
| Contributing Scenarios Below pH2 and above pH11 the su Use suitable eye protection [PPE26 Avoid skin contact: wear chemical activity training [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108] PROC3: General exposures [CS1]. Use in contained batch processes [CS37].; With sample collection [CS56]. Equipment cleaning and maintenance [CS39]. PROC4: General exposures (open systems) [CS16]. Batch process [CS55] (open | [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures bstance has corrosive properties: [6]. by resistant gloves (tested to EN374) in combination with specific No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}. No specific measures identified [EI18]. Recommendations: {Ensure the system is closed}; {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Clear spills immediately [C&H13]}. No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or |
| Contributing Scenarios Below pH2 and above pH11 the su Use suitable eye protection [PPE26 Avoid skin contact: wear chemical activity training [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108] PROC3: General exposures [CS1]. Use in contained batch processes [CS37].; With sample collection [CS56]. Equipment cleaning and maintenance [CS39]. PROC4: General exposures (open systems) [CS16]. Batch process [CS55] (open systems) [CS108]; | [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures bstance has corrosive properties: [6]. ly resistant gloves (tested to EN374) in combination with specific No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}. No specific measures identified [EI18]. Recommendations: {Ensure the system is closed}; {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Clear spills immediately [C&H13]}. No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and |
| Contributing Scenarios Below pH2 and above pH11 the su Use suitable eye protection [PPE26 Avoid skin contact: wear chemical activity training [PPE17] PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. Process sampling [CS2] (closed systems) [CS107] PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108] PROC3: General exposures [CS1]. Use in contained batch processes [CS37].; With sample collection [CS56]. Equipment cleaning and maintenance [CS39]. PROC4: General exposures (open systems) [CS16]. Batch process [CS55] (open | [G1]. Ensure operatives are trained to minimize exposure [EI19] Risk Management Measures bstance has corrosive properties: [6]. by resistant gloves (tested to EN374) in combination with specific No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}. No specific measures identified [EI18]. Recommendations: {Ensure the system is closed}; {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Clear spills immediately [C&H13]}. No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or |

| maintenance [CS39]. | |
|---|--|
| | |
| | |
| | |
| | |
| PROC5: | No specific measures identified [EI18]. |
| General exposures (open systems) | |
| [CS16]. Mixing operations (open | Recommendations: |
| systems) [CS30]. Material transfers | {Drain down and flush system prior to equipment break-in or |
| [CS3].; Batch process [CS55].; | maintenance [E55]} {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. |
| Cleaning [CS47]. | the work area every day [CM113]]. {Clear spins immediately [CM1113]]. |
| PROC6: | No specific measures identified [EI18]. |
| General exposures (open systems) | |
| [CS16] | Recommendations: {Clean equipment and the work area every day |
| Mixing operations (open systems) | [C&H3]}. {Clear spills immediately [C&H13]}. |
| [CS30]. Material transfers [CS3]. | |
| Batch process [CS55].; Cleaning [CS47] | |
| PROC8a: | No specific measures identified [EI18]. |
| General exposures (open systems) | The specific measures identified [Lifte]. |
| [CS16]; Non-dedicated facility | Recommendations: |
| [CS82]; Material transfers [CS3].; | {Drain down and flush system prior to equipment break-in or |
| Equipment cleaning and | maintenance [E55]}. {Use drum pumps [E53]}. {Clean equipment and |
| maintenance [CS39].; | the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. |
| Bulk transfers [CS14]. | No anasifia massamas identified [EI10] |
| PROC8b: General exposures, open systems | No specific measures identified [EI18]. |
| [CS16].; | |
| Dedicated facility [CS81]Material | {Drain down and flush system prior to equipment break-in or |
| transfers [CS3].; | maintenance [E55]}.{Use drum pumps [E53]}. {Clean equipment and |
| Equipment cleaning and | the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. |
| maintenance [CS39].; | |
| Bulk transfers [CS14]. PROC9: | No anasifia massures identified [EI10] |
| General exposures [CS1].; | No specific measures identified [EI18]. |
| Dedicated facility [CS81]Drum and | Recommendations: |
| small package filling [CS6].; | {Drain down and flush system prior to equipment break-in or |
| Equipment cleaning and | maintenance [E55]} .{Clean equipment and the work area every day |
| maintenance [CS39]. | [C&H3]}.{Clear spills immediately [C&H13]}. |
| PROC10: | No specific measures identified [EI18]. |
| General exposures (open systems) [CS16] | Recommendations: |
| Rolling, Brushing [CS51].; | {Use long handled tools where possible [E50]}. {Clean equipment and |
| Equipment cleaning and | the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. |
| maintenance [CS39] | {Avoid splashing [C&H15]}. |
| PROC13: | No specific measures identified [EI18]. |
| General exposures, open systems | |
| [CS16] | Recommendations: |
| Dipping, immersion and pouring | {Drain down and flush system prior to equipment break-in or maintenance [E55]}.{Clean equipment and the work area every day |
| [CS4] | [C&H3]] {Clear spills immediately [C&H13]}. |
| PROC14: | No specific measures identified [EI18]. |
| General exposures (open systems) | 1 |
| [CS16] | Recommendations: |
| Production or preparation or | {Drain down and flush system prior to equipment break-in or |
| articles by tabletting, compression, | maintenance [E55]}.{Clean equipment and the work area every day |
| extrusion or pelletization [CS100] | [C&H3]}. {Clear spills immediately [C&H13]}. |

| | 127 177 177 177 177 177 177 177 177 177 | |
|---|--|--|
| PROC15: | No specific measures identified [EI18]. | |
| General exposures [CS1]. | D 1 C | |
| Laboratory activities [CS36]. Small scale [CS61]. | Recommendations: {Drain down and flush system prior to equipment break-in or | |
| Sman scale [CS01]. | maintenance [E55]}.{Clean equipment and the work area every day | |
| | [C&H3]}. {Clear spills immediately [C&H13]}. | |
| PROC19: | No specific measures identified [EI18]. | |
| General exposures [CS1]. Mixing | and appeared announced [announced]. | |
| operations (open systems) [CS30] | . Recommendations: | |
| Manual [CS34]. | {Clean equipment and the work area every day [C&H3]}.; | |
| | {Clear spills immediately [C&H13]} | |
| Section 2.2 | Control of environmental exposure | |
| Aluminum, aluminum powders, al | uminum oxide and soluble aluminum compounds are non hazardous (not | |
| classified for the environment). A | luminum (Al) is the most commonly occurring metallic element, comprising | |
| | nd is therefore found in great abundance in both the terrestrial and sediment | |
| | 3-8% (30,000-80,000 ppm) are not uncommon. The relative contributions of | |
| | isting natural pools of aluminum in soils and sediments is very small, and | |
| | ms of added amounts or in terms of toxicity. | |
| Section 3 | Exposure Estimation | |
| 3.1. Health | | |
| | ted to exceed the applicable exposure limits (given in section 8 of the SDS) sk management measures given in section 2 are implemented [G29] | |
| 3.2. Environment | | |
| N.A. | | |
| Section 4 | Guidance to check compliance with the Exposure Scenario | |
| 4.1. Health | | |
| The ECETOC TRA (V2.0) tool I | nas been used to estimate workplace exposures unless otherwise indicated | |
| 4.2. Environment | | |
| N.A. | | |
| | Additional good practice advice beyond the REACH | |
| 1 | Chemical Safety Assessment - (Section Optional) | |
| | | |
| Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH. | | |
| Control of Worker Exposure | | |
| Use of PPE S | kin protection: | |
| | Gloves: | |
| - | Observe breakthrough time of the gloves used | |
| | <u>Respiratory protection:</u> | |
| F | Respirators: | |
| - | Wear a disposable mask only once | |
| - | Clean non-disposable masks after each use and store in a clean | |
| | box in a clean area Wear respirators < 2 bre/day | |
| <u> </u> | Wear respirators ≤ 2 hrs/day | |

9.1.6: Exposure Scenario 6: Use as flocculant or coagulant in water and waste water treatment

Aqueous solution:

ES6 - Industrial and Professional use of Aluminium salts in aqueous solutions (max. 25% Aluminium) as a flocculants or coagulant in water and waste water treatment

| Section 1 | Exposure Scenario Title |
|--|---|
| Title | Industrial and Professional use of Aluminium salts in |
| | aqueous solutions as a flocculants or coagulant in water |
| | and waste water treatment; max 25% Aluminium |
| | content. |
| Use Descriptor | Sector of Use: Industrial (SU2, SU5, SU6b, SU10, SU23) |
| Osc Descriptor | |
| | Process Categories: |
| | PROC2: Use in a closed continuous process, with occasional controlled |
| | exposure |
| | PROC3: Use in a closed batch process (synthesis or formulation) |
| | PROC4: Use in a batch and other process (synthesis) where opportunity for exposure arises |
| | PROC5: Mixing or blending in batch processes for formulation of |
| | preparations and articles (multistage and/or significant contact) |
| | PROC8a: Transfer of substance or preparation (charging/discharging) |
| | from/to vessels/large containers at non-dedicated facilities |
| | PROC8b: Transfer of substance or preparation (charging/discharging) |
| | from/to vessels/large containers at dedicated facilities |
| | PROC9: Transfer of substance or preparation into small containers |
| | (dedicated filling line, including weighing) PROC19: Hand-mixing with intimate contact and only PPE available |
| | Environmental Release Categories: |
| | ERC2: Formulation of preparations |
| | ERC4: Industrial use of processing aids and products, not becoming part |
| | of articles |
| | ERC6b: Industrial use of reactive processing aids |
| | ERC8a: Wide dispersive indoor use of processing aids in open systems |
| | ERC8b: Wide dispersive indoor use of reactive substances in open |
| | systems ERC8d: Wide dispersive outdoor use of processing aids in open systems |
| Processes, tasks, activities covered | Industrial and Professional use of Aluminium salts as a flocculants or |
| Trocesses, tasks, activities covered | coagulant in water and waste water treatment; max 25% Aluminium |
| | content. Includes equipment cleaning and maintenance. |
| Exposure criteria | DNEL, inhalation long term: 1.8 mg/m ³ |
| Section 2 | Operational conditions and risk management measures |
| Section 2.1 | Control of worker exposure |
| Product characteristics | • |
| Physical form of product | Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; |
| 1 | Liquid, vapour pressure <10 Pa [OC14] |
| Concentration of substance in | Covers percentage substance in the product up to 25 % [G12]. |
| product | |
| Amounts used | Varies between milliliters (sampling) and cubic meters (material |
| Frequency and duration of use | transfers) [OC13] |
| Frequency and dufation of use | Covers daily exposures up to 8 hours (unless stated differently) [G2] |
| | |
| Human factors not influenced by | Not applicable |
| Human factors not influenced by risk management | Not applicable |
| Human factors not influenced by | Not applicable Assumes use at not > 20oC above ambient [G15]; |
| Human factors not influenced by risk management | Assumes use at not > 20oC above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented |
| Human factors not influenced by risk management Other Operational Conditions | Assumes use at not > 20oC above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. |
| Human factors not influenced by risk management Other Operational Conditions affecting worker exposure | Assumes use at not > 20oC above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposures [EI19] |
| Human factors not influenced by risk management Other Operational Conditions | Assumes use at not > 20oC above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. |
| Human factors not influenced by risk management Other Operational Conditions affecting worker exposure Contributing Scenarios | Assumes use at not > 20oC above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposures [EI19] Risk Management Measures |
| Human factors not influenced by risk management Other Operational Conditions affecting worker exposure | Assumes use at not > 20oC above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposures [EI19] Risk Management Measures bstance has corrosive properties: |

| PROC2: | No specific measures identified [EI18]. |
|-------------------------------------|--|
| General exposures [CS1]. | D. A. C. |
| Continuous process [CS54]. | Recommendations: |
| Process sampling [CS2] (open | {Ensure the system is closed} {Clear transfer lines prior to de-coupling |
| systems) [CS108] | [E39]}. {Clear spills immediately [C&H13]}. |
| PROC3: | No specific measures identified [EI18]. |
| General exposures [CS1]. Use in | |
| contained batch processes [CS37]. | Recommendations: |
| With sample collection [CS56]. | {Ensure the system is closed}; |
| Equipment cleaning and | {Drain down and flush system prior to equipment break-in or |
| maintenance [CS39]. | maintenance [E55]}.{Clear spills immediately [C&H13]}. |
| PROC4: | No specific measures identified [EI18]. |
| General exposures (open systems) | |
| [CS16]. Batch process [CS55] | Recommendations: |
| (open systems) [CS108]; | {Drain down and flush system prior to equipment break-in or |
| Drum/batch transfers [CS8]. With | maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and |
| sample collection [CS56]. | the work area every day [C&H3]}. |
| Equipment cleaning and | {Clear spills immediately [C&H13]}. |
| maintenance [CS39]. | |
| PROC5: | No specific measures identified [EI18]. |
| General exposures (open systems) | |
| [CS16]. Mixing operations (open | Recommendations: |
| systems) [CS30]. Material transfers | {Drain down and flush system prior to equipment break-in or |
| [CS3]. | maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and |
| Batch process [CS55]. | the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. |
| Cleaning [CS47]. | |
| PROC8a: | No specific measures identified [EI18]. |
| General exposures (open systems) | |
| [CS16]; Non-dedicated facility | Recommendations: |
| [CS82]; | {Drain down and flush system prior to equipment break-in or |
| Material transfers [CS3]. | maintenance [E55]}. {Use drum pumps [E53]}. {Clean equipment and |
| Equipment cleaning and | the work area every day [C&H3]}.{Clear spills immediately [C&H13]}. |
| maintenance [CS39]. | |
| Bulk transfers [CS14]. | |
| PROC8b: | No specific measures identified [EI18]. |
| General exposures, open systems | |
| [CS16]. | Recommendations: |
| Dedicated facility [CS81] Material | {Drain down and flush system prior to equipment break-in or |
| transfers [CS3]. | maintenance [E55]}. {Use drum pumps [E53]}. {Clean equipment and |
| Equipment cleaning and | the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. |
| maintenance [CS39]. | , |
| Bulk transfers [CS14]. | |
| PROC9: | No specific measures identified [EI18]. |
| General exposures [CS1]. | 1 |
| Dedicated facility [CS81] | Recommendations: |
| Drum and small package filling | {Drain down and flush system prior to equipment break-in or |
| [CS6]. | maintenance [E55]}. {Clean equipment and the work area every day |
| Equipment cleaning and | [C&H3]} {Clear spills immediately [C&H13]}. |
| maintenance [CS39]. | [[[[]]] [[]] [[]] [] [] [|
| PROC19: | Industrial worker: |
| General exposures [CS1]. Mixing | 5-25%: |
| operations (open systems) [CS30]. | Avoid carrying out operation for more than 1 hour [OC11] |
| Manual [CS34]. | 1-5%: |
| inimium [CDD 1]. | Avoid carrying out operation for more than 4 hours [OC12] |
| | Avoid carrying out operation for more than 4 hours [OC12] <1%: |
| | No specific measures identified [EI18]. |
| | 110 specific measures identified [E110]. |
| | Professional worker: |
| | 5-25%: |
| | Wear a respirator conforming to EN140 with Type A/P2 filter or better |
| | wear a respirator comorning to EN140 with Type A/F2 Titler of better |

| | [PPE29] or: | | |
|---|---|--|--|
| | Avoid carrying out operation for more than 15 minutes [OC10] { 1-5%: | | |
| | Avoid carrying out operation for more than 1 hour [OC11] | | |
| | <1%: | | |
| | Avoid carrying out operation for more than 4 hours [OC12] | | |
| | Recommendations: | | |
| | {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. {Stay upwind/keep distance from source [EI22]}. | | |
| Section 2.2 | Control of environmental exposure | | |
| classified for the environment) eight percent of the earth's crus environments. Concentrations anthropogenic aluminum to the therefore, not relevant either in | Aluminum, aluminum powders, aluminum oxide and soluble aluminum compounds are non hazardous (not classified for the environment). Aluminum (Al) is the most commonly occurring metallic element, comprising eight percent of the earth's crust and is therefore found in great abundance in both the terrestrial and sediment environments. Concentrations of 3-8% (30,000-80,000 ppm) are not uncommon. The relative contributions of anthropogenic aluminum to the existing natural pools of aluminum in soils and sediments is very small, and therefore, not relevant either in terms of added amounts or in terms of toxicity. | | |
| Section 3 | Exposure Estimation | | |
| 3.1. Health | | | |
| | spected to exceed the applicable exposure limits (given in section8 of the SDS) s/risk management measures given in section 2 are implemented [G29] | | |
| 3.2. Environment | | | |
| N.A. | | | |
| Section 4 | Guidance to check compliance with the Exposure Scenario | | |
| 4.1. Health | | | |
| The ECETOC TRA (V2.0) too [G21] | ol has been used to estimate workplace exposures unless otherwise indicated | | |
| 4.2. Environment | | | |
| N.A. | | | |
| Section 5 | Additional good practice advice beyond the REACH | | |
| Section 5 | Chemical Safety Assessment - (Section Optional) | | |
| Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH. | | | |
| Control of Worker Exposure | Control of Worker Exposure | | |
| Use of PPE | Skin protection: Gloves: - Observe breakthrough time of the gloves used Respiratory protection: | | |
| | Respirators: | | |
| | - Wear a disposable mask only once | | |
| | - Clean non-disposable masks after each use and store in a | | |
| | clean box in a clean area | | |

Solid, high dustiness:

ES6 – Industrial and Professional use of Aluminium salts as flocculants or coagulant in water and waste water treatment; solid – high dustiness; Aluminium content = max. 25%

Wear respirators ≤ 2 hrs/day

| 20 70 | |
|--------------|---|
| Section 1 | Exposure Scenario Title |
| Title | Industrial and Professional use of Aluminium salts as flocculants or coagulant in water and waste water |

| | treatment; solid – high dustiness; Aluminium content = max. 25% |
|---|--|
| Use Descriptor | Sector of Use: SU2, SU5, SU6b, SU10, SU23) |
| Use Descriptor | Process Categories: PROC2: Use in a closed continuous process, with occasional controlled exposure PROC3: Use in a closed batch process (synthesis or formulation) PROC4: Use in a batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC19: Hand-mixing with intimate contact and only PPE available Environmental Release Categories: |
| Processes, tasks, activities covered | ERC2: Formulation of preparations ERC4: Industrial use of processing aids and products, not becoming part of articles ERC6b: Industrial use of reactive processing aids ERC8a:Wide dispersive indoor use of processing aids in open systems ERC8b: Wide dispersive indoor use of reactive substances in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems Industrial and Professional use of Aluminium salts as flocculants or |
| | coagulant in water and waste water treatment. |
| LGES exposure criteria | DNFL inhalation long term: 1.8 mg/m3 |
| GES exposure criteria | DNEL, inhalation long term: 1.8 mg/m3 |
| GES exposure criteria Section 2 Section 2.1 | Operational conditions and risk management measures |
| Section 2 Section 2.1 Product characteristics Physical form of product Concentration of substance in | |
| Section 2 Section 2.1 Product characteristics Physical form of product | Operational conditions and risk management measures Control of worker exposure Solid, high dustiness [OC6] Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] |
| Section 2 Section 2.1 Product characteristics Physical form of product Concentration of substance in product | Operational conditions and risk management measures Control of worker exposure Solid, high dustiness [OC6] Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material |
| Section 2 Section 2.1 Product characteristics Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management | Operational conditions and risk management measures Control of worker exposure Solid, high dustiness [OC6] Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable |
| Section 2 Section 2.1 Product characteristics Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions affecting worker exposure | Operational conditions and risk management measures Control of worker exposure Solid, high dustiness [OC6] Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20oC above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].; Ensure operatives are trained to minimize exposures [EI19] |
| Section 2 Section 2.1 Product characteristics Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions | Operational conditions and risk management measures Control of worker exposure Solid, high dustiness [OC6] Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20oC above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].; |
| Section 2 Section 2.1 Product characteristics Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions affecting worker exposure | Operational conditions and risk management measures Control of worker exposure Solid, high dustiness [OC6] Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20oC above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].; Ensure operatives are trained to minimize exposures [EI19] Risk Management Measures ostance has corrosive properties: |
| Section 2 Section 2.1 Product characteristics Physical form of product Concentration of substance in product Amounts used Frequency and duration of use Human factors not influenced by risk management Other Operational Conditions affecting worker exposure Contributing Scenarios Below pH2 and above pH11 the sul Use suitable eye protection [PPE26] | Operational conditions and risk management measures Control of worker exposure Solid, high dustiness [OC6] Covers percentage substance in the product up to 25% [G12]. Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] Covers daily exposures up to 8 hours (unless stated differently) [G2] Not applicable Assumes use at not > 20oC above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1].; Ensure operatives are trained to minimize exposures [EI19] Risk Management Measures ostance has corrosive properties: |

| | T == 4.0 |
|--|--|
| | [E66] |
| | Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. |
| | (80% efficiency) [E82]. |
| | Recommendations: |
| | {Ensure the system is closed} {Clear transfer lines prior to de-coupling |
| | [E39]}. {Clear spills immediately [C&H13]}. |
| PROC3: | Industrial workers: |
| General exposures [CS1]. Use in | No specific measures identified [EI18]. |
| contained batch processes [CS37]. | |
| With sample collection [CS56]. | Professional workers: Ensure material transfers are under containment or extract ventilation |
| Equipment cleaning and maintenance [CS39]. | (80% efficiency) [E66]. |
| mamenance [CS37]. | Provide extract ventilation to material transfer points and other openings |
| | (80% efficiency) [E82] |
| | |
| | Recommendations: |
| | {Ensure the system is closed} |
| | {Drain down and flush system prior to equipment break-in or |
| PROC4: | maintenance [E55]}. {Clear spills immediately [C&H13]}. Industrial workers: |
| General exposures (open systems) | 5-25%: |
| [CS16]. | Ensure material transfers are under containment or extract ventilation |
| Batch process [CS55] (open | (90% efficiency) [E66]. |
| systems) [CS108]; | Provide extract ventilation to material transfer points and other openings |
| Drum/batch transfers [CS8]. With | (90% efficiency) [E82]. |
| sample collection [CS56]. | Due foreign of months are |
| Equipment cleaning and maintenance [CS39]. | Professional workers: 5-25%: |
| mamenance [CS37]. | Ensure material transfers are under containment or extract ventilation |
| | (80% efficiency) [E66]. |
| | Provide extract ventilation to material transfer points and other openings |
| | (80% efficiency) [E82]. |
| | Avoid carrying out operation for more than 1 hour [OC11] Or: |
| | Avoid carrying out operation for more than 4 hours [OC12] plus |
| | Wear a respirator conforming to EN140 with Type A/P2 filter or better |
| | {PPE29] |
| | 1-5%: |
| | Avoid carrying out operation for more than 15 minutes [OC10] |
| | <1%: Avoid corruing out operation for more than 1 hour [OC11] |
| | Avoid carrying out operation for more than 1 hour [OC11] |
| | Recommendations: |
| | {Drain down and flush system prior to equipment break-in or |
| | maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and |
| | the work area every day [C&H3]}. |
| PROC5: | {Clear spills immediately [C&H13]}. Industrial workers: |
| General exposures (open systems) | Ensure material transfers are under containment or extract ventilation |
| [CS16]. Mixing operations (open | (90% efficiency) [E66]. |
| systems) [CS30]. Material transfers | Provide extract ventilation to material transfer points and other openings |
| [CS3]. | (90% efficiency) [E82]. |
| Batch process [CS55]. | Due fraction of months are |
| Cleaning [CS47]. | Professional workers: 5-25%: |
| | Ensure material transfers are under containment or extract ventilation |
| | (80% efficiency) [E66]. |
| | Provide extract ventilation to material transfer points and other openings |
| | (80% efficiency) [E82]. |

| | Avoid carrying out operation for more than 1 hour [OC11] |
|--|---|
| | OR: Avoid carrying out operation for more than 4 hours [OC12] plus Wear a |
| | respirator conforming to EN140 with Type A/P2 filter or better [PPE29] |
| | 1-5%: |
| | Avoid carrying out operation for more than 15 minutes [OC10] <1%: |
| | Avoid carrying out operation for more than 1 hour [OC11] |
| | Recommendations: |
| | {Drain down and flush system prior to equipment break-in or |
| | maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and |
| PDOC9 | the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. |
| PROC8a: General exposures (open systems) [CS16]; | 5-25%: Ensure material transfers are under containment or extract ventilation (80% efficiency) [E66]. |
| Non-dedicated facility [CS82]; | Provide extract ventilation to material transfer points and other openings |
| Material transfers [CS3]. | (80% efficiency) [E82]. |
| Equipment cleaning and | Avoid carrying out operation for more than 1 hour [OC11] |
| maintenance [CS39]. Bulk transfers [CS14]. | OR: Avoid carrying out operation for more than 4 hours [OC12] plus Wear |
| Sum vumsters [est 1]. | a respirator conforming to EN140 with Type A/P2 filter or better |
| | [PPE29] 1-5%: |
| | Ensure material transfers are under containment or extract ventilation |
| | (80% efficiency) [E66].; |
| | Provide extract ventilation to material transfer points and other openings |
| | (80% efficiency) [E82]. Avoid carrying out operation for more than 4 hours [OC12] |
| | Avoid carrying out operation for more than 4 hours [OC12] |
| | Recommendations: |
| | Use bulk or semi-bulk handling systems [E43].; |
| | Discharge sacks via suitable vented charge chute [E44].{Drain down and flush system prior to equipment break-in or maintenance [E55]}.; |
| | {Use drum pumps [E53]}. {Clean equipment and the work area every |
| | day [C&H3]}. {Clear spills immediately [C&H13]}. |
| PROC8b: | Industrial workers: |
| General exposures, open systems | 5-25%: |
| [CS16]. Dedicated facility [CS81] | Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66] |
| Material transfers [CS3]. | Provide extract ventilation to material transfer points and other openings |
| Equipment cleaning and | (90% efficiency) [E82]. |
| maintenance [CS39]. | TV 1 II |
| Bulk transfers [CS14]. | Use bulk or semi-bulk handling systems [E43]. Discharge sacks via suitable vented charge chute [E44]. |
| | Discharge sacks via suitable vehied charge chute [E44]. |
| | Professional workers: 5-25%: |
| | Ensure material transfers are under containment or extract ventilation |
| | (80% efficiency) [E66].; |
| | Provide extract ventilation to material transfer points and other openings (80% efficiency) [E82]. |
| | Avoid carrying out operation for more than 1 hour [OC11] |
| | Use bulk or semi-bulk handling systems [E43]. |
| | Discharge sacks via suitable vented charge chute [E44]. |
| | Or: Avoid carrying out operation for more than 4 hours [OC12] plus |
| | Wear a respirator conforming to EN140 with Type A/P2 filter or better |
| | [PPE29] |
| | 1-5%: |

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| | Avoid carrying out operation for more than 15 minutes [OC10] |
|--|--|
| | <1%: Avoid carrying out operation for more than 1 hour [OC11] |
| | Avoid earrying out operation for more than I nour [OC11] |
| | Recommendations: |
| | {Drain down and flush system prior to equipment break-in or maintenance [E55]} |
| | {Use drum pumps [E53]}. {Clean equipment and the work area every |
| | day [C&H3]}. |
| PROC9: | {Clear spills immediately [C&H13]}. Ensure material transfers are under containment or extract ventilation |
| General exposures [CS1]. | (80% efficiency) [E66]. |
| Dedicated facility [CS81] | Provide extract ventilation to material transfer points and other openings |
| Drum and small package filling [CS6]. | (80% efficiency) [E82]. Avoid carrying out operation for more than 4 hours [OC12]{ |
| Equipment cleaning and | Avoid earrying out operation for more than 4 hours [OC12] |
| maintenance [CS39]. | Recommendations: |
| | Use bulk or semi-bulk handling systems [E43].; Discharge sacks via suitable vented charge chute [E44].Drain down and |
| | flush system prior to equipment break-in or maintenance [E55]}. {Clean |
| | equipment and the work area every day [C&H3]}. |
| PROC19 | {Clear spills immediately [C&H13]}. Industrial workers: |
| General exposures [CS1]. Mixing | 5-25%: |
| operations (open systems) [CS30].; Manual [CS34]. | Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] |
| | <5%: Avoid carrying out operation for more than 1 hour [OC11] |
| | <1%: Avoid carrying out operation for more than 4 hours [OC12] |
| | Avoid carrying out operation for more than 4 hours [OC12 |
| | Professional workers:: 5-25%: |
| | Avoid carrying out operation for more than 4 hours [OC12] plus |
| | Wear a respirator conforming to EN140 with Type A/P2 filter or better [PPE29] |
| | <5%: Avoid carrying out operation for more than 15 minutes [OC10] |
| | Avoid earrying out operation for more than 13 minutes [OC10] <1%: |
| | Avoid carrying out operation for more than 1 hour [OC11]{ |
| | Recommendations: |
| | {Clean equipment and the work area every day [C&H3]}. |
| | {Clear spills immediately [C&H13]} {Stay upwind/keep distance from source [E122]} |
| Section 2.2 | Control of environmental exposure |
| Section 2.2 | Control of chylronnichtal exposure |

Aluminum, aluminum powders, aluminum oxide and soluble aluminum compounds are non hazardous (not classified for the environment). Aluminum (Al) is the most commonly occurring metallic element, comprising eight percent of the earth's crust and is therefore found in great abundance in both the terrestrial and sediment environments. Concentrations of 3-8% (30,000-80,000 ppm) are not uncommon. The relative contributions of anthropogenic aluminum to the existing natural pools of aluminum in soils and sediments is very small, and therefore, not relevant either in terms of added amounts or in terms of toxicity.

Section 3 Exposure Estimation

3.1. Health

Predicted exposures are not expected to exceed the applicable exposure limits (given in section8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented [G29]

3.2. Environment

N.A.

| Section 4 | Guidance to check compliance with the Exposure Scenario |
|---------------------|--|
| 4.1. Health | |
| The ECETOC TRA | (V2.0) tool has been used to estimate workplace exposures unless otherwise indicated |
| 4.2. Environment | |
| N.A. | |
| Section 5 | Additional good practice advice beyond the REACH Chemical |
| | Safety Assessment - (Section Optional) |
| | ported in this section have not been taken into account in the exposure estimates related to the e. They are not subject to obligation laid down in Article 37 (4) of REACH. |
| Control of Worker E | xposure |
| Use of PPE | Skin protection: Gloves: - Observe breakthrough time of the gloves used Respiratory protection: Respirators: - Wear a disposable mask only once |
| | Clean non-disposable masks after each use and store in a clean box in a clean area Wear respirators ≤ 2 hrs/day |

Solid, low dustiness:

| ES6 – Industrial and | Professional use of Aluminium salts as flocculant or coagulant in |
|--|---|
| water and waste water treatment – solid-low dust; Aluminium content = max. 25% | |
| Section 1 | Exposure Scenario Title |
| Title | Industrial and Professional use of Aluminium salts as |
| | flocculant or coagulant in water and waste water |
| | treatment – solid-low dust; Aluminium content = max. |
| | 25% |
| Use Descriptor | Sector of Use: Industrial (SU2, SU5, SU6b, SU10, SU23) |
| | Process Categories: |
| | PROC2: Use in a closed continuous process, with occasional controlled |
| | exposure |
| | PROC3: Use in a closed batch process (synthesis or formulation) PROC4: Use in a batch and other process (synthesis) where opportunity |
| | for exposure arises |
| | PROC5: Mixing or blending in batch processes for formulation of |
| | preparations and articles (multistage and/or significant contact) |
| | PROC8a: Transfer of substance or preparation (charging/discharging) |
| | from/to vessels/large containers at non-dedicated facilities |
| | PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities |
| | PROC9: Transfer of substance or preparation into small containers |
| | (dedicated filling line, including weighing) |
| | PROC19: Hand-mixing with intimate contact and only PPE available |
| | Environmental Release Categories: |
| | ERC2: Formulation of preparations |
| | ERC4: Industrial use of processing aids and products, not becoming part of articles |
| | ERC6b: Industrial use of reactive processing aids |
| | ERC8a:Wide dispersive indoor use of processing aids in open systems |
| | ERC8b: Wide dispersive indoor use of reactive substances in open |
| | systems |

| | ERC8d: Wide dispersive outdoor use of processing aids in open systems |
|--|--|
| Processes, tasks, activities covered | Industrial and Professional use of Aluminium salts as flocculant or coagulant in water and waste water treatment. Aluminium content = max. 25% |
| Exposure criteria | DNEL, inhalation long term: 1.8 mg/m³ |
| Section 2 | Operational conditions and risk management measures |
| Section 2.1 | Control of worker exposure |
| Product characteristics | |
| Physical form of product | Solid, low dustiness [OC1] |
| Concentration of substance in product | Covers percentage substance in the product up to 25% [G12]. |
| Amounts used | Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] |
| Frequency and duration of use | Covers daily exposures up to 8 hours (unless stated differently) [G2] |
| Human factors not influenced by risk management | Not applicable |
| Other Operational Conditions affecting worker exposure | Assumes use at not > 20oC above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1] Ensure operatives are trained to minimize exposures [EI19] |
| Contributing Scenarios | Risk Management Measures |
| PROC2: General exposures [CS1]. Continuous process [CS54]. Process sampling [CS2] (open systems) [CS108] PROC3: General exposures [CS1]. Use in contained batch processes [CS37]. With sample collection [CS56]. Equipment cleaning and maintenance [CS39]. PROC4: General exposures (open systems) [CS16]. Batch process [CS55] (open systems) [CS108]; Drum/batch transfers [CS8]. With sample collection [CS56]. Equipment cleaning and | No specific measures identified [EI18]. Recommendations {Ensure the system is closed} {Clear transfer lines prior to de-coupling [E39]}. {Clear spills immediately [C&H13]}. No specific measures identified [EI18]. Recommendations: {Ensure the system is closed} {Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Clear spills immediately [C&H13]}. No specific measures identified [E118]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}.{Clear spills immediately [C&H13]}. |
| maintenance [CS39]. PROC5: General exposures (open systems) [CS16]. Mixing operations (open systems) [CS30]. Material transfers [CS3]. Batch process [CS55]. Cleaning [CS47]. PROC8a: General exposures (open systems) [CS16]; Non-dedicated facility [CS82]; Material transfers [CS3]. Equipment cleaning and maintenance [CS39]. | No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}; {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Use drum pumps [E53]}. {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. |

| PROC8b: | No specific measures identified [EI18]. |
|--|--|
| General exposures, open systems | |
| [CS16]. | Recommendations: |
| Dedicated facility [CS81] | {Drain down and flush system prior to equipment break-in or |
| Material transfers [CS3]. | maintenance [E55]}. {Use drum pumps [E53]}. {Clean equipment and |
| Equipment cleaning and maintenance [CS39]. | the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. |
| Bulk transfers [CS14]. | |
| PROC9: | No specific measures identified [EI18]. |
| General exposures [CS1].; | |
| Dedicated facility [CS81]Drum and | Recommendations: |
| small package filling [CS6]. | {Drain down and flush system prior to equipment break-in or |
| Equipment cleaning and | maintenance [E55]}.{Clean equipment and the work area every day |
| maintenance [CS39]. | [C&H3]}. {Clear spills immediately [C&H13]}. |
| PROC19: | No specific measures identified [EI18]. |
| General exposures [CS1]. Mixing | |
| operations (open systems) [CS30]. | Recommendations: |
| Manual [CS34]. | {Clean equipment and the work area every day [C&H3]}.; |
| | {Clear spills immediately [C&H13]} |
| Section 2.2 | Control of environmental exposure |

Aluminum, aluminum powders, aluminum oxide and soluble aluminum compounds are non hazardous (not classified for the environment). Aluminum (Al) is the most commonly occurring metallic element, comprising eight percent of the earth's crust and is therefore found in great abundance in both the terrestrial and sediment environments. Concentrations of 3-8% (30,000-80,000 ppm) are not uncommon. The relative contributions of anthropogenic aluminum to the existing natural pools of aluminum in soils and sediments is very small, and therefore, not relevant either in terms of added amounts or in terms of toxicity.

Section 3 Exposure Estimation

3.1. Health

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented [G29]

3.2. Environment

N.A.

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

The ECETOC TRA (V2.0) tool has been used to estimate workplace exposures unless otherwise indicated [G21]

4.2. Environment

N.A.

Section 5 Additional good practice advice beyond the REACH Chemical Safety Assessment - (Section Optional)

Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.

Control of Worker Exposure

Use of PPE

Skin protection:
Gloves:
- Observe b

- Observe breakthrough time of the gloves used

Respiratory protection:

Respirators:

- Wear a disposable mask only once
- Clean non-disposable masks after each use and store in a clean box in a clean area
- Wear respirators ≤ 2 hrs/day

9.1.7 Exposure Scenario 7: Use in laboratory

Aqueous solution:

| Section 1 | Exposure Scenario Title |
|--|--|
| Title | Use of Aluminium salts – Aqueous solution – in industrial and professional laboratory settings; max Aluminium content = 25% |
| Use Descriptors | Sector of Use: SU9 |
| | Process Categories: PROC15: Use as a laboratory reagent Environmental Release Categories: ERC4: Industrial use of processing aids in processes and products, not becoming part of articles |
| Processes, tasks, activities covered | Use of aluminium salts (aqueous solution) in small scale laboratory settings. Max. aluminium content = 25% |
| Exposure criteria | DNEL, inhalation long term: 1.8 mg/m³ |
| Section 2 | Operational conditions and risk management measures |
| Section 2.1 | Control of worker exposure |
| Product characteristics | |
| Physical form of product | Aqueous solution: vapour pressure of Alu-salt in water 0.01 Pa or less; Liquid, vapour pressure < 10 Pa [OC14] |
| Concentration of substance in product | Covers percentage substance in the product up to 25 % [G12]. |
| Amounts used | Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] |
| Frequency and duration of use | Covers daily exposures up to 8 hours (unless stated differently) [G2] |
| Human factors not influenced by risk management | Not applicable |
| Other Operational Conditions affecting worker exposure | Assumes use at not > 20oC above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposures [EI19] |
| Contributing Scenarios | Risk Management Measures |
| Below pH2 and above pH11 the sul | |
| Use suitable eye protection [PPE26 | |
| Avoid skin contact: Wear suitable : PROC15: General exposures [CS1]. | No specific measures identified [EI18]. |
| Laboratory activities [CS36]. Small scale [CS61]. | Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]} {Clean equipment and the work area every day [C&H3]}. {Clear spills immediately [C&H13]}. |
| Section 2.2 | Control of environmental exposure |

eight percent of the earth's crust and is therefore found in great abundance in both the terrestrial and sediment environments. Concentrations of 3-8% (30,000-80,000 ppm) are not uncommon. The relative contributions of anthropogenic aluminum to the existing natural pools of aluminum in soils and sediments is very small, and therefore, not relevant either in terms of added amounts or in terms of toxicity.

Exposure Estimation Section 3

3.1. Health

Predicted exposures are not expected to exceed the applicable exposure limits (given in section8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented [G29]

3.2. Environment

N.A.

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

The ECETOC TRA (V2.0) tool has been used to estimate workplace exposures unless otherwise indicated [G21]

4.2. Environment

N.A.

| Section 5 | Additional good practice advice beyond the REACH Chemical Safety |
|-----------|--|
| | Assessment - (Section Optional) |
| | |

Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.

| Control of Worker Exposure | |
|----------------------------|--|
| Use of PPE | Skin protection: |
| | Gloves: |
| | Observe breakthrough time of the gloves used |
| | Respiratory protection: |
| | Respirators: |
| | Wear a disposable mask only once |
| | - Clean non-disposable masks after each use and store in a |
| | clean box in a clean area |
| | Wear respirators ≤ 2 hrs/day |

Solid, high dustiness:

| ES7 - Use of Aluminium salts – solid, high dust – in industrial and professional | | |
|--|---|--|
| laboratory settings; max Aluminium content = 25% | | |
| Section 1 | Exposure Scenario Title | |
| Title | Use of Aluminium salts – solid, high dust – in industrial and professional laboratory settings; max Aluminium | |
| | content = 25% | |
| Use Descriptors | Sector of Use: SU9 | |
| | Process Categories: PROC15: Use as a laboratory reagent Environmental Release Categories: | |
| | ERC4: Industrial use of processing aids in processes and products, not becoming part of articles | |
| Processes, tasks, activities covered | Use of aluminium salts (solid, high dustiness) in small scale laboratory settings. Max. aluminium content = 25% | |
| Exposure criteria | DNEL, inhalation long term: 1.8 mg/m ³ | |
| Section 2 | Operational conditions and risk management measures | |
| Section 2.1 | Control of worker exposure | |
| Product characteristics | | |

| Physical form of product | Solid, high dustiness [OC6] |
|--|---|
| Concentration of substance in | Covers percentage substance in the product up to 25% [G12]. |
| product | |
| Amounts used | Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] |
| Frequency and duration of use | Covers daily exposures up to 8 hours (unless stated differently) [G2] |
| Human factors not influenced by risk management | Not applicable |
| Other Operational Conditions | Assumes use at not > 20oC above ambient [G15] |
| affecting worker exposure | Assumes a good basic standard of occupational hygiene is implemented [G1]. |
| | Ensure operatives are trained to minimize exposures [EI19] |
| Contributing Scenarios | Risk Management Measures |
| Below pH2 and above pH11 the su | ibstance has corrosive properties: |
| Use suitable eye protection [PPE2 | 6] |
| Avoid skin contact: Wear suitable | |
| PROC15: General exposures [CS1]. | Carry out in a vented booth or extracted enclosure (80% efficiency) [E57]. |
| Laboratory activities [CS36]. | n t.c |
| Small scale [CS61]. | Recommendations: {Drain down and flush system prior to equipment break-in or |
| | maintenance [E55]. {Clean equipment and the work area every day |
| | [C&H3]}. |
| | {Clear spills immediately [C&H13]}. |
| Section 2.2 | Control of environmental exposure |
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| - Wear a disposable mask only once |
|--|
| - Clean non-disposable masks after each use and store in a |
| clean box in a clean area |
| - Wear respirators ≤ 2 hrs/day |

Solid, low dustiness:

| Section 1 | Exposure Scenario Title |
|--|--|
| Title | Use of Aluminium salts – solid, low dust – in industrial and professional laboratory settings; max Aluminium content = 25% |
| Use Descriptor | Sector of Use: SU9 |
| | Process Categories: PROC15: Use as a laboratory reagent Environmental Release Categories: ERC4: Industrial use of processing aids in processes and products, not becoming part of articles |
| Processes, tasks, activities covered | Use of aluminium salts (solid, low dustiness) in small scale laboratory settings. Max. aluminium content = 25% |
| Exposure criteria | DNEL, inhalation long term: 1.8 mg/m³ |
| Section 2 | Operational conditions and risk management measures |
| Section 2.1 | Control of worker exposure |
| Product characteristics | |
| Physical form of product | Solid, low dustiness [OC1] |
| Concentration of substance in product | Covers percentage substance in the product up to 25% [G12]. |
| Amounts used | Varies between milliliters (sampling) and cubic meters (material transfers) [OC13] |
| Frequency and duration of use | Covers daily exposures up to 8 hours (unless stated differently) [G2] |
| Human factors not influenced by risk management | Not applicable |
| Other Operational Conditions affecting worker exposure | Assumes use at not > 20oC above ambient [G15]; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposures [EI19] |
| Contributing Scenarios | Risk Management Measures |
| Below pH2 and above pH11 the su Use suitable eye protection [PPE26 Avoid skin contact: Wear suitable | |
| PROC15: General exposures [CS1]. Laboratory activities [CS36]. | No specific measures identified [EI18]. Recommendations: {Drain down and flush system prior to equipment break-in or maintenance [E55]}. {Clean equipment and the work area every day |
| Small scale [CS61]. | [C&H3]}. {Clear spills immediately [C&H13]}. |

anthropogenic aluminum to the existing natural pools of aluminum in soils and sediments is very small, and therefore, not relevant either in terms of added amounts or in terms of toxicity.

Section 3 Exposure Estimation

3.1. Health

Predicted exposures are not expected to exceed the applicable exposure limits (given in section8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented [G29]

3.2. Environment

N.A.

Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

The ECETOC TRA (V2.0) tool has been used to estimate workplace exposures unless otherwise indicated [G21]

4.2. Environment

N.A.

Section 5 Additional good practice advice beyond the REACH
Chemical Safety Assessment - (Section Optional)

Note: The measures reported in this section have not been taken into account in the exposure estimates related to the exposure scenario above. They are not subject to obligation laid down in Article 37 (4) of REACH.

Control of Worker Exposure

| _ | |
|------------|---|
| Use of PPE | Skin protection: |
| | Gloves: |
| | - Observe breakthrough time of the gloves used |
| | Respiratory protection: |
| | Respirators: |
| | - Wear a disposable mask only once |
| | - Clean non-disposable masks after each use and store in a clean box in a |
| | clean area |
| | - Wear respirators < 2 hrs/day |

Exposure Estimation

Workers exposure

Worker exposure for this scenario has been assessed using ECETOC TRA V2.0. In Chapter 10 the relationships between the Operational Conditions and safe uses (RCRs (inhalation) <1) are given.

Consumer exposure

Not relevant

Indirect exposure of humans via the environment

Not relevant.