

SCHEDA DI SICUREZZA

(redatta ai sensi del Regolamento (CE) n. 1907/2006); Regolamento (CE) n. 1272/2008; Regolamento (CE) n. 453/2010)

1. IDENTIFICAZIONE DELLA SOSTANZA E DELLA SOCIETA'

1.1 Identificatore del prodotto

Denominazione: ACIDO CLORIDRICO
Sinonimi: Acido muriatico
Nome IUPAC: Cloruro di Idrogeno
Numero CAS: 7647-01-0
Numero EC: 231-595-7
Numero di registrazione REACH: 01-2119484862-27-0114

1.2 Pertinenti usi identificati della sostanza o miscela e usi sconsigliati

Agente sgrassante, utilizzato per neutralizzare, per acidificare, nell'industria farmaceutica, nei processi alimentari, nell'industria metallurgica, agente flocculante, agente detergente anche nell'industria tessile, agente di regolazione del pH.

Usi sconsigliati: tutti quelli che comportano formazione di aerosol ed esposizione di personale senza gli adeguati dispositivi di protezione.

1.3 Informazioni sul fornitore della scheda di dati di sicurezza

1.4 Numero telefonico di emergenza

+39 (0) 554277238 (Centro Antiveleni Azienda Ospedaliera Careggi Firenze)
+39 (0) 266101029 (Centro Antiveleni Ospedale Niguarda Milano)
+39 (0) 63054343 (Centro Antiveleni Policlinico "Gemelli" Roma)
+39 (0) 817472870 (Centro Antiveleni Azienda Ospedaliera Cardarelli Napoli)

2. IDENTIFICAZIONE DEI PERICOLI

2.1 Classificazione della sostanza:

classificazione a norma della direttiva 67/548/CEE (direttiva DSD)

C, R34 – Xi, R37

classificazione a norma del Regolamento 1272/2008 (CLP)

STOT SE 3, H335: Può irritare le vie respiratorie

Skin Corr. 1B, H314: Provoca gravi ustioni cutanee e gravi lesioni oculari

Per il testo completo delle classificazioni e delle frasi di rischio fare riferimento alla sezione 16 della presente scheda dati di sicurezza.

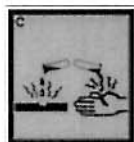
2.2. Elementi dell'etichetta

Nome: *ACIDO CLORIDRICO*

Contiene: *Acido cloridrico*

Etichettatura del prodotto secondo la direttiva 67/548/CEE (direttiva DSD)

Pittogramma di pericolo



Corrosivo

Frasi di rischio:

R34 Provoca ustioni

R37 Irritante per le vie respiratorie

Consigli di prudenza:

S1/2 Conservare sotto chiave e fuori dalla portata dei bambini

S26 In caso di contatto con gli occhi, lavare immediatamente ed abbondantemente con acqua e consultare un medico.

S45 In caso di incidente o di malessere consultare immediatamente il medico (se possibile mostrargli l'etichetta)

Etichettatura del prodotto secondo il Regolamento (CE) n. 1272/2008 CLP (EU-GHS)

Pittogramma di pericolo

Avvertenza: Attenzione



GHS 07: Tossicità specifica per organi bersaglio - esposizione singola

Avvertenza: Pericolo

GHS 05: Corrosivo, categoria di pericolo 1B

Indicazioni di pericolo:

H314: Provoca gravi ustioni cutanee e gravi lesioni oculari;

H335: Può irritare le vie respiratorie.

Consigli di prudenza:Consiglio di prudenza – Conservazione

P405 Conservare sotto chiave

Consiglio di prudenza – Reazione

P312 In caso di malessere, contattare un Centro Antiveneni o un medico

Consiglio di prudenza - Reazione

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

2.3. Altri pericoliRischi per l'uomo

A contatto con gli occhi provoca irritazioni, congiuntiviti, necrosi corneale. In casi gravi, lesioni irreversibili; a contatto con la pelle provoca ustioni; i vapori possono causare dermatiti.

L'ingestione può causare ulcerazioni delle mucose dell'apparato digerente, salivazione, nausea, vomito sanguigno, febbre diarrea, perforazione intestinale.

L'inalazione di vapori può causare forti irritazioni del tratto superiore dell'apparato respiratorio, fino alla polmonite od all'edema polmonare acuto.

Reagisce violentemente con le basi ed è corrosiva. Reagisce violentemente con ossidanti formando gas tossici (cloro). In presenza di acqua attacca molti metalli formando gas combustibili.

Rischi per l'ambiente

Può causare variazioni di pH con danni localizzati all'ambiente ed agli esseri viventi.

3. COMPOSIZIONE / INFORMAZIONI SUGLI INGREDIENTI**3.1. Sostanza**

| Sostanza | CAS N. | EC N. (Einecs o Elines) | Index N. | Concentr. % | Simbolo | Classificazione |
|----------------------------------|-----------|----------------------------|--------------|----------------|---------------------------|---|
| Acido cloridrico in soluzione | 7647-01-0 | 231-595-7 | 017-002-01-X | 32-37% | C, Xi GHS 07 GHS 05 | 67/548/CEE: C, R34 - Xi, R37 1272/2008: STOT SE 3, H335 - Skin Corr. 1B, H314 |
| Acqua | 7732-18-5 | 213-791-2 | | 63-68% | | |

Non sono presenti ingredienti addizionali che, nelle conoscenze attuali del fornitore e nelle concentrazioni applicabili, siano classificati come nocivi alla salute o all'ambiente, rispondano ai criteri PBT o vPvB, o ai quali sia stato assegnato un limite di esposizione professionale e che debbano quindi essere riportati in questa sezione.

Per il testo completo delle frasi R vedere sezione 16.

4. MISURE DI PRIMO SOCCORSO**4.1. Descrizione delle misure di primo soccorso**

- **Inalazione:** allontanare l'infortunato dall'ambiente contaminato e portarlo all'aria aperta tenendolo al riposo e al caldo. Se si arresta il respiro praticare la respirazione artificiale. Chiamare un medico.
- **Contatto con la pelle:** rimuovere gli indumenti contaminati e lavare la zona cutanea interessata con abbondante acqua e successivamente con una soluzione di bicarbonato di sodio al 3%.
- **Contatto con gli occhi:** lavare abbondantemente con acqua per almeno 15 minuti e successivamente con soluzione acquosa di bicarbonato di sodio al 3%. Chiamare il medico qualora persistano i sintomi.
- **Ingestione:** contattare immediatamente un medico. Non provocare il vomito, bere molta acqua per diluire la soluzione gastrica. Non somministrare liquidi se la persona è incosciente. In caso di ingestione sono possibili ulcerazioni dalla bocca allo stomaco, la deglutizione può essere difficoltosa, il polso può essere debole e frequente, la respirazione dovrà essere aiutata.

4.2. Principali sintomi ed effetti, sia acuti che ritardati

In caso di ingestione sono possibili ulcerazioni. Possibili ulcerazioni alla pelle in caso di contatto.

4.3. Indicazione dell'eventuale necessità di consultare immediatamente un medico oppure di trattamenti speciali

In caso d'incidente o malessere consultare immediatamente un medico (se possibile mostrare le istruzioni per l'uso o la scheda di sicurezza).

5. MISURE ANTINCENDIO

Il prodotto non è combustibile ma può essere coinvolto in un incendio.

5.1. Mezzi di estinzione

- **Idonei mezzi di estinzione:** quando nell'incendio è implicato acido cloridrico, è consigliabile operare da sopravvento con acqua.
- **Mezzi di estinzione da non utilizzare:** possono essere impiegati tutti i mezzi, senza esclusione.
- **Speciali pericoli di esposizione (sostanza/preparato/gas prodotti/prodotti della combustione):** il riscaldamento può provocare lo sviluppo di cloro e gas pericolosi.

- **Speciali mezzi protettivi per il personale antincendio:** normale equipaggiamento per la protezione da calore, un autorespiratore autonomo a domanda di pressione o, se le circostanze lo richiedono, usare maschera a pieno facciale con filtro B+P3
- **Precauzioni durante l'incendio:** raffreddare con acqua i contenitori esposti al calore.

5.2. Pericoli speciali derivanti dalla sostanza

Può dare origine a fumi tossici. I vapori possono causare vertigine, svenimento o soffocamento.

5.3. Raccomandazioni per gli addetti all'estinzione degli incendi

Nessuna indicazione particolare, oltre all'adozione dell'equipaggiamento completo a disposizione degli addetti all'estinzione incendi.

6. MISURE IN CASO DI RILASCIO ACCIDENTALE

6.1 Precauzioni personali, dispositivi di protezione e procedure in caso di emergenza

Indossare la protezione completa per aggressioni acide: tuta con cappuccio, stivali, guanti ed occhiali per protezioni chimiche o visiera. Proteggere le vie respiratorie con maschera a pieno facciale con filtro per vapori acidi oppure, quando le circostanze lo richiedono, usare l'autoprotettore. Non usare lenti a contatto, tenersi sopravento. Ventilare adeguatamente la zona ed abbattere i vapori con acqua nebulizzata in abbondanza.

6.2 Precauzioni ambientali

Circoscrivere l'area per evitare la contaminazione di corsi d'acqua e falde acquifere. I vapori possono determinare un'atmosfera corrosiva.

6.3 Metodi e materiali per il contenimento e per la bonifica

Raccogliere le perdite ed assorbire il resto del prodotto con materiale appropriato. Se fosse necessario bonificare la zona, coprire la superficie contaminata con calce spenta o carbonato di potassio o pietrisco calcareo o polvere di marmo. Raccogliere il rifiuto in adatti contenitori chiusi, in plastica o ferro rivestito in gomma; non utilizzare contenitori metallici.

6.4 Riferimenti ad altre sezioni

Per ulteriori informazioni vedi anche sezioni 8 e 13.

7. MANIPOLAZIONE E IMMACAZZINAMENTO

7.1. Precauzioni per la manipolazione sicura

Manipolare il prodotto in locali ben areati e ventilati, se necessario utilizzare mezzi meccanici di aspirazione/ventilazione. Proteggere sempre il volto e le mani. Quando le circostanze lo richiedono di indossare la protezione completa per aggressioni acide (tuta con cappuccio, scarpe antiacide, guanti, occhiali o visiera) e di prevedere docce di emergenza e fontanelle lava occhi.

7.2. Condizioni per l'immagazzinamento sicuro, comprese eventuali incompatibilità

Tenere separato da basi forti, ipocloriti e solfiti. Altamente corrosivo per la maggior parte dei metalli. Reagisce con alcuni metalli liberando idrogeno. L'acido cloridrico attacca alcuni tipi di gomma e di plastica dei rivestimenti. Tenere i contenitori ermeticamente chiusi al buio in un luogo fresco e ben ventilato. Materiali idonei allo stoccaggio: acciaio al carbonio opportunamente rivestito con alcuni tipi di gomma od ebanite, serbatoi in vetroresina con idoneo liner, serbatoi o fusti in PVC.

7.3. Usi finali specifici

Nessun uso particolare.

8. CONTROLLO DELL'ESPOSIZIONE/PROTEZIONE INDIVIDUALE

8.1. Parametri di controllo

Non sono stabiliti valori di esposizione per i vari componenti presenti nel preparato.

Sono riportati di seguito i limiti di esposizione per il cloro, che potrebbe svilupparsi dal preparato in caso di anomalia.

Acido cloridrico: 8 ore: 5 ppm (DM 26/02/04)

Breve Termine: 10 ppm(DM 26/02/04)

8.2. Controlli dell'esposizione

Assicurare una buona ventilazione. Mantenere l'ambiente pulito per evitare lo sviluppo di vapori acidi. Prima delle pause ed al termine dei lavori lavare le mani. Conservare lontano da alimenti o mangimi o da bevande.

- **Protezione respiratoria:** quando le circostanze lo richiedono, proteggere le vie respiratorie con maschera a pieno facciale con filtro per vapori acidi, oppure indossare l'autorespiratore.
- **Protezione delle mani:** usare guanti protettivi resistenti agli agenti chimici.
- **Protezione degli occhi:** occhiali di protezione ermetici con protezione laterale e protezione facciale idonea ai rischi chimici.
- **Protezione della pelle:** indossare indumenti a protezione completa della pelle e quando è necessario protezione completa contro aggressioni chimiche.

Precauzioni igieniche generali: lavarsi energicamente le mani dopo la manipolazione e prima di mangiare, bere o fumare.

Controllo dell'esposizione ambientale: fare riferimento alla specifica normativa per la protezione dell'ambiente (aria, acqua, suolo e rifiuti).

9. PROPRIETA' FISICHE E CHIMICHE**9.1. Informazioni sulle proprietà fisiche e chimiche fondamentali**

| | | | |
|---------------------------------|---|--|----------------------------------|
| <i>Aspetto</i> | liquido fumante da incolore a giallognolo | <i>Limiti infiammabilità</i> | Non applicabile |
| <i>Odore</i> | pungente ed irritante | <i>Pressione vapore</i> | |
| <i>pH</i> | altamente acido | <i>Densità liquido</i> | |
| <i>Temp. inizio ebollizione</i> | 50.5°C per HCl al 38% 104°C per HCl al 25% 108.6°C (20.22% HCl:azeotropo) | <i>Densità vapori</i> | |
| <i>Temperatura di fusione</i> | | <i>Viscosità</i> | Non determinata |
| <i>Punto infiammabilità</i> | Non infiammabile | <i>Solubilità</i> | in acqua completamente miscibile |
| <i>Autoinfiammabilità</i> | Non infiammabile | <i>Coefficiente ripartiz. (n-ottanolo)/(acqua)</i> | - |
| <i>Densità relativa</i> | 1.12 a 1.19 g/cm ³ | <i>Peso molecolare</i> | 36.45 |

9.2. Altre informazioni

Nessuna informazione.

10. STABILITA' E REATTIVITA'**10.1. Reattività**

Il prodotto è reattivo.

10.2. Stabilità chimica

Il prodotto non è stabile.

10.3. Possibilità di reazioni pericolose

Può reagire pericolosamente con alcali (soluzioni alcaline) o ammine in massa.

10.4. Condizioni da evitare

Per riscaldamento si sviluppano vapori di HCl.

10.5. Materiali incompatibili

Tenere separato da basi forti, ipocloriti (sviluppano cloro) e solfiti (sviluppano idrogeno solforato). Altamente corrosivo per la maggior parte dei metalli. reagisce con alcuni metalli liberando idrogeno.

10.6. Prodotti di decomposizione pericolosi

Vapori di acido cloridrico.

11. INFORMAZIONI TOSSICOLOGICHE**11.1. Informazioni sugli effetti tossicologici**

Non sono disponibili dati tossicologici sul preparato in quanto tale. Si tenga, quindi, presente la concentrazione delle singole sostanze al fine di valutare gli effetti tossicologici derivanti dall'esposizione al preparato.

- **Vie di penetrazione:** inalazione, ingestione, contatto con la pelle.
- **Sensibilizzazione:** non sembrano ipotizzabili effetti di sensibilizzazione.
- **Inalazione:** l'inalazione di aerosol può causare irritazione alle vie respiratorie superiori e danni polmonari.
- **Ingestione:** mediamente tossico. Effetti sistemici derivanti dall'ingestione sono sonnolenza, pressione bassa, nausea o vomito. L'ingestione causa lesioni all'apparato digestivo e più raramente lesioni polmonari.
- **Contatto con gli occhi:** azione corrosiva al contatto con gli occhi e può causare gravi ustioni e profonde ulcerazioni che possono lasciare cicatrici. La gravità delle lesioni dipende dalla concentrazione del prodotto, dal tempo di contatto e dalla temperatura.
- **Contatto con la pelle:** azione corrosiva al contatto con la pelle e può causare gravi ustioni e profonde ulcerazioni che possono lasciare cicatrici. La gravità delle lesioni dipende dalla concentrazione del prodotto, dal tempo di contatto e dalla temperatura.
- **Cancerogenesi:** sono riportati dati di cancerogenità per i sali idrati.
- **Mutagenesi:** sono riportati in letteratura dati di mutagenicità. La concentrazione che può produrre effetti mutageni è fortemente più alta della concentrazione usata per la disinfezione.
- **Effetti Riproduzione:** riferite evidenze sperimentali.

DATI ED INFORMAZIONI TOSSICOLOGICHE SUI PRINCIPALI COMPONENTI**Acido cloridrico**

| | |
|--|-----------------------|
| LCLo (inalazione uomo) (HCl soluzione): | 1300 ppm/30 min (SAX) |
| LCLo (inalazione uomo) (HCl soluzione): | 3000 ppm/5 min (SAX) |
| DL50 (orale coniglio) (HCl soluzione): | 900 mg/kg (SAX) |
| LC50 (inalazione ratto) (HCl soluzione): | 3124 ppm/1h (SAX) |
| LC50 (inalazione topo) (HCl soluzione): | 1108 ppm/1h (SAX) |
| LC50 (inalazione ratto) (HCl anidro): | 4701 ppm/30 min (SAX) |
| LC50 (inalazione topo) (HCl anidro): | 2644 ppm/30 min (SAX) |
| LC50 (inalazione ratto) (HCl aerosol): | 5666 ppm/30 min (SAX) |
| LC50 (inalazione topo) (HCl aerosol): | 2142 ppm/30 min (SAX) |

12. INFORMAZIONI ECOLOGICHE**12.1. Tossicità**

Il preparato è classificato pericoloso per l'ambiente.

Utilizzare secondo le buone pratiche lavorative, evitando di disperdere il prodotto nell'ambiente.

Tossicità acquatica: modifica del pH con danni alla vita acquatica

12.2. Persistenza e degradabilità

Sensibile alla luce con decomposizione. Non persistente.

12.3. Potenziale di bioaccumulo

Non bioaccumulabile.

12.4. Mobilità nel suolo

Dati non disponibili

12.5. Risultati della valutazione PBT e vPvB

Non applicabile.

12.6. Altri effetti avversi

Può causare variazioni localizzate del pH.

13. CONSIDERAZIONI SULLO SMALTIMENTO**13.1. Metodi di trattamento dei rifiuti**

Provvedere finché possibile al recupero del prodotto e consegnarlo all'utilizzatore. Altrimenti con l'osservanza delle disposizioni legislative, avviare a discarica autorizzata. Il cloro attivo può essere distrutto con agenti a basso potere riducente (bisolfito di sodio); la fine della reazione può essere controllata con cartina all'amido iodurato. Il trattamento di neutralizzazione (pH 6-8) può essere fatto con acido solforico diluito aggiunto lentamente e sotto agitazione.

Effettuare il lavaggio degli imballi e recuperare l'acqua, e se questo non fosse possibile, procedere al trattamento come da normativa vigente.

Rifiuto speciale (eventualmente assimilabile ai rifiuti solidi urbani) da smaltire in discarica autorizzata secondo la normativa vigente (D. Lgs 152/2006 ed s.m.i.).

14. INFORMAZIONI SUL TRASPORTO**14.1. Numero ONU**

1789

14.2. Nome di spedizione dell'ONU

Acido cloridrico

14.3. Classi di pericolo connesso al trasporto

8

14.4. Gruppo d'imballaggio

II

14.5. Pericoli per l'ambiente

Sostanza non classificata pericolosa per l'ambiente.

14.6. Precauzioni speciali per gli utilizzatori

Vietato il transito nelle gallerie della categoria E.

14.7. Trasporto di rinfuse secondo l'allegato II di MARPOL 73/78 ed il codice IBC

Non applicabile

15. INFORMAZIONI SULLA REGOLAMENTAZIONE**15.1 Norme e legislazione su salute, sicurezza e ambiente specifiche per la sostanza**

- **Controllo dei pericoli di incidenti rilevanti connessi con determinate sostanze pericolose (D.Lgs. Governo 334/1999):** figura all'interno dell'ALLEGATO I - ELENCO DELLE SOSTANZE, MISCELE E PREPARATI PERICOLOSI PER L'APPLICAZIONE DELL'ARTICOLO 2.
- **Decreto Legislativo 16/09/2009 n. 1005 "sulle sostanze che riducono lo strato di ozono":** non applicabile;
- **Regolamento CEE/UE n° 1907/2006 - REACH":** rientra tra le sostanze dell'Allegato 17, al punto 3 della *Colonna 1*, ma non risulta applicabile alcuna restrizione di cui alla *Colonna 2*.
- **Regolamento 689/2008 "Esportazione ed importazione di sostanze chimiche pericolose":** non applicabile;
- **Regolamento CEE/UE n° 842 del 17/05/2006 "su taluni gas fluorurati ad effetto serra":** non applicabile;

- **D.Lgs. Governo n° 152 del 03/04/2006:** non applicabile;
- **Regolamento CEE/UE n° 850 del 29/04/2004 “Relativo agli inquinanti organici persistenti e che modifica la direttiva 79/117/CEE”:** non applicabile;
- **Regolamento CE n. 648/2004 “relativo ai detergenti”:** non applicabile;
- **Decreto Legislativo 21 maggio 2004, n. 169 "Attuazione della direttiva 2002/46/CE relativa agli integratori alimentari":** non applicabile;
- **Immissione sul mercato di biocidi(D.Lgs. Governo 174/2000) “in materia di immissione sul mercato di biocidi”:** non applicabile;

15.2 Valutazione della sicurezza chimica

È stata effettuata a norma dell'art. 14 “Relazione sulla sicurezza chimica e obbligo di applicare e raccomandare misure di riduzione dei rischi” del Regolamento (CE) n. 1907/2006, “REACH”, una valutazione della sicurezza chimica ed è stata compilata una relazione sulla sicurezza chimica in quanto sostanza soggetta a registrazione (quantitativi superiori a 10 tonnellate all'anno). La relazione sulla sicurezza chimica documenta la valutazione della sicurezza chimica effettuata a norma dei paragrafi da 2 a 7 dell'art. 14 e dell'allegato I del Regolamento (CE) n. 1907/2006, “REACH”.

16. ALTRE INFORMAZIONI

Testi integrali delle frasi di rischio R:

R34 Provoca ustioni

R37 Irritante per le vie respiratorie

Testi integrali dei consigli di prudenza S:

S1/2 Conservare sotto chiave e fuori dalla portata dei bambini

S26 In caso di contatto con gli occhi, lavare immediatamente ed abbondantemente con acqua e consultare un medico.

S45 In caso di incidente o di malessere consultare immediatamente il medico (se possibile mostrargli l'etichetta)

Testi integrali delle classificazioni (DSD/DPD):

C, Corrosivo

Xi, Irritante

Testi integrali delle indicazioni di pericolo H:

H314: Provoca gravi ustioni cutanee e gravi lesioni oculari;

H335: Può irritare le vie respiratorie.

Testi integrali dei consigli di prudenza P:

Consiglio di prudenza – Conservazione

P405 Conservare sotto chiave

Consiglio di prudenza – Reazione

P312 In caso di malessere, contattare un Centro Antiveleni o un medico

Consiglio di prudenza - Reazione

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

Abbreviazioni e acronimi

PBT Persistente Bioaccumulabile Tossico

vPvB molto (very) Persistente molto (very) Bioaccumulabile

CLP Classificazione, Etichettatura e Imballaggio (Regolamento (CE) N. 1272/2008)

DSD Direttiva Sostanze Pericolose (Direttiva 67/548/CEE)

REACH Registration Evaluation and Authorisation of Chemicals (Regolamento (CE) N. 1907/2006)

**ACIDO CLORIDRICO
IN SOLUZIONE**

SDS-03

DL50 "Lethal Dose 50", dose letale per il 50% della popolazione campione di cavia sottoposte.
LC50 (24h) "Lethal Concentration 50", concentrazione letale per il 50% della popolazione campione di cavia sottoposte.

I dati e le informazioni contenuti nella presente scheda sono basati sulle conoscenze dirette e/o desunte dalla letteratura specifica disponibile alla data di compilazione. Il loro carattere è però informativo e non costituiscono garanzia.

L'uso del prodotto avviene sotto il controllo dell'utente ed è perciò sua responsabilità adeguarsi alle condizioni di corretto esercizio indicate nella scheda. Non si assumono responsabilità per usi impropri.

Modifiche apportate rispetto alla Revisione n° 04 del 15 settembre 2009

Aggiornamento delle intestazioni dei capitoli e del loro contenuto secondo gli ultimi aggiornamenti ed integrazioni dei Regolamenti (CE) n.: 1907/2006 (REACH), 1272/2008 (CLP), 453/2010 (modifica al Regolamento REACH).

Bibliografia

- 1) Regolamento (CE) n. 453/2010 recante modifica 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. 1907/2006 (Registrazione, valutazione, autorizzazione e restrizione delle sostanze chimiche – REACH)
- 3) Regolamento (CE) N°1272/2008, CLP e successive modifiche
- 4) DM 03/02/1997 n. 52 e DM 28/04/1997 e successivi aggiornamenti (Classificazione, imballaggio ed etichettatura delle sostanze pericolose)
- 5) D.Lgs. n. 65 del 14/3/2003 e successivi aggiornamenti (Classificazione, imballaggio ed etichettatura dei preparati pericolosi)
- 6) Lista valori limite di esposizione comunitari
- 7) Normative per il trasporto di merce pericolosa
- 8) Sax's - Dangerous Properties of Industrial Materials
- 9) Bretherick's - Handbook of Reactive Chemical Hazards
- 10) Perry's - Chemical Engineer's Handbook
- 11) The dictionary of Substances and their Effects (DOSE)
- 12) Handbook of environmental data on organic chemicals (Verschuieren)
- 13) Organic solvent - Physical properties and methods of purification (Riddick)
- 14) ACGIH - Limiti di esposizione
- 15) NIOSH - Pocket guide to chemical hazards
- 16) RTECS - The registry of toxic effects of chemical substances
- 17) Database ecotossicologico sostanze chimiche DESC

Allegato – Scenari di esposizione estratti dal CSR*ES 1: Manufacture, Recycling and Distribution of Hydrochloric acid*

9.1.1 Exposure scenario

| Worker – ES1 – Hydrochloric acid | | |
|------------------------------------|--|---------------|
| Section 1 | Exposure Scenario Title | |
| Title | ES1 – Manufacture of Hydrochloric acid; CAS: 7647-01-0 | |
| Use Descriptor | Sector of Use: Industrial (SU8, SU9) | |
| | Process Categories: PROC1: Use in a closed process, no likelihood of exposure (PROC1 is also applicable to the manufacture of HCl gas for the production of hydrochloric acid by | |
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| | <i>absorption into water under SCC.)</i> 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 (mixtures) |
| Processes, tasks, activities covered | Manufacture of Substance. Includes recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container). |
| ES Exposure Criteria | SCOEL: - 8 mg/m ³ - 8 hr. TWA - 15 mg/m ³ - 15 min. TWA |
| Section 2 | Operational conditions and risk management measures |
| Section 2.1 | Control of worker exposure |
| Product characteristics | |
| Physical form of product | Liquid, vapour pressure 0.5 – 10 kPa [OC4]. |
| Concentration of substance in product | Covers percentage substance in the product up to 40% (unless stated differently) [G13]. |
| 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]. |
| Other Operational Conditions affecting worker exposure | Assumes use at not >20 °C above ambient [G15] It should be noted that the process temperature may be higher, but the substance temperature is down to ambient at worker contact points. Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposures [E119] |
| Contributing Scenarios | Risk Management Measures |
| Due to the corrosive properties of the substance, always wear suitable protective clothing, eye and skin protection | |
| PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. | Handle substance within a closed system [E47]. Clear transfer lines prior to de-coupling [E39] |
| PROC2: General exposures [CS1]. Process sampling [CS2]. Continuous process [CS54]. | Handle substance within a closed system [E47]. Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. Clear transfer lines prior to decoupling [E39] |
| PROC3: General exposures [CS1]. Remanufacture of reject articles [CS19]. Cleaning [CS47]. Use in contained batch processes [CS37]. With sample collection [CS56]. | Handle substance within a closed system [E47]. Drain down and flush system prior to equipment break-in or maintenance [E55]. Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. Clear transfer lines prior to decoupling [E39] Wear suitable gloves tested to EN374 [PPE15]. |

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| PROC4: Drum/batch transfers [CS8] Bulk transfers [CS14]. General exposures (open systems) [CS16]. Cleaning [CS47]. Remanufacture of reject articles [CS19]. With sample collection [CS56]. | Use bulk or semi-bulk handling systems [E43]. <u>Or</u> Use drum pumps [E53]. Drain down and flush system prior to equipment break-in or maintenance [E55]. Provide extract ventilation to points where emissions occur (90% efficiency) [E54]. |
| PROC8a: Bulk transfers [CS14]. Process sampling [CS2]. Drum/batch transfers [CS8]. General exposures (open systems) [CS16]. Equipment cleaning and maintenance [CS39]. Transport [CS58]. Internal [CS59]. | Handle substance within a predominantly closed system provided with extract ventilation (90% efficiency) [E49]. <u>Or</u> Provide extract ventilation to points where emissions occur (90% efficiency) [E54] |
| PROC8b: Bulk transfers [CS14]. Process sampling [CS2]. Equipment cleaning and maintenance [CS39]. Transport [CS58]. Internal [CS59]. Drum/batch transfers [CS8]. General exposures (open systems) [CS16]. | Handle substance within a predominantly closed system provided with extract ventilation (90% efficiency) [E49]. <u>Or</u> Provide extract ventilation to points where emissions occur (90% efficiency) [E54] |
| PROC9: Drum and small package filling [CS6]. Drum/batch transfers [CS8]. Equipment cleaning and maintenance [CS39]. | Handle substance within a predominantly closed system provided with extract ventilation (90% efficiency) [E49]. Fill containers/cans at dedicated fill points supplied with local extract ventilation (90% efficiency) [E51] |
| PROC15: Laboratory activities [CS36]. | Handle in a fume cupboard or under extract ventilation (80% efficiency) [E83]. <u>Or</u> Carry out in a vented booth or extracted enclosure (80% efficiency) [E57] Avoid carrying out operation for more than 4 hours [OC12] |
| <u>Or:</u> | Avoid carrying out operation for more than 1 hour [OC11] |
| PROC15: Laboratory activities [CS36] | |
| Section 2.2 | Control of environmental exposure |
| Product characteristics | Liquid, vapor pressure 0.5 – 10 kPa [OC4]. |
| Amounts used | NR |
| Frequency and duration of use | 360 days per year |
| Other Operational Conditions of use affecting environmental exposure | All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments [W1] |
| Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil | Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases [W2] Prevent leaks and prevent soil / water pollution caused by leaks [S4] |
| Organizational measures to prevent/limit release from site | Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic released. [W2] |

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| Conditions and measures related to municipal sewage treatment plant | All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments [W1] |
| Conditions and measures related to external treatment of waste for disposal | All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments [W1] |
| Conditions and measures related to external recovery of waste | NR |
| Other environmental control measures additional to above | NR |
| Section 3 | Exposure Estimation |
| 3.1. Health | |
| PROC1: Safe use for exposures >4 hours is safe, also without the use of LEV or personal breathing protection. | |
| PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9: Exposure safe for >4 hrs, provided that LEV (90% efficiency) is used. | |
| PROC15: exposures during 15 min-1 hr are safe, also without the use of LEV; For exposures >1 hr, LEV (80% efficiency) must be used. | |
| 3.2. Environment | |
| Substance will disassociate upon contact with water, the only effect is the pH effect, therefore after passing through the STP exposure is considered negligible and with no risk. | |
| Section 4 | Guidance to check compliance with the Exposure Scenario |
| 4.1. Health | |
| Worker exposure has been evaluated using ECETOC TRA V2.0 | |
| 4.1.1 Health – Uses advised against | |
| - Any use involving aerosol formation or vapor release in excess of 10 ppm where workers are exposed without respiratory protection | |
| - Any use carrying a risk of splashes to eyes / skin where workers are exposed without eye / skin protection | |
| 4.2. Environment | |
| 4.2.1 Environment – Uses advised against | |
| Any uses involving direct releases to air / surface water that cannot be buffered by natural systems to maintain pH at the naturally occurring level. | |
| Section 5 | Additional good practice advice beyond the REACH Chemical Safety Assessment |
| 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 | |
| Process sampling [CS2]. | Wear suitable gloves tested to EN374 [PPE15] |
| Equipment cleaning and maintenance [CS39] | Drain down and flush system prior to equipment break-in or maintenance [E55]. Clear spills immediately [C&H13]. |
| Control of environmental exposure | |
| Equipment cleaning and maintenance [CS39] | Retain drain downs in sealed storage pending disposal or for subsequent recycle [ENVT4]. |

9.1.2 Exposure estimation

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.

In Section 3.1 of the scenario above, the Safe Uses, and conditions under which, are given.

Not relevant

9.1.2.3 Indirect exposure of humans via the environment

Not relevant.

*ES 2: Use as Intermediate by Industry***9.2.1 Exposure scenario**

| WORKER – ES2 – Hydrochloric acid | |
|--|--|
| Section 1 | Exposure Scenario Title |
| Title | ES2 - Industrial use of Hydrochloric acid as Intermediate; CAS: 7647-01-0 |
| Use Descriptor | Sector of Use: Industrial (SU3, SU4, SU8, SU9, SU11, SU12, SU13, SU19) Process Categories: PROC1: Use in a closed process, no likelihood of exposure (PROC1 is also applicable to the use of HCl gas as intermediate under SCC.) 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 PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC15: Use as a laboratory reagent Environmental Release Categories: ERC6A: Industrial use, resulting in manufacture of another substance (use of intermediates) |
| Processes, tasks, activities covered | Use as Intermediate by Industry; -Sampling -Material transfers |
| ES Exposure Criteria | SCOEL: - 8 mg/m ³ - 8 hr. TWA - 15 mg/m ³ - 15 min. TWA |
| Section 2 | Operational conditions and risk management measures |
| Section 2.1 | Control of worker exposure |
| Product characteristics | |
| Physical form of product | Liquid, vapour pressure 0.5 – 10 kPa [OC4]. |
| Concentration of substance in product | Covers percentage substance in the product up to 40 % (unless stated differently) [G13]. |
| 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] |
| Other Operational Conditions affecting worker exposure | Assumes use at not > 20°C above ambient [G15]; It should be noted that the process temperature may be higher, but the substance temperature is down to ambient at worker contact points. Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposures [E119] |
| Contributing Scenarios | Risk Management Measures |
| Due to the corrosive properties of the substance, always wear suitable protective clothing, eye and skin protection | |
| PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. | Handle substance within a closed system [E47]. Clear transfer lines prior to decoupling [E39] |

| | |
|--|--|
| PROC2: General exposures [CS1]. Process sampling [CS2] Continuous process [CS54]. | Handle substance within a closed system [E47]. Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. Clear transfer lines prior to decoupling [E39] |
| PROC3: General exposures [CS1]. Remanufacture of reject articles [CS19]. Cleaning [CS47]. Use in contained batch processes [CS37]. With sample collection [CS56]. | Handle substance within a closed system [E47]. Drain down and flush system prior to equipment break-in or maintenance [E55]. Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. Clear transfer lines prior to decoupling [E39] Wear suitable gloves tested to EN374 [PPE15]. |
| PROC4: Drum/batch transfers [CS8] Bulk transfers [CS14]. General exposures (open systems) [CS16]. Cleaning [CS47]. Remanufacture of reject articles [CS19]. With sample collection [CS56]. | Use bulk or semi-bulk handling systems [E43]. <u>or</u> Use drum pumps [E53]. Drain down and flush system prior to equipment break-in or maintenance [E55]. Provide extract ventilation to points where emissions occur (90% efficiency) [E54]. |
| PROC9: Drum and small package filling [CS6]. Drum/batch transfers [CS8]. Equipment cleaning and maintenance [CS39]. | Handle substance within a predominantly closed system provided with extract ventilation (90% efficiency) [E49]. <u>or</u> Fill containers/cans at dedicated fill points supplied with local extract ventilation [E51]. |
| PROC15: Laboratory activities [CS36]. | Handle in a fume cupboard or under extract ventilation (80% efficiency) [E83]. <u>Or</u> Carry out in a vented booth or extracted enclosure (80% efficiency) [E57] Avoid carrying out operation for more than 4 hours [OC12] |
| <u>Or:</u> | Avoid carrying out operation for more than 1 hour [OC11] |
| PROC15: Laboratory activities [CS36] | |
| Section 2.2 | Control of environmental exposure |
| Product characteristics | Liquid, vapor pressure 0.5 - 10 kPa [OC4]. |
| Amounts used | NR |
| Frequency and duration of use | 360 days per year |
| Other Operational Conditions of use affecting environmental exposure | All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments [W1] |
| Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil | Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases [W2] Prevent leaks and prevent soil / water pollution caused by leaks [S4] |
| Organisation measures to prevent/limit release from site | Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic released. [W2] |
| Conditions and measures related to municipal sewage treatment plant | All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments [W1] |
| Conditions and measures related to external treatment of waste for disposal | All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments [W1] |
| Conditions and measures related to external recovery of waste | NR |

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| Other environmental control measures additional to above | NR |
| Section 3 | Exposure Estimation |
| 3.1. Health | |
| PROC1: safe use for activities >4 hrs, also without the use of LEV or breathing equipment. | |
| PROC2, PROC3, PROC4, PROC9: safe use for activities >4 hrs, provided that LEV (90% efficiency) is used. | |
| PROC15: safe use for activities 15 min – 1 hr, also without LEV; For activities >1 hr, LEV (80% efficiency) must be used. | |
| 3.2. Environment | |
| Substance will disassociate upon contact with water, the only effect is the pH effect, therefore after passing through the STP exposure is considered negligible and with no risk | |
| Section 4 | Guidance to check compliance with the Exposure Scenario |
| 4.1. Health | |
| Worker exposure has been evaluated using ECETOC TRA V2.0 | |
| 4.1.1 Health – Uses advised against | |
| - Any use involving aerosol formation or vapor release in excess of 10 ppm where workers are exposed without respiratory protection | |
| - Any use carrying a risk of splashes to eyes / skin where workers are exposed without eye / skin protection | |
| 4.2. Environment | |
| 4.2.1 Environment – Uses advised against | |
| Any uses involving direct releases to air / surface water that cannot be buffered by natural systems to maintain pH at the naturally occurring level. | |
| Section 5 | Additional good practice advice beyond the REACH Chemical Safety Assessment |
| 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 | |
| Process sampling [CS2] | Wear suitable gloves tested to EN374 [PPE15] |
| Equipment cleaning and maintenance [CS39] | Drain down and flush system prior to equipment break-in or maintenance [E55]. Clear spills immediately [C&H13]. |
| Control of environmental exposure | |
| Selection of relevant RMM Core Phrases | Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system. |

9.2.2 Exposure estimation

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.

In Section 3.1 of the scenario above, the Safe Uses, and conditions under which, are given.

Not relevant

Not relevant.

ES 3: Formulation and (re-)packing of Hydrochloric acid and its formulations by Industry and by Professionals

9.3.1 Exposure Scenario

| Worker – ES3 – Hydrochloric acid | |
|--|--|
| Section 1 | Exposure Scenario Title |
| Title | Formulation & (Re)Packaging of Hydrochloric acid and its formulations by Industry & by Professionals; CAS: 7647-01-0 |
| Use Descriptor | 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 (mixtures) 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) Environmental Release Categories: ERC2: Formulation of preparations (mixtures) |
| Processes, tasks, activities covered | Formulation, blending, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, large and small scale packing, maintenance and associated laboratory activities. |
| ES Exposure Criteria | SCOEL: - 8 mg/m ³ - 8 hr. TWA - 15 mg/m ³ - 15 min. TWA |
| Section 2 | Operational conditions and risk management measures |
| Section 2.1 | Control of worker exposure |
| Product characteristics | |
| Physical form of product | Liquid, vapour pressure 0.5 – 10 kPa [OC4] for 40% HCl For activities under PROC5 : Liquid, <i>partial vapour pressures</i> (cf. ELECNRTL in Aspenplus (vs 2004.1)) : 20 °C : 22.1 Pa 30 °C : 51 Pa 40 °C : 112 Pa |
| Concentration of substance in product | Covers percentage substance in the product up to 20 % (unless stated differently) [G13]. |
| 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] |
| Other Operational Conditions affecting worker exposure | Some operations are carried out at elevated temperature (> 20°C above ambient temperature) [OC7].; Assumes a good basic standard of occupational hygiene is implemented [G1]. Ensure operatives are trained to minimize exposures [E1119] |
| Risk Management Measures [GT7] | |
| Due to the corrosive properties of the substance, always wear suitable protective clothing, eye and skin protection | |
| PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. | Handle substance within a closed system [E47]. Clear transfer lines prior to decoupling [E39] |

| | |
|--|--|
| PROC2: General exposures [CS1]. Process sampling [CS2]. Continuous process [CS54]. | Handle substance within a closed system [E47]. Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. Clear transfer lines prior to decoupling [E39]. |
| PROC3: General exposures [CS1]. Remanufacture of reject articles [CS19]. Cleaning [CS47]. Use in contained batch processes [CS37]. With sample collection [CS56]. | Handle substance within a closed system [E47]. Drain down and flush system prior to equipment break-in or maintenance [E55]. Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. Clear transfer lines prior to decoupling [E39]. Wear suitable gloves tested to EN374 [PPE15]. |
| PROC4: Drum/batch transfers [CS8]. Bulk transfers [CS14]. General exposures (open systems) [CS16]. Cleaning [CS47]. Remanufacture of reject articles [CS19]. With sample collection [CS56]. | Use bulk or semi-bulk handling systems [E43]. <u>or</u> Use drum pumps [E53]. Drain down and flush system prior to equipment break-in or maintenance [E55]. Provide extract ventilation to points where emissions occur (90% efficiency) [E54]. |
| PROC5: Drum/batch transfers [CS8]. Bulk transfers [CS14]. General exposures (open systems) [CS16]. Mixing operations (open systems) [CS30]. Cleaning [CS47]. | Transfer materials directly to mixing vessels [E45]. Use drum pumps [E53]. If not available and pouring from container is necessary, use extra safeguards: spill containment, splash protection for skin and eyes, use respirator to prevent inhalation of vapors/aerosols. Drain down and flush system prior to equipment break-in or maintenance [E55]. |
| PROC8a: Bulk transfers [CS14]. Process sampling [CS2]. Drum/batch transfers [CS8]. General exposures (open systems) [CS16]. Equipment cleaning and maintenance [CS39]. Transport [CS58]. Internal [CS59]. | Handle substance within a predominantly closed system provided with extract ventilation (90% efficiency) [E49]. <u>or</u> Provide extract ventilation to points where emissions occur (90% efficiency) [E54]. |
| PROC8b: Bulk transfers [CS14]. Process sampling [CS2]. Equipment cleaning and maintenance [CS39]. Transport [CS58]. Internal [CS59]. Drum/batch transfers [CS8]. General exposures (open systems) [CS16]. | Handle substance within a predominantly closed system provided with extract ventilation (90% efficiency) [E49]. <u>or</u> Provide extract ventilation to points where emissions occur (90% efficiency) [E54]. |
| PROC9: Drum and small package filling [CS6]. Drum/batch transfers [CS8]. Equipment cleaning and maintenance [CS39]. | Handle substance within a predominantly closed system provided with extract ventilation (90% efficiency) [E49]. Fill containers/cans at dedicated fill points supplied with local extract ventilation (90% efficiency) [E51]. |
| Section 2.2 | Control of environmental exposure |
| Product characteristics | Liquid, vapor pressure 0.5 - 10 kPa [OC4]. |

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| Amounts used | NR |
| Frequency and duration of use | 360 days per year |
| Other Operational Conditions of use affecting environmental exposure | All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments [W1] |
| Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil | Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases [W2] Prevent leaks and prevent soil / water pollution caused by leaks [S4] |
| Organisation measures to prevent/limit release from site | Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic released. [W2] |
| Conditions and measures related to municipal sewage treatment plant | All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments [W1] |
| Conditions and measures related to external treatment of waste for disposal | All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments [W1] |
| Conditions and measures related to external recovery of waste | NR |
| Other environmental control measures additional to above | NR |
| Section 3 | Exposure Estimation |
| 3.1. Health | |
| PROC1: Safe use for activities >4 hrs, also without LEV or without breathing equipment. PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9: safe use for activities >4 hrs, provided that LEV (90% efficiency) is used. PROC5: uses are safe for activities >4 hrs, at operating temperatures of 20, 30 or 40 °C, without the use of LEV or breathing protection. | |
| 3.2. Environment | |
| Standard phrases. Ability to Include a web link. | |
| Section 4 | Guidance to check compliance with the Exposure Scenario |
| 4.1. Health | |
| Worker exposure has been evaluated using ECETOC TRA V2.0 | |
| 4.2. Environment | |
| Substance will disassociate upon contact with water, the only effect is the pH effect, therefore after passing through the STP exposure is considered negligible and with no risk | |
| Section 5 | Additional good practice advice beyond the REACH Chemical Safety Assessment |
| 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 | |
| Process sampling [CS2]. | Wear suitable gloves tested to EN374 [PPE15] |
| Equipment cleaning and maintenance [CS39] | Drain down and flush system prior to equipment break-in or maintenance [E55]. Clear spills immediately [C&H13]. |
| Control of environmental exposure | |

Selection of relevant RMM Core Phrases

Good practice RMM phrases may be incorporated in this section or consolidated into the main sections of the SDS, depending on the preference of the Registrant and functionality of the available e-SDS system.

9.3.2 Exposure estimation

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.

In Section 3.1 of the scenario above, the Safe Uses, and conditions under which, are given.

Not relevant

Not relevant.

ES4: Industrial use of Hydrochloric acid and formulations

9.4.1 Exposure Scenario

| Worker – ES4 – Hydrochloric acid | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------------|---|------|------|----|----|------|--|----|------|--|----|------|--|----|------|--|----|------|--|----|-----|--|----|-----|--|
| Section 1 | Exposure Scenario Title | | | | | | | | | | | | | | | | | | | | | | | | |
| Title | ES4 – Industrial Use of Hydrochloric acid and Formulations; CAS: 7647-01-0 | | | | | | | | | | | | | | | | | | | | | | | | |
| Use Descriptor | Sector of Use: Industrial (SU2a, SU2b, SU3, SU5, SU14, SU15, SU16) 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 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 PROC15: Use as a laboratory reagent PROC19: Hand-mixing with intimate contact and only PPE available Environmental Release Categories: ERC4: Industrial use of processing aids in processes and products, not becoming part of articles ERC6b: Industrial use of reactive processing aids | | | | | | | | | | | | | | | | | | | | | | | | |
| Processes, tasks, activities covered | Use of HCl & its Formulations by Industry | | | | | | | | | | | | | | | | | | | | | | | | |
| ES Exposure Criteria | SCOEL: - 8 mg/m³ – 8 hr. TWA - 15 mg/m³ – 15 min. TWA | | | | | | | | | | | | | | | | | | | | | | | | |
| Section 2 | Operational conditions and risk management measures | | | | | | | | | | | | | | | | | | | | | | | | |
| Section 2.1 | Control of worker exposure | | | | | | | | | | | | | | | | | | | | | | | | |
| Product characteristics | | | | | | | | | | | | | | | | | | | | | | | | | |
| Physical form of product | Liquid, vapor pressure 0.5 - 10 kPa [OC4]. PROC13: Partial vapor pressures over the bath with a 15% HCl solution are : <table><tr><td>T °C</td><td>pHCl</td><td>Pa</td></tr><tr><td>20</td><td>1.89</td><td></td></tr><tr><td>30</td><td>4.93</td><td></td></tr><tr><td>40</td><td>12.2</td><td></td></tr><tr><td>50</td><td>28.6</td><td></td></tr><tr><td>60</td><td>64.5</td><td></td></tr><tr><td>70</td><td>139</td><td></td></tr><tr><td>80</td><td>290</td><td></td></tr></table> | T °C | pHCl | Pa | 20 | 1.89 | | 30 | 4.93 | | 40 | 12.2 | | 50 | 28.6 | | 60 | 64.5 | | 70 | 139 | | 80 | 290 | |
| T °C | pHCl | Pa | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | 1.89 | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | 4.93 | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | 12.2 | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | 28.6 | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | 64.5 | | | | | | | | | | | | | | | | | | | | | | | | |
| 70 | 139 | | | | | | | | | | | | | | | | | | | | | | | | |
| 80 | 290 | | | | | | | | | | | | | | | | | | | | | | | | |

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|--|--|
| | 90 584 100 1140 (Cf. ELECNRTL in Aspenplus (vs. 2004.1)) |
| Concentration of substance in product | Covers percentage substance in the product up to 40 % (unless stated differently) [G13]. |
| 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] |
| 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 exposures [E119] Under PROC13, operating temperatures may differ from 20 – 30 – 40 – 50 – 60 – 70 – 80 – 90 – 100 °C |
| Contributing Scenarios | Risk Management Measures |
| Due to the corrosive properties of the substance, always wear suitable protective clothing, eye and skin protection | |
| PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. | Handle substance within a closed system [E47]. Clear transfer lines prior to decoupling [E39] |
| PROC2: General exposures [CS1]. Process sampling [CS2] Continuous process [CS54]. | Handle substance within a closed system [E47]. Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. Clear transfer lines prior to decoupling [E39] |
| PROC3: General exposures [CS1]. Remanufacture of reject articles [CS19]. Cleaning [CS47]. Use in contained batch processes [CS37]. With sample collection [CS56]. | Handle substance within a closed system [E47]. Drain down and flush system prior to equipment break-in or maintenance [E55]. Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. Clear transfer lines prior to decoupling [E39] Wear suitable gloves tested to EN374 [PPE15]. |
| PROC4: Drum/batch transfers [CS8] Bulk transfers [CS14]. General exposures (open systems) [CS16]. Cleaning [CS47]. Remanufacture of reject articles [CS19]. With sample collection [CS56]. | Use bulk or semi-bulk handling systems [E43]. or Use drum pumps [E53]. Drain down and flush system prior to equipment break-in or maintenance [E55]. Provide extract ventilation to points where emissions occur (90% efficiency) [E54]. |
| PROC9: Drum and small package filling [CS6]. Drum/batch transfers [CS8]. Equipment cleaning and maintenance [CS39]. | Handle substance within a predominantly closed system provided with extract ventilation (90% efficiency) [E49]. Fill containers/cans at dedicated fill points supplied with local extract ventilation (90% efficiency) [E51] |
| PROC10: Rolling, Brushing [CS51]. Equipment cleaning and maintenance [CS39]. | Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour) (90% efficiency) [E40]. Wear suitable gloves (tested to EN374) [PPE15] |
| PROC13: Dipping, immersion and pouring [CS4]. Treatment by dipping and pouring [CS35]. | Provide extract ventilation to material transfer points and other openings (90% efficiency) [E82] Carry out in a vented booth provided with laminar airflow [E59]. Automate activity where possible [AP16]. Allow time for product to drain from workpiece [E121]. Wear suitable gloves (tested to EN374) [PPE15]. |
| PROC15: Laboratory activities [CS36]. | Handle in a fume cupboard or under extract ventilation (80% efficiency) [E83]. Or Carry out in a vented booth or extracted enclosure (80% efficiency) [E57] Avoid carrying out operation for more than 4 hours [OC12] |

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|--|---|
| Or: | Avoid carrying out operation for more than 1 hour [OC11] |
| PROC15: Laboratory activities [CS36] | |
| PROC19: Mixing operations (open systems) [CS30]. Additive premixing [CS92] | Wear suitable gloves tested to EN374 [PPE15]. Wear a respirator conforming to EN140 Type A filter or better [PPE22] |
| Or: | Wear suitable gloves tested to EN374 [PPE15]. Avoid carrying out operation for more than 15 minutes [OC10] |
| Section 2.2 | Control of environmental exposure |
| Product characteristics | Liquid, vapor pressure 0.5 - 10 kPa [OC4]. |
| Amounts used | NR |
| Frequency and duration of use | 360 days per year |
| Other Operational Conditions of use affecting environmental exposure | All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments [W1] |
| Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil | Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases [W2] Prevent leaks and prevent soil / water pollution caused by leaks [S4] |
| Organisation measures to prevent/limit release from site | Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic released. [W2] |
| Conditions and measures related to municipal sewage treatment plant | All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments [W1] |
| Conditions and measures related to external treatment of waste for disposal | All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments [W1] |
| Conditions and measures related to external recovery of waste | NR |
| Other environmental control measures additional to above | NR |
| Section 3 | Exposure Estimation |
| 3.1. Health | |
| PROC1: Safe use for activities >4 hrs, also without LEV or breathing protection. PROC2, PROC3, PROC4, PROC9, PROC10: Safe use for activities >4 hrs, provided that LEV (90% efficiency) is used. PROC13: Safe use at all temperatures as mentioned above (2.1) provided that LEV (90% efficiency) is used. PROC15: Safe use for 15 min. – 1 hrs; if used >1 hr, LEV (80% efficiency) must be used. PROC19: safe use for >4 hrs: provided that breathing equipment (half mask) is used; or limit exposure to <15 min. | |
| 3.2. Environment | |
| Substance will disassociate upon contact with water, the only effect is the pH effect, therefore after passing through the STP exposure is considered negligible and with no risk | |
| Section 4 | Guidance to check compliance with the Exposure Scenario |
| 4.1. Health | |
| Worker exposure has been evaluated using ECETOC TRA V2.0 | |
| 4.2. Environment | Standard phrases |
| 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 | |
|---|---|
| Process sampling [CS2]. | Wear suitable gloves tested to EN374 [PPE15] |
| Equipment cleaning and maintenance [CS39] | Drain down and flush system prior to equipment break-in or maintenance [E55]. Clear spills immediately [C&H13]. |
| Control of environmental exposure | |
| | |

9.4.2 Exposure estimation**9.4.2.1 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.

In Section 3.1 of the scenario above, the Safe Uses, and conditions under which, are given.

9.4.2.2 Consumer exposure

Not relevant

9.4.2.3 Indirect exposure of humans via the environment

Not relevant.

ES 5: Professional use of Hydrochloric acid and Formulations**9.4.3 Exposure Scenario**

| Worker – ES5 – Hydrochloric acid | |
|--------------------------------------|---|
| Section 1 | Exposure Scenario Title |
| Title | ES5 – Professional Use of Hydrochloric acid and Formulations |
| Use Descriptor | Sector of Use: Industrial (SU20, SU22, SU23) 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 PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC15: Use as a laboratory reagent PROC19: Hand-mixing with intimate contact and only PPE available Environmental Release Categories: ERC4 Industrial use of processing aids in processes 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 ERC8e: Wide dispersive outdoor use of reactive substances in open systems |
| Processes, tasks, activities covered | Professional Use of Hydrochloric acid and Formulations |
| ES Exposure Criteria | SCOEL: - 8 mg/m ³ - 8 hr. TWA - 15 mg/m ³ - 15 min. TWA |

| Section 2 | | Operational conditions and risk management measures | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|--|--|------|------|----|----|------|--|----|------|--|----|------|--|----|------|--|----|------|--|----|-----|--|----|-----|--|----|-----|--|-----|------|--|
| Section 2.1 | | Control of worker exposure | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Product characteristics | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Physical form of product | Liquid, vapor pressure 0.5 - 10 kPa [OC4]. PROC13: Partial vapor pressures over the bath with a 15% HCl solution are : <table><tr><td>T °C</td><td>pHCl</td><td>Pa</td></tr><tr><td>20</td><td>1.89</td><td></td></tr><tr><td>30</td><td>4.93</td><td></td></tr><tr><td>40</td><td>12.2</td><td></td></tr><tr><td>50</td><td>28.6</td><td></td></tr><tr><td>60</td><td>64.5</td><td></td></tr><tr><td>70</td><td>139</td><td></td></tr><tr><td>80</td><td>290</td><td></td></tr><tr><td>90</td><td>584</td><td></td></tr><tr><td>100</td><td>1140</td><td></td></tr></table> (Cf. ELECNRTL in Aspenplus (vs. 2004.1)) | | | T °C | pHCl | Pa | 20 | 1.89 | | 30 | 4.93 | | 40 | 12.2 | | 50 | 28.6 | | 60 | 64.5 | | 70 | 139 | | 80 | 290 | | 90 | 584 | | 100 | 1140 | |
| T °C | pHCl | Pa | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | 1.89 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | 4.93 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | 12.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | 28.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | 64.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 70 | 139 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 80 | 290 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 90 | 584 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 | 1140 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Concentration of substance in product | Covers percentage substance in the product up to 40 % (unless stated differently) [G13]. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 [E119] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Contributing Scenarios | | Risk Management Measures | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Due to the corrosive properties of the substance, always wear suitable protective clothing, eye and skin protection | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PROC1: General exposures (closed systems) [CS15]. Continuous process [CS54]. | | Handle substance within a closed system [E47]. Clear transfer lines prior to decoupling [E39] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PROC2: General exposures [CS1]. Process sampling [CS2] Continuous process [CS54]. | | Handle substance within a closed system [E47]. Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. Clear transfer lines prior to decoupling [E39] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PROC3: General exposures [CS1]. Remanufacture of reject articles [CS19]. Cleaning [CS47]. Use in contained batch processes [CS37]. With sample collection [CS56]. | | Handle substance within a closed system [E47]. Drain down and flush system prior to equipment break-in or maintenance [E55]. Ensure material transfers are under containment or extract ventilation (90% efficiency) [E66]. Clear transfer lines prior to decoupling [E39] Wear suitable gloves tested to EN374 [PPE15]. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PROC4: Drum/batch transfers [CS8] Bulk transfers [CS14]. General exposures (open systems) [CS16]. Cleaning [CS47]. Remanufacture of reject articles [CS19]. With sample collection [CS56]. | | Use bulk or semi-bulk handling systems [E43]. or Use drum pumps [E53]. Drain down and flush system prior to equipment break-in or maintenance [E55]. Provide extract ventilation to points where emissions occur (90% efficiency) [E54]. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PROC8a: Bulk transfers [CS14]. Process sampling [CS2]. Drum/batch transfers [CS8]. General exposures (open systems) [CS16]. Equipment cleaning and maintenance | | Handle substance within a predominantly closed system provided with extract ventilation (90% efficiency) [E49]. or Provide extract ventilation to points where emissions occur (90% efficiency) [E54] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| [CS39] Transport [CS58]. Internal [CS59]. | | | | | | | | | | | | | | | | | | | | | |
|--|---|------|---------|----|------|----|------|----|------|----|------|----|------|----|-----|----|-----|----|-----|-----|------|
| PROC10: Rolling, Brushing [CS51]. Equipment cleaning and maintenance [CS39]. | Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour) (90% efficiency) [E40]. Wear suitable gloves (tested to EN374) [PPE15] | | | | | | | | | | | | | | | | | | | | |
| PROC11: Spraying/fogging by manual application [CS24]. Spraying/fogging by machine application [CS25]. Spray Bottle [CS49]. Or: | Provide extract ventilation to points where emissions occur (90% efficiency) [E54]. <u>and</u> Wear a respirator conforming to EN140 with Type A filter or better. [PPE22] Provide extract ventilation to points where emissions occur (90% efficiency) [E54]. Avoid carrying out operation for more than 15 minutes [OC10] | | | | | | | | | | | | | | | | | | | | |
| PROC13: Dipping, immersion and pouring [CS4]. Treatment by dipping and pouring [CS35]. | Provide extract ventilation to material transfer points and other openings (90% efficiency) [E82]. Carry out in a vented booth provided with laminar airflow [E59]. Automate activity where possible [AP16]. Allow time for product to drain from workpiece [E121]. Wear suitable gloves (tested to EN374) [PPE15]. | | | | | | | | | | | | | | | | | | | | |
| PROC15: Laboratory activities [CS36]. Or: PROC15: Laboratory activities [CS36] | Handle in a fume cupboard or under extract ventilation (80% efficiency) [E83]. <u>Or</u> Carry out in a vented booth or extracted enclosure (80% efficiency) [E57]. Avoid carrying out operation for more than 4 hours [OC12] Avoid carrying out operation for more than 1 hour [OC11] | | | | | | | | | | | | | | | | | | | | |
| PROC19: Mixing operations (open systems) [CS30]. Additive premixing [CS92]. Or: | Wear suitable gloves tested to EN374 [PPE15]. Wear a respirator conforming to EN140 Type A filter or better [PPE22] Wear suitable gloves tested to EN374 [PPE15]. Avoid carrying out operation for more than 15 minutes [OC10] | | | | | | | | | | | | | | | | | | | | |
| Section 2.2 | Control of environmental exposure | | | | | | | | | | | | | | | | | | | | |
| Product characteristics | Liquid, vapor pressure 0.5 - 10 kPa [OC4]. PROC13: Partial vapor pressures over the bath with a 15% HCl solution are : <table><thead><tr><th>T °C</th><th>pHCl Pa</th></tr></thead><tbody><tr><td>20</td><td>1.89</td></tr><tr><td>30</td><td>4.93</td></tr><tr><td>40</td><td>12.2</td></tr><tr><td>50</td><td>28.6</td></tr><tr><td>60</td><td>64.5</td></tr><tr><td>70</td><td>139</td></tr><tr><td>80</td><td>290</td></tr><tr><td>90</td><td>584</td></tr><tr><td>100</td><td>1140</td></tr></tbody></table> (Cf. ELECNRTL in Aspenplus (vs. 2004.1)) | T °C | pHCl Pa | 20 | 1.89 | 30 | 4.93 | 40 | 12.2 | 50 | 28.6 | 60 | 64.5 | 70 | 139 | 80 | 290 | 90 | 584 | 100 | 1140 |
| T °C | pHCl Pa | | | | | | | | | | | | | | | | | | | | |
| 20 | 1.89 | | | | | | | | | | | | | | | | | | | | |
| 30 | 4.93 | | | | | | | | | | | | | | | | | | | | |
| 40 | 12.2 | | | | | | | | | | | | | | | | | | | | |
| 50 | 28.6 | | | | | | | | | | | | | | | | | | | | |
| 60 | 64.5 | | | | | | | | | | | | | | | | | | | | |
| 70 | 139 | | | | | | | | | | | | | | | | | | | | |
| 80 | 290 | | | | | | | | | | | | | | | | | | | | |
| 90 | 584 | | | | | | | | | | | | | | | | | | | | |
| 100 | 1140 | | | | | | | | | | | | | | | | | | | | |
| Amounts used | NR | | | | | | | | | | | | | | | | | | | | |
| Frequency and duration of use | 8 h/d for 360 days per year | | | | | | | | | | | | | | | | | | | | |
| Other Operational Conditions of use affecting environmental exposure | Ensure all waste water is collected and treated via a WWTP [W6] | | | | | | | | | | | | | | | | | | | | |
| Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil | Ensure all waste water is collected and treated via a WWTP [W6] | | | | | | | | | | | | | | | | | | | | |

| | |
|---|--|
| Organisation measures to prevent/limit release from site | Prevent leaks and prevent soil / water pollution caused by leaks [S4] |
| Conditions and measures related to municipal sewage treatment plant | All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments [W1] |
| Conditions and measures related to external treatment of waste for disposal | NR |
| Conditions and measures related to external recovery of waste | NR |
| Other environmental control measures additional to above | NR |
| Section 3 | Exposure Estimation |
| 3.1. Health | |
| <p>PROC1: Safe use for activities >4 hrs, without the use of LEV or without breathing protection. PROC2, PROC3, PROC4, PROC8a, PROC10, PROC19: Safe uses for activities >4 hrs, provided that LEV (90% efficiency) is used. PROC11: Safe use for activities >4 hrs. ONLY if LEV (90% efficiency) plus breathing equipment (half mask) is used; or limit exposure to <15 min., plus use LEV (90% efficiency). PROC13: Safe use at all temperatures as mentioned above (2.1) provided that LEV (90% efficiency) is used. PROC15: Safe use for activities 15 min – 1 hr, also without LEV; For activities >1 hr, LEV (80% efficiency) must be used. PROC19: safe use for >4 hrs: provided that breathing equipment (half mask) is used; or limit exposure to <15 min.</p> | |
| 3.2. Environment | |
| Standard phrases. Ability to Include a web link. | |
| Section 4 | Guidance to check compliance with the Exposure Scenario |
| 4.1. Health | |
| Worker exposure has been evaluated using ECETOC TRA V2.0 | |
| 4.2. Environment | |
| Substance will disassociate upon contact with water, the only effect is the pH effect, therefore after passing through the STP exposure is considered negligible and with no risk | |
| Section 5 | Additional good practice advice beyond the REACH Chemical Safety Assessment |
| 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 | |
| Process sampling [CS2]. | Wear suitable gloves tested to EN374 [PPE15] |
| Equipment cleaning and maintenance [CS39] | Drain down and flush system prior to equipment break-in or maintenance [E55]. Clear spills immediately [C&H13]. |
| Control of environmental exposure | |
| | |

9.5.2 Exposure estimation

9.4.3.1 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.

In Section 3.1 of the scenario above, the Safe Uses, and conditions under which, are given.

9.5.2.2 Consumer exposure

Not relevant

9.5.2.3 Indirect exposure of humans via the environment

Not relevant.

*ES 6: Use of Hydrochloric acid and Formulations by Consumers***9.4.4 Exposure Scenario**

| | |
|---|--|
| Consumer – ES6 – Hydrochloric acid | |
| Section 1 | Exposure Scenario Title |
| Title | ES6 – Use of Hydrochloric acid and Formulations by Consumers |
| Use Descriptor | Sector of Use: Consumer Uses: Private Households (SU21) Process Categories: (PROC) N.A. Environmental Release Categories: ERC8b: Wide dispersive indoor use of processing aids in open systems ERC8e: Wide dispersive outdoor use of reactive substances in open systems Product categories: PC20: Products such as ph-regulators, flocculants, precipitants, neutralization agents PC21: Laboratory chemicals PC35: Washing and cleaning products (including solvent based products) PC37: Water treatment chemicals PC38: Welding and soldering products |
| Processes, tasks, activities covered | Use of HCl solution at a maximum concentration of 20% for purposes as mentioned under the PCs above. |
| Section 2 | Operational conditions and risk management measures |
| Field for additional statements to explain scenario if required. | |
| Section 2.1 | Control of worker exposure |
| Product characteristics | |
| Physical form of product | Liquid, vapor pressure 0.5 - 10 kPa [OC4]. |
| Concentration of substance in product | Covers percentage substance in the product up to 20 % (unless stated differently) [G13]. |
| Amounts used | Max. 500 ml per activity |
| Frequency and duration of use | Covers daily exposures up to 4 hours (unless stated differently) [G2]; up to 5 times/year |
| Other Operational Conditions affecting worker exposure | Assumes use at not > 20°C above ambient [G15] |
| Risk Management Measures related to Consumer uses | |
| The substance may cause local irritating effects; no systemic effects. For that reason: always use protective gloves during the handling and application activities mentioned under the Product Categories above. | |
| Section 2.2 | Control of environmental exposure |
| Product characteristics | Liquid, vapor pressure 0.5 - 10 kPa [OC4]. |
| Amounts used | NR |
| Frequency and duration of use | 360 days per year |
| Other Operational Conditions of use affecting environmental exposure | All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments [W1] |
| Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil | Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases [W2] Prevent leaks and prevent soil / water pollution caused by leaks [S4] |

| | |
|--|--|
| Organisation measures to prevent/limit release from site | Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic released. [W2] |
| Conditions and measures related to municipal sewage treatment plant | All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments [W1] |
| Conditions and measures related to external treatment of waste for disposal | All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments [W1] |
| Conditions and measures related to external recovery of waste | NR |
| Other environmental control measures additional to above | NR |
| Section 3 | Exposure Estimation |
| 3.1. Health | |
| Exposures have not been estimated as the substance only causes local dermal and/or inhalatory effects and no systemic effects. However, one worst case application has been calculated. Assuming the following application conditions: - use for removal of cement rests from bricks, tiles, etc. - use of a 20% HCl solution in water - duration 8 hrs. - room volume 50 m ³ - ventilation rate 2x/hr Results: Inhalation – mean event concentration: 15 mg/m ³ Inhalation – mean concentration on day of exposure: 5 mg/m ³ Inhalation – year average: 0.03 mg/m ³ /day <i>This inhalatory uptake is very unlikely to happen, as the substance will immediately start to irritate when it enters the inhalatory tract.</i> Dermal – load: 465 mg/cm ² Dermal – acute (internal) dose: 0.016 mg/kg Dermal – chronic (internal) dose: 0.00008 mg/kg/day <i>Such an unrealistic high dermal load is unlikely, but assuming that it occurs the user will have reacted on the burning/itching skin sensation and will automatically start using gloves.</i> | |
| 3.2. Environment | |
| Substance will disassociate upon contact with water, the only effect is the pH effect, therefore after passing through the STP exposure is considered negligible and with no risk | |
| Section 4 | Guidance to check compliance with the Exposure Scenario |
| 4.1. Health | |
| | |
| 4.2. Environment | |
| Substance will disassociate upon contact with water, the only effect is the pH effect, therefore after passing through the STP exposure is considered negligible and with no risk | |

9.6.2 Exposure estimation**9.6.2.1 Workers exposure**

Not relevant

9.6.2.2 Consumer exposure

Exposures have not been estimated as the substance only causes local dermal and/or inhalatory effects and no systemic effects. Inhalatory uptake is very unlikely to happen, as the substance will immediately start to irritate when it enters the inhalatory tract. Dermal load is unlikely, but assuming that it would occur, the user will have reacted on the burning/itching skin sensation and will automatically start using gloves.

9.6.2.3 Indirect exposure of humans via the environment

Not relevant.