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1272/2008 (CLP) & 2015/830

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ABSCHNITT 1: BEZEICHNUNG DES STOFFS BZW. DES GEMISCHS UND DES UNTERNEHMENS

1.1 Produktidentifikator

Produktname Melamin

Chemische Bezeichnung 2,4,6-Triamino-1,3,5-triazin

 $\begin{array}{lll} \text{Chemische Formel} & & C_3H_6N_6 \\ \text{CAS-Nr.} & & 108\text{-}78\text{-}1 \\ \text{EG-Nr.} & & 203\text{-}615\text{-}4 \end{array}$

REACH-Registrierungsnr. 01-2119485947-16-0017

1.2 Relevante identifizierte Verwendungen des Stoffs oder Gemischs und Verwendungen, von denen abgeraten wird

Identifizierte Verwendung(en) Melamin $(C_3H_6N_6)$ ist ein Produkt in Form eines weißen Pulvers, das für die

Herstellung zahlreicher Kunstharze verwendet wird.

• Formulierung oder Umverpackung

• Verwendung als Zwischenprodukt für Harze (reagiertes Melamin)

• Verwendung als Additiv für Schaumstoffe

Verwendung als Additiv f
ür intumeszierende Beschichtungen

• PU-Schaumstoffe - Arbeiter (Industrie)

• Intumeszierende Beschichtungen - Arbeiter (Industrie)

· Intumeszierende Beschichtungen - Facharbeiter

Verwendungen, von denen abgeraten

wird:

Hinzufügung zu Lebens- oder Futtermitteln.

1.3 Einzelheiten zum Lieferanten, der das Sicherheitsdatenblatt bereitstellt

Hersteller/Lieferant Qatar Melamine Co Adresse P.O. Box 50001, Mesaieed,

Katar.

 $\begin{array}{lll} \hbox{Telefon} & & (+974)\,44228888 \\ \hbox{E-Mail} & & \underline{mktg@qafco.com.qa} \\ \hbox{Alleinvertreter eines nicht in der Gemeinschaft ansässigen Herstellers} \end{array}$

Hersteller/Lieferant MUNTAJAT B.V.

Adresse Prinses Margrietplantsoen 78-A

2595 BR, Den Haag

Niederlande

 $\begin{array}{lll} \mbox{Telefon} & +31(0)70\ 219\ 7000 \\ \mbox{E-Mail} & \mbox{REACH@muntajatbv.com} \\ \mbox{Website} & \mbox{www.muntajatbv.com} \end{array}$

1.4 Notrufnummer

National Poisons Information Service +44 (0) 111

(Birmingham)

Bei Austritt, Leckagen, Feuer, Innerhalb der USA und in Kanada: 1-800-424-9300

Exposition oder Unfall wenden Sie sich Außerhalb der USA und von Kanada: +1 703-741-5970 und +1-703-527-3887 (R-

bitte rund um die Uhr an CHEMTREC Gespräche werden entgegengenommen)

ABSCHNITT 2: MÖGLICHE GEFAHREN

2.1 Einstufung des Stoffs oder Gemischs

Verordnung (EG) Nr. 1272/2008 (CLP) Repr. 2 :Kann vermutlich die Fruchtbarkeit beeinträchtigen.

2.2 Kennzeichnungselemente

Verordnung (EG) Nr. 1272/2008 (CLP)

Produktname Melamin

Gefahrenpiktogramm



Signalwort Achtung

GEMÄSS EG-VERORDNUNGEN 1907/2006 (REACH),

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Gefahrenhinweise H361f: Kann vermutlich die Fruchtbarkeit beeinträchtigen.

Sicherheitshinweise P201: Vor Gebrauch besondere Anweisungen einholen.

P202: Vor Gebrauch alle Sicherheitshinweise lesen und verstehen.

P280: Schutzhandschuhe/ Schutzkleidung/Augenschutz/Gesichtsschutz tragen. P308+P313: BEI Exposition oder falls betroffen: Ärztlichen Rat einholen/ärztliche

Hilfe hinzuziehen.

P405: Unter Verschluss aufbewahren.

P501: Inhalt/Behälter im Einklang mit den lokalen, staatlichen oder nationalen

Vorschriften entsorgen.

2.3 Sonstige Gefahren

Druckdatum: 06.10.2020

Kann beim Verschlucken gesundheitsschädlich sein. Staub kann die Haut, Augen und Luftwege reizen.

2.4 Weitere Informationen

Keine.

ABSCHNITT 3: ZUSAMMENSETZUNG/ANGABEN ZU BESTANDTEILEN

3.1 Stoffe

GEFÄHRLICHE	CAS-Nr.	EG-Nr.	%W/W	Gefahrenhinweise	Gefahrenpiktogramm
BESTANDTEILE					
Melamin	108-78-1	203-615-4	≥ 99	Repr. 2 H361f	GHS08
		01-2119485947-16-0017		-	

3.2 Gemische

Nicht anwendbar.

ABSCHNITT 4: ERSTE-HILFE-MASSNAHMEN

4.1 Beschreibung der Erste-Hilfe-Maßnahmen

Nach Einatmen Bei Atembeschwerden das Opfer an die frische Luft bringen und bequem setzen

oder legen, um die Atmung zu erleichtern. Falls die Symptome anhalten, einen

Arzt aufsuchen.

Nach Hautkontakt sofort gründlich mit Wasser und Seife abwaschen. Nach Hautkontakt

Zunächst gründlich mehrere Minuten lang mit Wasser ausspülen (Kontaktlinsen Nach Augenkontakt

entfernen, wenn dies problemlos möglich ist), dann einen Arzt aufsuchen.

Nach Verschlucken Nach Verschlucken den Mund mit Wasser ausspülen (nur wenn die Person bei

Bewusstsein ist).

4.2 Wichtigste akute und verzögert auftretende Symptome und Wirkungen

Staub kann die Haut, Augen und Luftwege reizen.

4.3 Hinweise auf ärztliche Soforthilfe oder Spezialbehandlung

BEI Exposition oder falls betroffen: Ärztlichen Rat einholen/ärztliche Hilfe

hinzuziehen.

ABSCHNITT 5: MASSNAHMEN ZUR BRANDBEKÄMPFUNG

5.1 Löschmittel

Geeignete Löschmittel Mit Kohlendioxid, trockenen Chemikalien, Schaum oder Sprühwasser löschen.

Nicht geeignete Löschmittel Wasserstrahl.

5.2. Besondere vom Stoff oder Gemisch ausgehende Gefahren

Zersetzt sich bei Feuer und setzt giftigen Rauch frei: Kohlenmonoxid,

Kohlendioxid, Stickstoffoxide. Bei einer Aufheizung von Melamin über 500 °C

wird Ammoniak freigesetzt.

5.3 Hinweise für Brandbekämpfer

Brandbekämpfer müssen vollständige Schutzbekleidung einschließlich eines

unabhängigen Atemschutzgeräts tragen.

ABSCHNITT 6: MASSNAHMEN BEI UNBEABSICHTIGTER FREISETZUNG

6.1 Personenbezogene Vorsichtsmaßnahmen, Schutzausrüstung und in Notfällen anzuwendende Verfahren

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Eine geeignete Belüftung vorsehen. Eine geeignete Personenschutzausrüstung (einschließlich Atemschutzgerät) während der Entfernung des verschütteten Produkts vorsehen. Staubbildung vermeiden. Vermeiden, Staub einzuatmen.

6.2 Umweltschutzmaßnahmen

Nicht in die Kanalisation ableiten und nicht in Oberflächen- oder Grundwasser eindringen lassen.

6.3 Methoden und Material für die Rückhaltung und Reinigung

Verschüttete Stoffe in Behälter füllen, falls erforderlich, zuerst befeuchten, um Staubbildung zu vermeiden. Rückstände vorsichtig aufnehmen. Verschüttete Stoffe nicht mit Wasser abwaschen, andernfalls besteht die Gefahr, dass der Boden rutschig ist und die Kanalisation verstopft wird.

6.4 Verweis auf andere Abschnitte

Siehe auch Abschnitt 8, 13.

ABSCHNITT 7: HANDHABUNG UND LAGERUNG

7.1 Schutzmaßnahmen zur sicheren Handhabung

Vor Gebrauch besondere Anweisungen einholen. Vor Gebrauch alle Sicherheitshinweise lesen und verstehen. Eine geeignete Belüftung sicherstellen. Staubbildung vermeiden. Vermeiden, Staub einzuatmen. Schutzhandschuhe/Schutzkleidung/Augenschutz/Gesichtsschutz tragen. Hände und exponierte Haut nach der Handhabung gründlich abwaschen.

7.2 Bedingungen zur sicheren Lagerung unter Berücksichtigung von Unverträglichkeiten

Vor direkter Sonneneinstrahlung schützen. Unter Verschluss aufbewahren.

Trocken lagern. Behälter fest verschlossen halten.

Lagertemperatur Raumtemperatur.

Lagerdauer Unter normalen Lagerbedingungen stabil.
Unverträgliche Materialien: Starke Säuren. Stark oxidierende Mittel.

7.3 Spezifische Endanwendungen

- Formulierung oder Umverpackung
- Verwendung als Zwischenprodukt für Harze (reagiertes Melamin)
- Verwendung als Additiv f
 ür Schaumstoffe
- Verwendung als Additiv für intumeszierende Beschichtungen
- PU-Schaumstoffe Arbeiter (Industrie)
- Intumeszierende Beschichtungen Arbeiter (Industrie)
- Intumeszierende Beschichtungen Facharbeiter

ABSCHNITT 8: BEGRENZUNG UND ÜBERWACHUNG DER EXPOSITION/PERSÖNLICHE SCHUTZAUSRÜSTUNG

8.1 Zu überwachende Parameter

8.1.1 Grenzwerte für die Exposition am Arbeitsplatz

STOFF	CAS-Nr.	LTEL (8 Std.	LTEL (8 Std.	STEL (ppm)	STEL (mg/m³)	Hinweis
		TWA ppm)	TWA mg/m³)		-	
Melamin	108-78-1					Keine
						Zuordnung

Quelle: UK Workplace Exposure Limits EH40/2005 (Fourth edition, published 2020), United Kingdom

8.1.2 Biologischer Grenzwert Nicht bestimmt.

8.1.3 PNEC- und DNEL-Werte

DNEL / DMEL	Oral	Nach Einatmen	Hautkontakt
Industrie - Langfristig - Lokale Auswirkungen			
Industrie - Langfristig - Systemische Auswirkungen		8.3 mg/m ³	11,8 mg/kg KGW/Tag
Industrie - Kurzfristig - Lokale Auswirkungen			
Industrie - Kurzfristig - Systemische Auswirkungen		82.3 mg/m ³	117 mg/kg KGW/Tag

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Verbraucher - Langfristig - Lokale Auswirkungen			
Verbraucher - Langfristig - Systemische	0,42 mg/kg KGW/Tag	1,5 mg/m ³	4,2 mg/kg KGW/Tag
Auswirkungen			
Verbraucher - Kurzfristig - Lokale Auswirkungen			
Verbraucher - Kurzfristig - Systemische			
Auswirkungen			

Umwelt	PNEC
Aquatisches Kompartiment (einschließlich Sediment)	Süßwasser: 0,51 mg/l
	Diskontinuierliche Freisetzung: 2 mg/l
	Meerwasser: 0,051 mg/l
	Süßwasser (Sediment): 2,524 mg/kg TG
	Meerwasser (Sediment): 0,252 mg/kg TG
Terrestrisches Kompartiment	Kläranlage: 200 mg/l
Atmosphärisches Kompartiment	Boden: 0,206 mg/kg TG

8.2 Begrenzung und Überwachung der Exposition

Eine geeignete Belüftung vorsehen. 8.2.1. Angemessene technische

Kontrollen

8.2.2. Persönliche Schutzausrüstung

Augenschutz Augenschutz tragen (Schutzbrille, Gesichtsschutz oder Sicherheitsbrille).

Hautschutz Schutzhandschuhe tragen.

Durchdringungszeit des Handschuhmaterials: siehe Angaben des

Handschuhherstellers.

Atemschutz Zugelassene Staubschutzmaske tragen, wenn bei der Handhabung Staub entsteht.

Thermische Risiken Nicht anwendbar.

8.2.3. Begrenzung und Überwachung Nicht in die Kanalisation ableiten und nicht in Oberflächen- oder Grundwasser

der Umweltexposition eindringen lassen.

ABSCHNITT 9: PHYSIKALISCHE UND CHEMISCHE EIGENSCHAFTEN

9.1 Angaben zu den grundlegenden physikalischen und chemischen Eigenschaften

Aussehen Pulverr. Farbe: Weiß.

Geruch Geruchslos. Geruchsschwelle Nicht bestimmt.

7,5-8,5 (wässrige Lösung), 20 g/l @ 20°C

Schmelzpunkt/Gefrierpunkt 354°C (gefriert nicht, wird fest)

Siedepunkt und Siedebereich >354°C (Sublimation) Flammpunkt Nicht anwendbar. Verdampfungsgeschwindigkeit Nicht anwendbar. Entzündbarkeit (fest, gasförmig) Nicht entzündlich. Obere/untere Entzündbarkeits- oder Nicht verfügbar.

Explosionsgrenzen

Dampfdruck 4.7 x 1.0E-8 Pa @ 20°C Dampfdicht Nicht anwendbar. Dichte (g/ml) 1570 kg/m³

Relative Dichte 1,57

Löslichkeit(en) Löslichkeit (Wasser) Leicht wasserlöslich: 3,48 g/l @ 20°C

Löslichkeit (sonstiges) Sehr Leicht löslich: Aceton (0,3 g/l), Ethanol (0,6 g/l), Dimethylformamid (0,1 g/l), Löslich: Cellosolve-Ethyl (11,2 g/l) @ 30°C

Verteilungskoeffizient (n--1,22 @ 20°C

Oktanol/Wasser)

Selbstentzündungstemperatur >500°C Zersetzungstemperatur (°C) >354°C

Viskosität Nicht anwendbar. Explosive Eigenschaften Nicht explosiv. Oxidierende Eigenschaften Nicht oxidierend.

9.2 Sonstige Angaben

Dissoziationskonstante 6.7 pKa @ 20°C Molekulargewicht 126,12 g/mol

ABSCHNITT 10: STABILITÄT UND REAKTIVITÄT

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10.1 Reaktivität

Unter normalen Lagerbedingungen stabil.

10.2 Chemische Stabilität

Unter normalen Lagerbedingungen stabil.

10.3 Möglichkeit gefährlicher Reaktionen

Keine gefährlichen Reaktionen bekannt, wenn für den vorgesehenen

Verwendungszweck eingesetzt.

10.4 Zu vermeidende Bedingungen

Von Feuchtigkeit fernhalten.

10.5 Unverträgliche Materialien

Akute Toxizität - Hautkontakt

Akute Toxizität - Einatmen

Starke Säuren. Stark oxidierende Mittel.

10.6 Gefährliche Zersetzungsprodukte

Keine gefährlichen Zersetzungsprodukte bekannt

ABSCHNITT 11: TOXIKOLOGISCHE ANGABEN

11.1 Angaben zu toxikologischen Wirkungen

Akute Toxizität - Verschlucken Kann beim Verschlucken gesundheitsschädlich sein.

LD50 (Ratte): 3161 mg/kg Geringe akute Toxizität. Geringe akute Toxizität. LC50 (Ratte): >5190 mg/m³

Ätz-/Reizwirkung auf die Haut Nicht bestimmt. Schwere Augenschädigung/-reizung Nicht bestimmt.

Sensibilisierung der Haut Keine Sensibilisierung der Haut.

Sensibilisierung der Atemwege Nicht bestimmt.

Keimzell-Mutagenität Kein Nachweis für mutagenes Potenzial. Karzinogenität Nicht als karzinogen für Menschen eingestuft.

LOAEL (oral): 126 mg/kg KGW/Tag (chronisch, Ratte, Blase).

Statistisch gesehen wurde ein beträchtlicher Anstieg der Inzidenz von Übergangs-Zell-Karzinomen und der kombinierten Inzidenz von Übergangs-Zell-Karzinomen und Papilloma-Viren in der Harnblase bei männlichen Ratten bei einer Exposition von 4500 ppm Melamin (ca. 263 mg/kg KGW/Tag) beobachtet, aber nicht bei einer Exposition bis zu 2250 ppm Melamin. Mit einer Ausnahme wurden Harnsteine bei männlichen Ratten mit Übergangs-Zell-Karzinom festgestellt. Weibliche Ratten haben keine Tumore entwickelt, auch nicht bei einer Exposition bis zu 9000 ppm. Es wurden keine neoplastischen Erkenntnisse bei der Behandlung von weiblichen

oder männlichen Mäusen festgestellt. Keine Nachweise bei Menschen. Kann vermutlich die Fruchtbarkeit bei männlichen Ratten beeinträchtigen. NOAEL (oral): 89 mg/kg KGW/Tag (subchronisch, 168 Stunden/Woche Ratte). Bei einer Eingenerationen-Prüfung (EOGRTS) gemäß OECD TG 443 an Ratten

wurden negative Auswirkungen auf das männliche Reproduktionssystem festgestellt, siehe ECHA Entscheidung Nummer TPE-D-2114373433-50-01. In Verbindung mit minimalem Zellmaterial in den Nebenhoden bei männlichen F0-und F1-Tieren wurde eine tubuläre Degeneration/Atrophie der Hoden festgestellt. Darüber hinaus wurde ein Anstieg von Spermaveränderungen (abgetrennte Köpfe)

bei männlichen F0- und F1-Tieren festgestellt.

Laktation Nicht erwartet.

STOT - einmalige Exposition Nicht bestimmt.

STOT - wiederhelte Exposition Nicht bestimmt

STOT - wiederholte Exposition Nicht bestimmt. Aspirationsgefahr Nicht erwartet.

11.2 Sonstige Angaben

Reproduktionstoxizität

Staub kann die Haut, Augen und Luftwege reizen.

ABSCHNITT 12: UMWELTBEZOGENE ANGABEN

12.1 Toxizität

Geringe Toxizität für Wasserorganismen.

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Akut LC50 (Daphnia magna): 200 mg/l Chronisch NOEC (Pimephales promelas): 5,1 mg/l NOEC (Daphnia magna): 11 mg/l

EC50 Süßwasser: 325 mg/l

Algen NOEC Süßwasser: 98 mg/l

12.2 Persistenz und Abbaubarkeit

Dieser Stoff ist nicht leicht biologisch abbaubar. Eine inhärente biologische

Abbaubarkeit wird nicht erwartet.

12.3 Bioakkumulationspotenzial

Dieser Stoff hat kein Bioakkumulationspotenzial. Biokonzentrationsfaktor (BCF): 3,8 ml/kg NG

12.4 Mobilität im Boden

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Es wird davon ausgegangen, dass dieser Stoff eine moderate Mobilität im Boden

12.5 Ergebnisse der PBT- und vPvB-Bewertung

Nicht als PBT oder vPvB eingestuft.

12.6 Andere schädliche Wirkungen

Nicht bekannt.

ABSCHNITT 13: HINWEISE ZUR ENTSORGUNG

13.1 Verfahren der Abfallbehandlung

Sichere Entsorgung von leeren Behältern und Abfall. Wenn möglich,

wiederverwerten oder dem Recycling zuführen.

13.2 Weitere Informationen

Entsorgung im Einklang mit den lokalen, staatlichen oder nationalen Vorschriften.

ABSCHNITT 14: ANGABEN ZUM TRANSPORT

Nicht als gefährlich für den Transport eingestuft.

14.1 UN-Nummer

Nicht anwendbar.

14.2 Ordnungsgemäße UN-Versandbezeichnung

Nicht anwendbar.

14.3 Transportgefahrenklassen

Nicht anwendbar.

14.4 Verpackungsgruppe

Nicht anwendbar.

14.5 Umweltgefahren

Nicht als Meeresschadstoff eingestuft.

14.6 Besondere Vorsichtsmaßnahmen für den Verwender

Nicht bekannt.

14.7 Massengutbeförderung gemäß Anhang II des MARPOL-Übereinkommens und gemäß IBC-Code

Nicht bekannt.

ABSCHNITT 15: RECHTSVORSCHRIFTEN

15.1 Vorschriften zu Sicherheit, Gesundheits- und Umweltschutz/spezifische Rechtsvorschriften für den Stoff oder das Gemisch

Europäische Verordnungen - Genehmigungen und/oder Einschränkungen für die Verwendung

Kandidatenliste der besonders Nicht aufgeführt

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besorgniserregenden Stoffe

REACH: ANHANG XIV Liste der Nicht aufgeführt

zulassungspflichtigen Stoffe

REACH: Anhang XVII Beschränkungen Nicht aufgeführt

der Herstellung, des Inverkehrbringens und der Verwendung bestimmter gefährlicher Stoffe, Gemische und

Erzeugnisse

Fortlaufender Aktionsplan der

Nicht aufgeführt

Gemeinschaft (CoRAP)

Verordnung (EG) Nr. 850/2004 des Nicht aufgeführt

Europäischen Parlaments und des Rates vom 29. April 2004 über persistente

organische Schadstoffe

Verordnung (EG) Nr. 1005/2009 über

Nicht aufgeführt

Stoffe, die zum Abbau der Ozonschicht

führen

Verordnung (EU) N° 649/2012 des Europäischen Parlaments und des Rates vom 4. Juli 2012 über die Aus- und Einfuhr gefährlicher Chemikalien Nicht aufgeführt

Nationale Verordnungen

Bestandsverzeichnis Aufgeführt in: Australien, Kanada (DSL), China, Japan, Korea, Taiwan,

Neuseeland (HSNO) - HSNO-Genehmigung: HSR002503, Neuseeland (NZIoC),

Philippinen.

15.2 Chemische Sicherheitsbeurteilung

Es wurde eine chemische Sicherheitsbeurteilung gemäß REACH durchgeführt.

ABSCHNITT 16: SONSTIGE ANGABEN

Die folgenden Abschnitte enthalten Änderungen oder neue Hinweise: 1-16

BILDUNTERSCHRIFT

Gefahrenpiktogramm



Gefahreneinstufung Repr. 2: Reproduktionstoxizität, Kategorie 2

Gefahrenhinweise H361f: Kann vermutlich die Fruchtbarkeit beeinträchtigen.

Sicherheitshinweise P201: Vor Gebrauch besondere Anweisungen einholen.

P202: Vor Gebrauch alle Sicherheitshinweise lesen und verstehen.

P280: Schutzhandschuhe/ Schutzkleidung/Augenschutz/Gesichtsschutz tragen. P308+P313: BEI Exposition oder falls betroffen: Ärztlichen Rat einholen/ärztliche

Hilfe hinzuziehen.

P405: Unter Verschluss aufbewahren.

P501: Inhalt/Behälter im Einklang mit den lokalen, staatlichen oder nationalen

Vorschriften entsorgen.

Akronyme CAS: Chemical Abstracts Service

CLP: Verordnung (EG) Nr. 1272/2008 über die Einstufung, Kennzeichnung und

Verpackung von Stoffen und Gemischen

DNEL: Derived No Effect Level EG: Europäische Gemeinschaft

LTEL: Long term exposure limit (Langzeitexposition)

PBT: Persistent, Bioaccumulative and Toxic (Persistent, bioakkummulierend,

toxisch)

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PNEC: Predicted No Effect Concentration (vorausgesagte Konzentration eines in der Pagel umweltgeföhrlichen Stoffee)

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der Regel umweltgefährlichen Stoffes) REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals

(Registrierung, Bewertung, Zulassung und Beschränkung chemischer Stoffe) STEL: Short term exposure limit (Kurzzeitexposition)

STOT: Specific Target Organ Toxicity (spezifische Zielorgantoxizität) vPvB: very Persistent and very Bioaccumulative (sehr persistent und sehr

bioakkummulierend)

Haftungsausschlussklausel

Die in dieser Dokumentation oder anderweitig den Nutzern erteilten Informationen sind nach gutem Glauben korrekt erstellt worden. Es ist allerdings Aufgabe des Nutzers, sich der Eignung des Produkts für seinen Einsatzzweck zu vergewissern. Qatar Melamine Co garantiert die Eignung des Produkts für einen besonderen Einsatzzweck nicht und schließt jegliche Haftung (gesetzlich oder anderweitig) im Rahmen des gesetzlich Zulässigen aus.

Qatar Melamine Co haftet nicht für Verlust oder Schäden (andere als durch das mangelhafte Produkt verursachte Todesfolge oder Körperverletzung, falls eine solche nachgewiesen werden kann), die sich aus dem Vertrauen in diese Information ergeben. Freiheit von Patent-, Urheber- oder Gebrauchsmusterschutzrechten kann nicht vorausgesetzt werden.

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(eSDS) Melamin

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	1.14 Guidance to DU to evaluate whether he works inside the boundaries set by the ES	
2.	• • • • • • • • • • • • • • • • • • •	
	2.1 Use as intermediate for resins (reacted melamine) (ERC 6a; ERC 6c)	
	2.2 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent	
	containment conditions (PROC 1)	
	2.3 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with occasional contr	
	equivalent containment conditions (PROC 2)	
	processes with equivalent containment conditions (PROC 3)	
	2.5 Chemical production where opportunity for exposure arises (PROC 4)	
	2.6 Mixing or blending in batch processes (PROC 5)	
	2.7 Calendering operations (PROC 6)	
	2.8 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a)	
	2.9 Transfer of substance or mixture (charging and discharging) at dedicated facilities	
	(PROC 8b)	
	2.10 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC 9)	
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	2.12 Use as laboratory reagent (PROC 15)	23
	2.13 Manual maintenance (cleaning and repair) of machinery (PROC 28)	
	2.14 Exposure estimation 2.15 Guidance to DU to evaluate whether he works inside the boundaries set by the ES	
3.	• • • • • • • • • • • • • • • • • • •	
٥.	3.1 Use of resins with unreacted residual melamine (ERC 5)	
	3.2 Industrial spraying (PROC 7).	
	3.3 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a)	
	3.4 Transfer of substance or mixture (charging and discharging) at dedicated facilities	28
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	3.5 Roller application or brushing (PROC 10)	28
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	3.8 Exposure estimation	
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	It (reacted melamine)	
sa	4.1 Use as intermediate for the production of other substances e.g. melamine salt (reacted melamine) (ERC 6a)	
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	equivalent containment conditions (PROC 2)	34
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	4.5 Chemical production where opportunity for exposure arises (PROC 4)	
	4.6 Mixing or blending in batch processes (PROC 5)	
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	4.8 Transfer of substance or mixture (charging and discharging) at dedicated facilities	
	(PROC 8b)	
	4.10 Use as laboratory reagent (PROC 15)	
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	5.1 Use as additive in foams (ERC 5)	
	5.2 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent	
	containment conditions (PROC 1)	
	5.3 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with	
	equivalent containment conditions (PROC 2)	
	5.4 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure	
	processes with equivalent containment conditions (PROC 3)	
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	(PROC 8b)	
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	5.11 Hand-mixing with intimate contact and only PPE available (PROC 19)	
	5.12 Manual maintenance (cleaning and repair) of machinery (PROC 28)	
	5.13 Exposure estimation	
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	6.6 Industrial spraying without Local Exhaust Ventilation (LEV) (PROC 7)	
	6.8 Transfer of substance or mixture (charging and discharging) at dedicated facilities (FROC 8a)	
	(PROC 8b)	
	6.9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC 9)	
	6.10 Roller application or brushing (PROC 10).	
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	7.5 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC 9)	
	7.6 Roller application or brushing (PROC 10)	
	7.7 Non industrial spraying (PROC 11)	
	7.8 Treatment of articles by dipping and pouring (PROC 13)	
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	(PROC 21)	
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	11.3 Exposure estimation.	
	11.4 Guidance to DU to evaluate whether he works inside the boundaries set by the ES	
12	2. Exposure Scenario 12: Service life (consumers) - Intumescent coating – Consumers	
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	12.3 Exposure estimation.	
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Exposure Scenario 1: Formulation or re-packing - Formulation or re-packaging

1.		Formulation or re-packing - Formulation or re-packaging			
SECTI	SECTION 1: Title of exposure scenario				
		Formulation or re-packaging			
Contrib	Contributing scenario controlling environmental exposure				
CS1	Formulation or re-packa	nging	ERC2		
Contrib	outing scenario controlli	ng worker exposure			
CS2		refinery in closed continuous process with occasional processes with equivalent containment conditions	PROC2		
CS3		tion in the chemical industry in closed batch processes with processes with equivalent containment conditions	PROC3		
CS4	Chemical production wh	nere opportunity for exposure arises	PROC4		
CS5	Mixing or blending in b	atch processes	PROC5		
CS6	Transfer of substance or facilities	mixture (charging and discharging) at non-dedicated	PROC8a		
CS7	Transfer of substance or	mixture (charging and discharging) at dedicated facilities	PROC8b		
CS8	Transfer of substance or including weighing)	mixture into small containers (dedicated filling line,	PROC9		
CS9	Tabletting, compression	, extrusion, pelletisation, granulation	PROC14		
CS10	Use as laboratory reager	nt	PROC15		
CS11	Hand-mixing with intim	ate contact and only PPE available	PROC19		
CS12	Manual maintenance (cl	eaning and repair) of machinery	PROC28		
SECTION	ON 2:	Conditions of use			
2.1		Contributing scenario controlling environmental exposur 1.1 Formulation or re-packaging (ERC 2)	e:		
Amoun	t used, frequency and du	uration of use (or from service life)			
		vant for the assessment as scenario specific releases are estimate evant for the assessment as scenario specific releases are estimate evant for the assessment as scenario specific releases are estimated as the scenario sp			
Condition	ons and measures related t	to biological sewage treatment plant			
Dischar	cal STP: Standard [Effecti ge rate of STP: >= 2E3 m tion of the STP sludge on	3/day			
		ons affecting environmental exposure			
2.2	2.2 Contributing scenario controlling worker exposure: 1.2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC 2)				
Produc	t characteristics				
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)					
Frequency and duration of use					
Duration of activity: <= 8 h/day					
Technical conditions and measures to control dispersion from source towards the worker					
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]					
Conditions and measures related to personal protection, hygiene and health evaluation					
•	tory protection: No [Effectives				

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Other given operational conditions affecting workers exposure	9
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Place of use: Indoor

Operating temperature: <= 40 °C

2.3

Contributing scenario controlling worker exposure:

1.3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC 3)

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Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.4

Contributing scenario controlling worker exposure:

1.4 Chemical production where opportunity for exposure arises (PROC 4)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.5

Contributing scenario controlling worker exposure:

1.5 Mixing or blending in batch processes (PROC 5)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

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Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.6

Contributing scenario controlling worker exposure:

1.6 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.7

Contributing scenario controlling worker exposure:

1.7 Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC 8b)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.8 Contributing scenario controlling worker exposure: 1.8 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC 9)

Product characteristics

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Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.9 Contributing scenario controlling worker exposure:
1.9 Tabletting, compression, extrusion, pelletisation, granulation (PROC 14)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]

Place of use: Indoor

Operating temperature: <= 40 °C

2.10 Contributing scenario controlling worker exposure:

1.10 Use as laboratory reagent (PROC 15)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]

2.11 Contributing scenario controlling worker exposure:
1.11 Hand-mixing with intimate contact and only PPE available (PROC 19)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 %

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Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374 with specific activity training) and (other)

appropriate dermal protection [Effectiveness, Dermal: 95%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.12 Contributing scenario controlling worker exposure:

1.12 Manual maintenance (cleaning and repair) of machinery (PROC 28)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

SECTION 3:	1.13 Exposure estimation

3.1. Environment

Release	Release estimation method	Explanations	
Water	Estimated release rate	Local release rate: 5 kg/day	
Air	Estimated release rate	Local release rate: 1 kg/day	
Non-Agricultural Soil	Estimated release factor	Release factor after on-site RMM: 0%	

Protection target	Exposure concentration	Risk quantification (RCR)
Fresh water	Local PEC: 0.255 mg/l	0.5
Sedimentation (Fresh water)	Local PEC: 1.26 mg/kg dw	0.5
Marine water	Local PEC: 0.0255 mg/l	0.5
Sedimentation (Marine water)	Local PEC: 0.126 mg/kg dw	0.5
Sewage Treatment Plant	Local PEC: 2.496 mg/l	0.01
Agricultural soil	Local PEC: 0.029 mg/kg dw	0.14
Man via Environment - Inhalation (Systemic effects)	Concentration in air: 7.8E-5 mg/m ³	< 0.01

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Man via Environment - Oral	Exposure via food consumption: 0.017 mg/kg bw/day	0.04
Man via Environment - Combined routes		0.04
3.2. Worker		
Contributing scenario controlling worker expose occasional controlled exposure or processes with exposure or processes with exposure or processes with exposure or processes with exposure or processes.		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.5 mg/m³	0.06
Inhalation, Systemic effects, Acute	2 mg/m³	0.024
Dermal, Systemic effects, Long Term	1.37 mg/kg bw/day	0.116
Combined routes, Systemic effects, Long Term		0.176
Contributing scenario controlling worker expositions batch processes with occasional controlled exposure		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	1 mg/m³	0.12
Inhalation, Systemic effects, Acute	4 mg/m³	0.049
Dermal, Systemic effects, Long Term	0.69 mg/kg bw/day	0.058
Combined routes, Systemic effects, Long Term		0.179
Contributing scenario controlling worker expos	cure: Chemical production where oppor	tunity for exposure arises (PROC
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	1.372 mg/kg bw/day	0.116
Combined routes, Systemic effects, Long Term		0.719
Contributing scenario controlling worker expos	sure: Mixing or blending in batch proce	esses (PROC 5)
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835
Contributing scenario controlling worker expos non-dedicated facilities (PROC 8a)	cure: Transfer of substance or mixture (charging and discharging) at
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m³	0.602
Inhalation, Systemic effects, Acute	20 mg/m³	0.243
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835
Contributing scenario controlling worker expos non-dedicated facilities (PROC 8b)	cure: Transfer of substance or mixture (charging and discharging) at
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	1 mg/m ³	0.12
Inhalation, Systemic effects, Acute	4 mg/m³	0.049
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
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Exposure route	Exposure estimate - Wor	ker Risk quantification (RCR)
Inhalation, Systemic effects, Long T	erm 5 mg/m³	0.602
Inhalation, Systemic effects, Acute	20 mg/m³	0.243
Dermal, Systemic effects, Long Terr	m 1.372 mg/kg bw/day	0.116
Combined routes, Systemic effects,	Long Term	0.719
Contributing scenario controlling (PROC 14)	worker exposure: Tabletting, compression,	extrusion, pelletisation, granulation
Exposure route	Exposure estimate - Wor	ker Risk quantification (RCR)
Inhalation, Systemic effects, Long T	Term 1 mg/m ³	0.12
Inhalation, Systemic effects, Acute	4 mg/m³	0.049
Dermal, Systemic effects, Long Terr	m 3.43 mg/kg bw/day	0.291
Combined routes, Systemic effects,	Long Term	0.411
Contributing scenario controlling	worker exposure: Use as laboratory reagen	(PROC 15)
Exposure route	Exposure estimate - Wor	ker Risk quantification (RCR)
Inhalation, Systemic effects, Long T	Term 0.5 mg/m ³	0.06
Inhalation, Systemic effects, Acute	2 mg/m³	0.024
Dermal, Systemic effects, Long Terr	m 0.34 mg/kg bw/day	0.029
Combined routes, Systemic effects,	Long Term	0.089
Contributing scenario controlling 19)	worker exposure: Hand-mixing with intima	te contact and only PPE available (PROC
Exposure route	Exposure estimate - Wor	ker Risk quantification (RCR)
anposure route	-	1 ()
	_	0.361
Inhalation, Systemic effects, Long T	_	
Inhalation, Systemic effects, Long T Inhalation, Systemic effects, Acute	20 mg/m ³	0.361
Inhalation, Systemic effects, Long T Inhalation, Systemic effects, Acute Dermal, Systemic effects, Long Ter	Germ 3 mg/m³ 20 mg/m³ m 7.072 mg/kg bw/day	0.361 0.243
Inhalation, Systemic effects, Long T Inhalation, Systemic effects, Acute Dermal, Systemic effects, Long Ter Combined routes, Systemic effects,	Germ 3 mg/m³ 20 mg/m³ m 7.072 mg/kg bw/day	0.361 0.243 0.599 0.961
Inhalation, Systemic effects, Long T Inhalation, Systemic effects, Acute Dermal, Systemic effects, Long Ter Combined routes, Systemic effects, Contributing scenario controlling	Germ 3 mg/m³ 20 mg/m³ m 7.072 mg/kg bw/day Long Term	0.361 0.243 0.599 0.961 aning and repair) of machinery (PROC 28
Inhalation, Systemic effects, Long Tanhalation, Systemic effects, Acute Dermal, Systemic effects, Long Terman Combined routes, Systemic effects, Contributing scenario controlling Exposure route	20 mg/m³ 20 mg/m³ 7.072 mg/kg bw/day Long Term worker exposure: Manual maintenance (cle Exposure estimate - Wor	0.361 0.243 0.599 0.961 aning and repair) of machinery (PROC 28
Inhalation, Systemic effects, Long T Inhalation, Systemic effects, Acute Dermal, Systemic effects, Long Ter Combined routes, Systemic effects, Contributing scenario controlling Exposure route Inhalation, Systemic effects, Long T	20 mg/m³ 20 mg/m³ 7.072 mg/kg bw/day Long Term worker exposure: Manual maintenance (cle Exposure estimate - Wor	0.361 0.243 0.599 0.961 aning and repair) of machinery (PROC 28) ker Risk quantification (RCR)
Inhalation, Systemic effects, Long Tonhalation, Systemic effects, Acute Dermal, Systemic effects, Long Termal, Systemic effects, Long Termal, Systemic effects, Combined routes, Systemic effects, Contributing scenario controlling Exposure route Inhalation, Systemic effects, Long Tonhalation, Systemic effects, Acute	20 mg/m ³ 20 mg/m ³	0.361 0.243 0.599 0.961 aning and repair) of machinery (PROC 28 ker Risk quantification (RCR) 0.602
Inhalation, Systemic effects, Long T Inhalation, Systemic effects, Acute Dermal, Systemic effects, Long Ter Combined routes, Systemic effects,	Zerm 3 mg/m³ 20 mg/m³ m 7.072 mg/kg bw/day Long Term worker exposure: Manual maintenance (cle. Exposure estimate - Worker Serm 5 mg/m³ 20 mg/m³ m 2.742 mg/kg bw/day	0.361 0.243 0.599 0.961 aning and repair) of machinery (PROC 28 ker Risk quantification (RCR) 0.602 0.243

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Melamin

•	T	A TT 4 . 1 4 . 1 . 4	- Use as intermediate for resins (reacted mo	

2.	Exposure Scenario 2:	Use at industrial sites - Use as intermediate for resins (reac	ted melamine)
SECTI	ON 1:	Title of exposure scenario	
		Use at industrial sites - Use as intermediate for resins (rea	ncted melamine)
Contrib	outing scenario controlli	ng environmental exposure	
CS1	Use as intermediate for	resins (reacted melamine)	ERC6a, ERC6c
Contrib	outing scenario controlli	ng worker exposure	
CS2		refinery in closed process without likelihood of exposure or nt containment conditions	PROC1
CS3	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions		
CS4		tion in the chemical industry in closed batch processes with posure or processes with equivalent containment conditions	PROC3
CS5	Chemical production wh	nere opportunity for exposure arises	PROC4
CS6	Mixing or blending in b	atch processes	PROC5
CS7	Calendering operations		PROC6
CS8	Transfer of substance or facilities	mixture (charging and discharging) at non-dedicated	PROC8a
CS9	Transfer of substance or	mixture (charging and discharging) at dedicated facilities	PROC8b
CS10	Transfer of substance or including weighing)	mixture into small containers (dedicated filling line,	PROC9
CS11	Tabletting, compression, extrusion, pelletisation, granulation PROC14		
CS12	Use as laboratory reagent PROC15		PROC15
CS13	Manual maintenance (cleaning and repair) of machinery PROC28		
SECTION	TION 2: Conditions of use		
2.1		Contributing scenario controlling environmental exposur 2.1 Use as intermediate for resins (reacted melamine) (ERC 6	
Amoun	t used, frequency and du	rration of use (or from service life)	
		vant for the assessment as scenario specific releases are estimate evant for the assessment as scenario specific releases are estimate.	
Condition	ons and measures related t	o biological sewage treatment plant	
Dischar	cal STP: Standard [Effecti ge rate of STP: >= 2E3 m tion of the STP sludge on	3/day	
Other g	given operational conditi	ons affecting environmental exposure	
Receivi	ng surface water flow: >=	1.8E4 m3/day	
2.2			
Produc	t characteristics		
		mixture/article: <= 100 % : Solid (medium dusty form)	
Freque	ncy and duration of use		
Duratio	n of activity: <= 8 h/day		
Technic	cal conditions and measu	res to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]			

Conditions and measures related to personal protection, hygiene and health evaluation

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Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: No [Effectiveness, Dermal: 0%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.3

Contributing scenario controlling worker exposure:

2.3 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC 2)

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Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.4

Contributing scenario controlling worker exposure:

2.4 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC 3)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.5

Contributing scenario controlling worker exposure:

2.5 Chemical production where opportunity for exposure arises (PROC 4)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

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Melamin

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

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Contributing scenario controlling worker exposure: 2.6 Mixing or blending in batch processes (PROC 5)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.7 Contributing scenario controlling worker exposure:

2.7 Calendering operations (PROC 6)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374 with basic employee training) and (other) appropriate dermal protection [Effectiveness, Dermal: 90%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.8 Contributing scenario controlling worker exposure:

2.8 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a)

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Melamin

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.9

Contributing scenario controlling worker exposure:

2.9 Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC 8b)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.10

Contributing scenario controlling worker exposure:

2.10 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC 9)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

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Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.11

Contributing scenario controlling worker exposure:

2.11 Tabletting, compression, extrusion, pelletisation, granulation (PROC 14)

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Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.12

Contributing scenario controlling worker exposure:

2.12 Use as laboratory reagent (PROC 15)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: No [Effectiveness, Dermal: 0%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

Contributing scenario controlling worker exposure:

2.13 Manual maintenance (cleaning and repair) of machinery (PROC 28)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

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Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

CECTION 2

Operating temperature: <= 40 °C

SECTION 3:	2.14 Exposure estimation				
3.1. Environment					
Release	Release esti	mation method Explanati		ions	
Water	Estimated re	lease rate	Local rele	elease rate: 3 kg/day	
Air	Estimated re	lease rate	Local rele	ease rate: 0.5 kg/day	
Non-Agricultural Soil	Estimated re	lease factor	Release fa	actor after on-site RMM: 0%	
Protection target		Exposure concentration		Risk quantification (RCR)	
Fresh water		Local PEC: 0.155 mg/l		0.3	
Sedimentation (Fresh water)		Local PEC: 1.26 mg/kg dw		0.3	
Marine water		Local PEC: 0.0255 mg/l		0.3	
Sedimentation (Marine water)		Local PEC: 0.126 mg/kg	dw	0.3	
Sewage Treatment Plant		Local PEC: 2.496 mg/l		< 0.01	
Agricultural soil		Local PEC: 0.029 mg/kg dw		0.08	
Man via Environment - Inhalation (Systemic effects)		Concentration in air: 7.8E	-5 mg/m ³	< 0.01	
Man via Environment - Oral		Exposure via food consun 0.017 mg/kg bw/day	nption:	0.04	
Man via Environment - Combined routes				0.02	

3.2. Worker

Contributing scenario controlling worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC 1)

Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.01 mg/m³	< 0.01
Inhalation, Systemic effects, Acute	0.04 mg/m³	< 0.01
Dermal, Systemic effects, Long Term	0.034 mg/kg bw/day	< 0.01
Combined routes, Systemic effects, Long Term		< 0.01

Contributing scenario controlling worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC 2)

Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.5 mg/m ³	0.06
Inhalation, Systemic effects, Acute	2 mg/m³	0.024
Dermal, Systemic effects, Long Term	1.37 mg/kg bw/day	0.116
Combined routes, Systemic effects, Long Term		0.176

Contributing scenario controlling worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC 3)

Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	1 mg/m ³	0.12

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Inhalation, Systemic effects, Acute	4 mg/m³	0.049
Dermal, Systemic effects, Long Term	0.69 mg/kg bw/day	0.058
Combined routes, Systemic effects, Long Term	0.05 mg/kg ow/day	0.179
Contributing scenario controlling worker exposi	ure: Chemical production where oppo	
4)	arev enemical production where appo	reality for emposure unique (11100
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m ³	0.602
Inhalation, Systemic effects, Acute	20 mg/m³	0.243
Dermal, Systemic effects, Long Term	1.372 mg/kg bw/day	0.116
Combined routes, Systemic effects, Long Term		0.719
Contributing scenario controlling worker expos	ure: Mixing or blending in batch proc	esses (PROC 5)
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m ³	0.602
Inhalation, Systemic effects, Acute	20 mg/m³	0.243
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835
Contributing scenario controlling worker expos	ure: Calendering operations (PROC 6	<u>(i)</u>
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m ³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	2.743 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835
Contributing scenario controlling worker exposenon-dedicated facilities (PROC 8a)	ure: Transfer of substance or mixture	(charging and discharging) at
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m ³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835
Contributing scenario controlling worker exposinon-dedicated facilities (PROC 8b)	ure: Transfer of substance or mixture	(charging and discharging) at
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	1 mg/m³	0.12
Inhalation, Systemic effects, Acute	4 mg/m ³	0.049
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.353
Contributing scenario controlling worker exposifilling line, including weighing) (PROC 9)	ure: Transfer of substance or mixture	into small containers (dedicated
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m³	0.602
Inhalation, Systemic effects, Acute	20 mg/m³	0.243
Dermal, Systemic effects, Long Term	1.372 mg/kg bw/day	0.116
Combined routes, Systemic effects, Long Term		0.719
Contributing scenario controlling worker expos	ure: Tabletting, compression, extrusion	on, pelletisation, granulation

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Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	1 mg/m³	0.12
Inhalation, Systemic effects, Acute	4 mg/m³	0.049
Dermal, Systemic effects, Long Term	3.43 mg/kg bw/day	0.291
Combined routes, Systemic effects, Long Term	1	0.411
Contributing scenario controlling worker ex	xposure: Use as laboratory reagent (PROC	C 15)
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.5 mg/m³	0.06
Inhalation, Systemic effects, Acute	2 mg/m³	0.024
Dermal, Systemic effects, Long Term	0.34 mg/kg bw/day	0.029
Combined routes, Systemic effects, Long Term	ı	0.089
Contributing scenario controlling worker ex	posure: Manual maintenance (cleaning an	nd repair) of machinery (PROC 28)
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m³	0.602
Inhalation, Systemic effects, Acute	20 mg/m³	0.243
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term	1	0.835
SECTION 4: 2.15 Guid the ES	dance to DU to evaluate whether he wor	ks inside the boundaries set by

ECETOC TRA Workers 3.1:
Explanation: The exposure estimates for PROC 8a are used, as TRA Workers cannot predict exposure for PROC 28 and these estimates can be considered suitable for estimating exposures during manual maintenance.

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3.	Exposure Scenario 3:	Use at industrial sites - Use of resins with unreacted residu	ial melamine		
SECTI	SECTION 1: Title of exposure scenario				
	Use at industrial sites - Use of resins with unreacted residual melamine				
Contri	buting scenario controlli	ng environmental exposure			
CS1	Use of resins with unrea	acted residual melamine	ERC5		
Contri	buting scenario controlli	ng worker exposure			
CS2	Industrial spraying		PROC7		
CS3	Transfer of substance of facilities	mixture (charging and discharging) at non-dedicated	PROC8a		
CS4	Transfer of substance or	mixture (charging and discharging) at dedicated facilities	PROC8b		
CS5	Roller application or br	ushing	PROC10		
CS6	Hand-mixing with intin	nate contact and only PPE available	PROC19		
CS7	Manual maintenance (c	leaning and repair) of machinery	PROC28		
SECTI	ION 2:	Conditions of use	<u> </u>		
2.1		Contributing scenario controlling environmental exposu 3.1 Use of resins with unreacted residual melamine (ERC 5)			
Amour	nt used, frequency and di	uration of use (or from service life)			
		vant for the assessment as scenario specific releases are estimate levant for the assessment as scenario specific releases are estimate as scenario specific releases are estimated as scenarios a			
Conditi	ions and measures related	to biological sewage treatment plant			
Biological STP: Standard [Effectiveness, Water: 0.169%] Discharge rate of STP: >= 2E3 m3/day Application of the STP sludge on agricultural soil: Yes					
Other	given operational conditi	ons affecting environmental exposure			
Receiv	Receiving surface water flow: >= 1.8E4 m3/day				
2.2					
Product characteristics					
Percentage (w/w) of substance in mixture/article: <= 5 % Physical form of the used product: Liquid					
Freque	Frequency and duration of use				
Duratio	on of activity: <= 8 h/day				
Techni	ical conditions and measu	res to control dispersion from source towards the worker			
Occupa	ational Health and Safety M	ral ventilation (mechanical) Management System: Advanced Fectiveness, Inhalation: 0%, Dermal: 0%]			
Condit	Conditions and measures related to personal protection, hygiene and health evaluation				
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]					
Other given operational conditions affecting workers exposure					
	Place of use: Indoor Operating temperature: <= 40 °C				
2.3		Contributing scenario controlling worker exposure: 3.3 Transfer of substance or mixture (charging and discharging facilities (PROC 8a)	ing) at non-dedicated		
Produc	ct characteristics				

Percentage (w/w) of substance in mixture/article: \leq 5 %

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Physical form of the used product: Liquid

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

(PROC 8b)

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.4 Contributing scenario controlling worker exposure:
3.4 Transfer of substance or mixture (charging and discharging) at dedicated facilities

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 5 %

Physical form of the used product: Liquid

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.5 Contributing scenario controlling worker exposure:
3.5 Roller application or brushing (PROC 10)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 5 %

Physical form of the used product: Liquid

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

Ventilation working room: General ventilation (mechanical) Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

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2.6 Contributing scenario controlling worker exposure:
3.6 Hand-mixing with intimate contact and only PPE available (PROC 19)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 5 %

Physical form of the used product: Liquid

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

Ventilation working room: General ventilation (mechanical) Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.7 Contributing scenario controlling worker exposure:
3.7 Manual maintenance (cleaning and repair) of machinery (PROC 28)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 5 %

Physical form of the used product: Liquid

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

$Conditions \ and \ measures \ related \ to \ personal \ protection, hygiene \ and \ health \ evaluation$

Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

SECTION 3:	3.8 Exposure estimation
SECTION 5:	3.6 Exposure estimation

3.1. Environment

	Release	Release estimation method	Explanations	
	Water Estimated release rate		Local release rate: 0.5 kg/day	
Air Estimated release rate		Estimated release rate	Local release rate: 0 kg/day	
	Non-Agricultural Soil	Estimated release factor	Release factor after on-site RMM: 0%	

Protection target	Exposure concentration	Risk quantification (RCR)	
Fresh water	Local PEC: 0.03 mg/l	0.06	
Sedimentation (Fresh water)	Local PEC: 0.148 mg/kg dw	0.06	
Marine water	Local PEC: 3E-3 mg/l	0.06	
Sedimentation (Marine water)	Local PEC: 0.015 mg/kg dw	0.06	
Sewage Treatment Plant	Local PEC: 0.25 mg/l	< 0.01	

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Agricultural soil	Local PEC: 2.2E-3 mg/kg dw	0.01
Man via Environment - Inhalation (Systemic	Concentration in air:	< 0.01
effects) Man via Environment - Oral	9.8E-16 mg/m³ Exposure via food consumption:	< 0.01
Man via Divisonment Gran	1.09E-3 mg/kg bw/day	V 0.01
Man via Environment - Combined routes		< 0.01
3.2. Worker		
Contributing scenario controlling worker exposur	e: Industrial spraying (PROC 7)	
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	2.43 mg/m ³	0.293
Inhalation, Systemic effects, Acute	2.43 mg/m ³	0.03
Dermal, Systemic effects, Long Term	1.714 mg/kg bw/day	0.145
Combined routes, Systemic effects, Long Term		0.438
Contributing scenario controlling worker exposu non-dedicated facilities (PROC 8a)	re: Transfer of substance or mixture (charging and discharging) at
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.105 mg/m ³	0.013
Inhalation, Systemic effects, Acute	0.105 mg/m ³	< 0.01
Dermal, Systemic effects, Long Term	2.74 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.245
Contributing scenario controlling worker exposu non-dedicated facilities (PROC 8b)	re: Transfer of substance or mixture (charging and discharging) at
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.105 mg/m ³	0.013
Inhalation, Systemic effects, Acute	0.105 mg/m ³	< 0.01
Dermal, Systemic effects, Long Term	2.74 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.245
Contributing scenario controlling worker exposu	re: Roller application or brushing (PR	OC 10)
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	1.1 mg/m³	0.133
Inhalation, Systemic effects, Acute	1.1 mg/m³	0.013
Dermal, Systemic effects, Long Term	5.486 mg/kg bw/day	0.465
Combined routes, Systemic effects, Long Term		0.597
Contributing scenario controlling worker exposure: Hand-mixing with intimate contact and only PPE available (PROC 19)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.53 mg/m ³	0.064
Inhalation, Systemic effects, Acute	0.53 mg/m^3	< 0.01
Dermal, Systemic effects, Long Term	5.657 mg/kg bw/day	0.479
Combined routes, Systemic effects, Long Term		0.543
Contributing scenario controlling worker exposure: Manual maintenance (cleaning and repair) of machinery (PROC 28)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.105 mg/m ³	0.013
, ,		

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Dermal, Systemic effects, Long Term		2.74 mg/kg bw/day	0.232	
	Combined routes, Systemic effects, Long Term			0.245
	SECTION 4:	3.9 Guidance to DU to evaluate whether he works inside the boundaries set by the ES		

Remarks on exposure data from external estimation tools:

Stoffenmanager 8:

Explanation: Inhalation exposure concentration estimated using Stoffenmanager® (version 8)

- Activity/type of task: Handling of liquids at high pressure resulting in substantial generation of mist or spray/haze
- Distance to task: In the breathing zone of the worker (distance head-product < 1 m) (worst-case assumption)
- Local controls: No control measures at the source
- Ventilation working room: General ventilation (mechanical)
- Volume of the working room: 100-1000 m3
- Regular cleaning of work area (daily): Yes
- Regular inspection and maintenance (at least monthly): Yes
- Presence of secondary emission sources (worst-case assumptions);

Other workers using the same substance simultaneously: Yes

A period of evaporation, drying or curing after the activity (with prolonged emission of vapours): Yes

The concentration that can be inhaled by the worker during the task due to the activity undertaken is obtained. As the task is performed for 8 hours, the daily average concentration equals the task concentration. In accordance with the ECHA Guidance (Chapter R.14), this estimated concentration is therefore considered to be the short-term as well as the long-term inhalation exposure estimate (90th percentiles).

ECETOC TRA Workers 3.1:

Explanation: As solid is used as value for CSA, while liquid is used, it is considered appropriate to refine the exposure estimates, using the standalone version of TRA Workers (v3.1). The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-8 Pa (as calculated by Chesar).

Stoffenmanager 8:

Explanation: Inhalation exposure concentration estimated using Stoffenmanager® (version 8)

- Activity/type of task: Handling of liquids on large surfaces or large work pieces
- Distance to task: In the breathing zone of the worker (distance head-product < 1 m) (worst-case assumption)
- Local controls: No control measures at the source
- Ventilation working room: General ventilation (mechanical)
- Volume of the working room: 100-1000 m3
- Regular cleaning of work area (daily): Yes
- Regular inspection and maintenance (at least monthly): Yes
- $\hbox{- Presence of secondary emission sources (worst-case assumptions);}\\$

Other workers using the same substance simultaneously: Yes

A period of evaporation, drying or curing after the activity (with prolonged emission of vapours): Yes

The concentration that can be inhaled by the worker during the task due to the activity undertaken is obtained. As the task is performed for 8 hours, the daily average concentration equals the task concentration. In accordance with the ECHA Guidance (Chapter R.14), this estimated concentration is therefore considered to be the short-term as well as the long-term inhalation exposure estimate (90th percentiles).

Stoffenmanager 8:

Explanation: Inhalation exposure concentration estimated using Stoffenmanager® (version 8)

- Activity/type of task: Handling of liquids using low pressure, low speed or on medium-sized surfaces
- Distance to task: In the breathing zone of the worker (distance head-product < 1 m) (worst-case assumption)
- Local controls: No control measures at the source
- Ventilation working room: General ventilation (mechanical)
- Volume of the working room: 100-1000 m3
- Regular cleaning of work area (daily): Yes
- Regular inspection and maintenance (at least monthly): Yes
- Presence of secondary emission sources (worst-case assumptions);

Other workers using the same substance simultaneously: Yes

A period of evaporation, drying or curing after the activity (with prolonged emission of vapours): Yes

The concentration that can be inhaled by the worker during the task due to the activity undertaken is obtained. As the task is performed for 8 hours, the daily average concentration equals the task concentration. In accordance with the ECHA Guidance (Chapter R.14), this estimated concentration is therefore considered to be the short-term as well as the long-term inhalation exposure estimate (90th percentiles).

ECETOC TRA Workers 3.1:

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Explanation: The exposure estimates for PROC 8a are used, as TRA Workers cannot predict exposure for PROC 28 and these estimates can be considered suitable for estimating exposures during manual maintenance. The exposure estimates are calculated for using a liquid, with the standalone version of TRA Workers (v3.1). The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-8 Pa (as calculated by Chesar).

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4. Exposure Scenario 4: Use at industrial sites - Use as intermediate for the production of other substances e.g. melamine salt (reacted melamine)

	melamine salt (reacted	l melamine)	
SECTI	SECTION 1: Title of exposure scenario		
	Use at industrial sites - Use as intermediate for the production of other substances e.g. melamine salt (reacted melamine)		
Contri	buting scenario controlli	ng environmental exposure	
CS1	Use as intermediate for melamine)	the production of other substances e.g. melamine salt (reacted	ERC6a
Contri	buting scenario controlli	ng worker exposure	
CS2	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC1		
CS3	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions		PROC2
CS4		tion in the chemical industry in closed batch processes with sposure or processes with equivalent containment conditions	PROC3
CS5	Chemical production wl	here opportunity for exposure arises	PROC4
CS6	Mixing or blending in b	atch processes	PROC5
CS7	Transfer of substance or facilities	mixture (charging and discharging) at non-dedicated	PROC8a
CS8	Transfer of substance or	mixture (charging and discharging) at dedicated facilities	PROC8b
CS9	Transfer of substance or including weighing)	mixture into small containers (dedicated filling line,	PROC9
CS10	Use as laboratory reager	nt	PROC15
CS11	Manual maintenance (cl	eaning and repair) of machinery	PROC28
SECTI	ON 2:	Conditions of use	•
2.1	Contributing scenario controlling environmental exposure: 4.1 Use as intermediate for the production of other substances e.g. melamine salt (reacted melamine) (ERC 6a)		
Amour	nt used, frequency and du	uration of use (or from service life)	
		vant for the assessment as scenario specific releases are estimat levant for the assessment as scenario specific releases are estim	
Conditi	ions and measures related	to biological sewage treatment plant	
Dischar	ical STP: Standard [Effecting rate of STP: >= 2E3 mation of the STP sludge on	3/day	
Other	given operational conditi	ons affecting environmental exposure	
Receivi	ing surface water flow: >=	1.8E4 m3/day	
2.2		Contributing scenario controlling worker exposure: 4.2 Chemical production or refinery in closed process without processes with equivalent containment conditions (PROC 1)	t likelihood of exposure or
Produc	ct characteristics		
	Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)		
Freque	Frequency and duration of use		
Duration of activity: <= 8 h/day			
Techni	cal conditions and measu	res to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]			

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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: \neq 40 °C

2.3

Contributing scenario controlling worker exposure:

4.3 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC 2)

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Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.4

Contributing scenario controlling worker exposure:

4.4 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC 3)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

$Conditions \ and \ measures \ related \ to \ personal \ protection, \ hygiene \ and \ health \ evaluation$

Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.5

Contributing scenario controlling worker exposure:

4.5 Chemical production where opportunity for exposure arises (PROC 4)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

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Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.6 Contributing scenario controlling worker exposure: 4.6 Mixing or blending in batch processes (PROC 5)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <=40 °C

2.7 Contributing scenario controlling worker exposure:

4.7 Transfer of substance or mixture (charging and discharging) at non-dedicated

facilities (PROC 8a)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

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2.8 Contributing scenario controlling worker exposure:
4.8 Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC 8b)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.9 Contributing scenario controlling worker exposure:

4.9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC 9)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

$Conditions \ and \ measures \ related \ to \ personal \ protection, \ hygiene \ and \ health \ evaluation$

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.10 Contributing scenario controlling worker exposure:
4.10 Use as laboratory reagent (PROC 15)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

 $Local\ exhaust\ ventilation:\ No\ [Effectiveness,\ Inhalation:\ 0\%,\ Dermal:\ 0\%]$

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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

1 & 1

Contributing scenario controlling worker exposure:

4.11 Manual maintenance (cleaning and repair) of machinery (PROC 28)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

SECTION 3:	4.12 Exposure estimation
3.1. Environment	

Release	Release estimation method	Explanations
Water	Estimated release rate	Local release rate: 3 kg/day
Air	Estimated release rate	Local release rate: 0.5 kg/day
Non-Agricultural Soil	Estimated release factor	Release factor after on-site RMM: 0%

Protection target	Exposure concentration	Risk quantification (RCR)
Fresh water	Local PEC: 0.155 mg/l	0.3
Sedimentation (Fresh water)	Local PEC: 0.766 mg/kg dw	0.3
Marine water	Local PEC: 0.0155 mg/l	0.3
Sedimentation (Marine water)	Local PEC: 0.077 mg/kg dw	0.3
Sewage Treatment Plant	Local PEC: 1.497 mg/l	< 0.01
Agricultural soil	Local PEC: 0.02917 mg/kg dw	0.08
Man via Environment - Inhalation (Systemic effects)	Concentration in air: 3.97E-5 mg/m³	< 0.01
Man via Environment - Oral	Exposure via food consumption: 9.7E-3 mg/kg bw/day	0.02

3.2. Worker

Man via Environment - Combined routes

Contributing scenario controlling worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC 1)

Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.01 mg/m ³	< 0.01

0.02

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Inhalation, Systemic effects, Acute	0.04 mg/m ³	< 0.01
Dermal, Systemic effects, Long Term	0.034 mg/kg bw/day	< 0.01
Combined routes, Systemic effects, Long Term		< 0.01
Contributing scenario controlling worker expose occasional controlled exposure or processes with expos		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.5 mg/m^3	0.06
Inhalation, Systemic effects, Acute	2 mg/m³	0.024
Dermal, Systemic effects, Long Term	1.37 mg/kg bw/day	0.116
Combined routes, Systemic effects, Long Term		0.176
Contributing scenario controlling worker exposus batch processes with occasional controlled exposure		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	1 mg/m³	0.12
Inhalation, Systemic effects, Acute	4 mg/m³	0.049
Dermal, Systemic effects, Long Term	0.69 mg/kg bw/day	0.058
Combined routes, Systemic effects, Long Term		0.179
Contributing scenario controlling worker expos 4)	ure: Chemical production where oppo	ortunity for exposure arises (PROC
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m³	0.602
Inhalation, Systemic effects, Acute	20 mg/m³	0.243
Dermal, Systemic effects, Long Term	1.372 mg/kg bw/day	0.116
Combined routes, Systemic effects, Long Term		0.719
Contributing scenario controlling worker expos	ure: Mixing or blending in batch proc	esses (PROC 5)
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m ³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835
Contributing scenario controlling worker expos non-dedicated facilities (PROC 8a)	ure: Transfer of substance or mixture	(charging and discharging) at
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m ³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835
Contributing scenario controlling worker expos non-dedicated facilities (PROC 8b)	ure: Transfer of substance or mixture	(charging and discharging) at
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	1 mg/m³	0.12
Inhalation, Systemic effects, Acute	4 mg/m³	0.049
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.353

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Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m³	0.602
Inhalation, Systemic effects, Acute	20 mg/m³	0.243
Dermal, Systemic effects, Long Term	1.372 mg/kg bw/day	0.116
Combined routes, Systemic effects, Long Term		0.719
Contributing scenario controlling worker expos	sure: Use as laboratory reagent (PROC	C 15)
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.5 mg/m³	0.06
Inhalation, Systemic effects, Acute	2 mg/m³	0.024
Dermal, Systemic effects, Long Term	0.34 mg/kg bw/day	0.029
Combined routes, Systemic effects, Long Term		0.089
Contributing scenario controlling worker expos	ure: Manual maintenance (cleaning ar	nd repair) of machinery (PROC 28
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m³	0.602
Inhalation, Systemic effects, Acute	20 mg/m³	0.243
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835
SECTION 4: 4.13 Guidan the ES	ce to DU to evaluate whether he wor	ks inside the boundaries set by

Remarks on exposure data from external estimation tools:

ECETOC TRA Workers 3.1:

Explanation: The exposure estimates for PROC 8a are used, as TRA Workers cannot predict exposure for PROC 28 and these estimates can be considered suitable for estimating exposures during manual maintenance.

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5. Ex	osure Scena	rio 5: Use	at industrial	sites - Use as	additive in foams
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5. SECTI		Use at industrial sites - Use as additive in foams Title of exposure scenario			
52011	011 21	Use at industrial sites - Use as additive in foams			
Contril	huting scenario controlli	ng environmental exposure			
CS1	Use as additive in foams		ERC5		
Contril	buting scenario controlli	ng worker exposure	1 2 2		
CS2	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC1				
CS3	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC2				
CS4		tion in the chemical industry in closed batch processes with posure or processes with equivalent containment conditions	PROC3		
CS5	Chemical production wh	nere opportunity for exposure arises	PROC4		
CS6	Mixing or blending in b	atch processes	PROC5		
CS7	Transfer of substance or facilities	mixture (charging and discharging) at non-dedicated	PROC8a		
CS8	Transfer of substance or	mixture (charging and discharging) at dedicated facilities	PROC8b		
CS9	Transfer of substance or including weighing)	mixture into small containers (dedicated filling line,	PROC9		
CS10	Use as laboratory reager	nt	PROC15		
CS11	Hand-mixing with intim	ate contact and only PPE available	PROC19		
CS12	Manual maintenance (cl	eaning and repair) of machinery	PROC28		
Subseq	uent service life exposur	e scenario(s):			
ES8	Service life (worker at in	ndustrial site) - PU foams - Workers (industrial)			
ES11	Service life (consumers)	- PU foams – Consumers			
SECTI	ON 2:	Conditions of use			
2.1		Contributing scenario controlling environmental exposur 5.1 Use as additive in foams (ERC 5)	e:		
Amoun	nt used, frequency and du	uration of use (or from service life)			
		vant for the assessment as scenario specific releases are estimate evant for the assessment as scenario specific releases are estimated as scenarios are scenarios as scenarios are scenarios as scenarios are scenarios as scenarios are scenarios as scenarios as scenarios are estimated as a scenarios ar			
Conditi	ons and measures related t	to biological sewage treatment plant			
Dischar	cal STP: Standard [Effecting rate of STP: >= 2E3 multion of the STP sludge on	3/day			
Other g	given operational conditi	ons affecting environmental exposure			
Receivi	ng surface water flow: >=	1.8E4 m3/day			
2.2		Contributing scenario controlling worker exposure: 5.2 Chemical production or refinery in closed process without processes with equivalent containment conditions (PROC 1)	at likelihood of exposure or		
Produc	et characteristics				
	age (w/w) of substance in l form of the used product	mixture/article: <= 100 % :: Solid (medium dusty form)			
Freque	ncy and duration of use				
Duratio	on of activity: <= 8 h/day				
Techni	cal conditions and measu	res to control dispersion from source towards the worker			
General	l ventilation: Basic general	l ventilation (1-3 air changes per hour) [Effectiveness, Inhalation	on: 0%]		

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Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.3

Contributing scenario controlling worker exposure:

5.3 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC 2)

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Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.4

Contributing scenario controlling worker exposure:

5.4 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC 3)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.5

Contributing scenario controlling worker exposure:

5.5 Chemical production where opportunity for exposure arises (PROC 4)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 %

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Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.0

Contributing scenario controlling worker exposure:

5.6 Mixing or blending in batch processes (PROC 5)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.7

Contributing scenario controlling worker exposure:

5.7 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

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Place of use: Indoor

Operating temperature: \leq 40 °C

2.8

Contributing scenario controlling worker exposure:

5.8 Transfer of substance or mixture (charging and discharging) at dedicated facilities

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(PROC 8b)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

20

Contributing scenario controlling worker exposure:

5.9 Transfer of substance or mixture into small containers (dedicated filling line,

including weighing) (PROC 9)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

 $Conditions \ and \ measures \ related \ to \ personal \ protection, hygiene \ and \ health \ evaluation$

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.10

Contributing scenario controlling worker exposure:

5.10 Use as laboratory reagent (PROC 15)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

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Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.11 Contributing scenario controlling worker exposure:

5.11 Hand-mixing with intimate contact and only PPE available (PROC 19)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 4 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374 with specific activity training) and (other)

appropriate dermal protection [Effectiveness, Dermal: 95%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.12 Contributing scenario controlling worker exposure:

5.12 Manual maintenance (cleaning and repair) of machinery (PROC 28)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

SECTION 3:	5.13 Exposure estimation	5.13 Exposure estimation	
3.1. Environment			
Release	Release estimation method	Explanations	
Water	Estimated release rate	Local release rate: 3 kg/day	

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Air	Estimated re	lease rate	Local rele	ease rate: 0.5 kg/day
Non-Agricultural Soil			actor after on-site RMM: 0%	
Protection target		Exposure concentration		Risk quantification (RCR)
Fresh water		Local PEC: 0.155 mg/l		0.3
Sedimentation (Fresh water)		Local PEC: 0.766 mg/kg	dw	0.3
Marine water		Local PEC: 0.0155 mg/l		0.3
Sedimentation (Marine water)		Local PEC: 0.077 mg/kg	dw	0.3
Sewage Treatment Plant		Local PEC: 1.497 mg/l		< 0.01
Agricultural soil		Local PEC: 0.017 mg/kg	dw	0.08
Man via Environment - Inhalation effects)	(Systemic	Concentration in air: 3.971E-5 mg/m³		< 0.01
Man via Environment - Oral		Exposure via food consun 9.7E-3 mg/kg bw/day	nption:	0.02
Man via Environment – Combined rou	tes			0.02
3.2. Worker				
Contributing scenario controlling we likelihood of exposure or processes with				closed process without
Exposure route		Exposure estimate - Wo	rker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Ter	m	0.01 mg/m ³		< 0.01
Inhalation, Systemic effects, Acute		0.04 mg/m³		< 0.01
Dermal, Systemic effects, Long Term		0.034 mg/kg bw/day		< 0.01
Combined routes, Systemic effects, Lo	ong Term			< 0.01
Contributing scenario controlling we occasional controlled exposure or proc				
Exposure route		Exposure estimate - Wo	rker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Ter	m	0.5 mg/m ³		0.06
Inhalation, Systemic effects, Acute		2 mg/m³		0.024
Dermal, Systemic effects, Long Term		1.37 mg/kg bw/day		0.116
Combined routes, Systemic effects, Lo	ong Term			0.176
Contributing scenario controlling worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC 3)				
Exposure route		Exposure estimate - Wo	rker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Ter	m	1 mg/m³		0.12
Inhalation, Systemic effects, Acute		4 mg/m³		0.049
Dermal, Systemic effects, Long Term		0.69 mg/kg bw/day		0.058
Combined routes, Systemic effects, Lo	ong Term			0.179
Contributing scenario controlling w 4)	orker exposu	re: Chemical production wh	ere opportu	unity for exposure arises (PROC
Exposure route		Exposure estimate - Wo	rker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Ter	m	5 mg/m³		0.602
Inhalation, Systemic effects, Acute		20 mg/m³		0.243
Dermal, Systemic effects, Long Term		1.372 mg/kg bw/day		0.116
Combined routes, Systemic effects, Lo	ong Term			0.719
Contributing scenario controlling w	orker exposu	re: Mixing or blending in ba	tch process	ses (PROC 5)
Exposure route		Exposure estimate - Wo	rker	Risk quantification (RCR)

Inhalation, Systemic effects, Long Term	5 mg/m³	0.602
Inhalation, Systemic effects, Acute	20 mg/m³	0.243
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835
Contributing scenario controlling worker exponon-dedicated facilities (PROC 8a)	sure: Transfer of substance or mixture	(charging and discharging) at
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m³	0.602
Inhalation, Systemic effects, Acute	20 mg/m³	0.243
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835
Contributing scenario controlling worker exponon-dedicated facilities (PROC 8b)	sure: Transfer of substance or mixture	(charging and discharging) at
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	1 mg/m³	0.12
Inhalation, Systemic effects, Acute	4 mg/m³	0.049
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.353
Contributing scenario controlling worker exportilling line, including weighing) (PROC 9)	sure: Transfer of substance or mixture	into small containers (dedicated
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m³	0.602
Inhalation, Systemic effects, Acute	20 mg/m³	0.243
Dermal, Systemic effects, Long Term	1.372 mg/kg bw/day	0.116
Combined routes, Systemic effects, Long Term		0.719
Contributing scenario controlling worker expo	sure: Use as laboratory reagent (PROC	C 15)
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.5 mg/m³	0.06
Inhalation, Systemic effects, Acute	2 mg/m³	0.024
Dermal, Systemic effects, Long Term	0.34 mg/kg bw/day	0.029
Combined routes, Systemic effects, Long Term		0.089
Contributing scenario controlling worker expo	sure: Hand-mixing with intimate conta	act and only PPE available (PROC
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	3 mg/m ³	0.361
Inhalation, Systemic effects, Acute	20 mg/m³	0.243
Dermal, Systemic effects, Long Term	7.072 mg/kg bw/day	0.599
Combined routes, Systemic effects, Long Term		0.961
Contributing scenario controlling worker expos	sure: Manual maintenance (cleaning an	nd repair) of machinery (PROC 28
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m³	0.602
Inhalation, Systemic effects, Acute	20 mg/m³	0.243
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835

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SECTION 4:	5.14 Guidance to DU to evaluate whether he works inside the boundaries set by
	the ES

Remarks on exposure data from external estimation tools:

ECETOC TRA Workers 3.1:

Explanation: The exposure estimates for PROC 8a are used, as TRA Workers cannot predict exposure for PROC 28 and these estimates can be considered suitable for estimating exposures during manual maintenance.

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6.	Exposure Scenario 6:	Use at industrial sites - Use as additive in intumescent coatings	
CTIC	N 1:	Title of exposure scenario	

6.						
SECTI	SECTION 1: Title of exposure scenario					
	Use at industrial sites - Use as additive in intumescent coatings					
Contril	outing scenario controlli	ng environmental exposure				
CS1	Use as additive in intum	escent coatings	ERC5			
Contril	buting scenario controlli	ng worker exposure	_			
CS2		tion in the chemical industry in closed batch processes with posure or processes with equivalent containment conditions	PROC3			
CS3	Chemical production wh	nere opportunity for exposure arises	PROC4			
CS4	Mixing or blending in b	atch processes	PROC5			
CS5	Industrial spraying with	Local Exhaust Ventilation (LEV)	PROC7			
CS6	Industrial spraying with	out Local Exhaust Ventilation (LEV)	PROC7			
CS7	Transfer of substance or facilities	mixture (charging and discharging) at non-dedicated	PROC8a			
CS8	Transfer of substance or	mixture (charging and discharging) at dedicated facilities	PROC8b			
CS9	Transfer of substance or including weighing)	mixture into small containers (dedicated filling line,	PROC9			
CS10	Roller application or bru	ıshing	PROC10			
CS11	Treatment of articles by	dipping and pouring	PROC13			
CS12	Use as laboratory reager	nt	PROC15			
CS13	Hand-mixing with intim	ate contact and only PPE available	PROC19			
CS14	Manual maintenance (cl	eaning and repair) of machinery	PROC28			
Subseq	uent service life exposur	e scenario(s):				
ES9	Service life (worker at i	ndustrial site) - Intumescent coatings - Workers (industrial)				
ES10	Service life (professiona	al worker) - Intumescent coatings - Professional Workers				
ES12	Service life (consumers)) - Intumescent coating – Consumers				
SECTI	ON 2:	Conditions of use				
2.1		Contributing scenario controlling environmental exposure 6.1 Use as additive in intumescent coatings (ERC 5)	e:			
Amoun	t used, frequency and du	uration of use (or from service life)				
		vant for the assessment as scenario specific releases are estimat evant for the assessment as scenario specific releases are estim				
Conditi	ons and measures related t	to biological sewage treatment plant				
Biological STP: Standard [Effectiveness, Water: 0.169%] Discharge rate of STP: >= 2E3 m3/day Application of the STP sludge on agricultural soil: Yes						
Other given operational conditions affecting environmental exposure						
Receivi	Receiving surface water flow: >= 1.8E4 m3/day					
2.2	2.2 Contributing scenario controlling worker exposure: 6.2 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC 3)					
Produc	t characteristics					
		mixture/article: <= 100 % :: Solid (medium dusty form)				
Freque	ncy and duration of use					
_ ^ V						

Duration of activity: <= 8 h/day

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Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.3

Contributing scenario controlling worker exposure:

6.3 Chemical production where opportunity for exposure arises (PROC 4)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.4

Contributing scenario controlling worker exposure:

6.4 Mixing or blending in batch processes (PROC 5)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.5

Contributing scenario controlling worker exposure:

6.5 Industrial spraying with Local Exhaust Ventilation (LEV) (PROC 7)

Product characteristics

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Percentage (w/w) of substance in mixture/article: <= 30 %

Physical form of the used product: Liquid

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

Ventilation working room: General ventilation (mechanical) Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: Yes (TRA Effectiveness) [Effectiveness, Inhalation: 95%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.6 Contributing scenario controlling worker exposure:
6.6 Industrial spraying without Local Exhaust Ventilation (LEV) (PROC 7)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 30 %

Physical form of the used product: Liquid

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

Ventilation working room: General ventilation (mechanical)

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: Yes (Respirator with APF of 10) [Effectiveness, Inhalation: 90%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: \leq 40 °C

2.7 Contributing scenario controlling worker exposure:

6.7 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

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Other given	operational	conditions	affecting	workers exposure	3

Place of use: Indoor

Operating temperature: <= 40 °C

2.8

Contributing scenario controlling worker exposure:

6.8 Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC 8b)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.9

Contributing scenario controlling worker exposure:

6.9 Transfer of substance or mixture into small containers (dedicated filling line,

including weighing) (PROC 9)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.10

Contributing scenario controlling worker exposure:

6.10 Roller application or brushing (PROC 10)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 30 %

Physical form of the used product: Liquid

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

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(eSDS)

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Ventilation working room: General ventilation (mechanical) Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.11

Contributing scenario controlling worker exposure:

6.11 Treatment of articles by dipping and pouring (PROC 13)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 30 %

Physical form of the used product: Liquid

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.12

Contributing scenario controlling worker exposure:

6.12 Use as laboratory reagent (PROC 15)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.13

Contributing scenario controlling worker exposure:

6.13 Hand-mixing with intimate contact and only PPE available (PROC 19)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 30 %

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Physical form of the used product: Liquid

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

Ventilation working room: General ventilation (mechanical) Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374 with specific activity training) and (other)

appropriate dermal protection [Effectiveness, Dermal: 95%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.14 Contributing scenario controlling worker exposure:

6.14 Manual maintenance (cleaning and repair) of machinery (PROC 28)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

SECTION 3:	6.15 Exposure estimation

3.1. Environment

Release	Release estimation method	Explanations	
Water	Estimated release rate	Local release rate: 3 kg/day	
Air	Estimated release rate	Local release rate: 0.5 kg/day	
Non-Agricultural Soil	Estimated release factor	Release factor after on-site RMM: 0%	

Protection target	Exposure concentration	Risk quantification (RCR)
Fresh water	Local PEC: 0.155 mg/l	0.3
Sedimentation (Fresh water)	Local PEC: 0.766 mg/kg dw	0.3
Marine water	Local PEC: 0.0155 mg/l	0.3
Sedimentation (Marine water)	Local PEC: 0.077 mg/kg dw	0.3
Sewage Treatment Plant	Local PEC: 1.497 mg/l	< 0.01
Agricultural soil	Local PEC: 0.017 mg/kg dw	0.08
Man via Environment - Inhalation (Systemic effects)	Concentration in air: 3.97E-5 mg/m ³	< 0.01

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Man via Environment – Combined routes	Man via Environment - Oral	Exposure via food consumption: 9.7E-3 mg/kg bw/day	0.02				
Contributing scenario controlling worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with cacasional controlled exposure or processes with equivalent containment conditions (PRCC 3)	Man via Environment Combined routes	7.7L-3 llig/kg bw/day	0.02				
Contributing scenario controlling worker exposure or processes with equivalent containment conditions (PROC 3) Exposure route Exposure estimate - Worker Risk quantification (RCR)			0.02				
Exposure route Lawring							
Inhalation, Systemic effects, Long Term Inhalation, Systemic effects, Acute Amg/m³ O.049 Dermal, Systemic effects, Long Term O.69 mg/kg bw/day O.058 Combined routes, Systemic effects, Long Term Exposure estimate - Worker Inhalation, Systemic effects, Long Term Systemic effects, Long Term Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term Inhalation							
Inhalation, Systemic effects, Acute 4 mg/m³ 0.049 Dermal, Systemic effects, Long Term 0.69 mg/kg bw/day 0.058 Combined routes, Systemic effects, Long Term 0.179 Contributing scenario controlling worker exposure: Chemical production where opportunity for exposure arises (PROC 4) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 1.372 mg/kg bw/day 0.116 Combined routes, Systemic effects, Long Term 1.372 mg/kg bw/day 0.116 Combined routes, Systemic effects, Long Term 1.372 mg/kg bw/day 0.719 Contributing scenario controlling worker exposure: Mixing or blending in batch processes (PROC 5) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 2.0 mg/m³ 0.602 Inhalation, Systemic effects, Long Term 2.0 mg/m³ 0.602 Inhalation, Systemic effects, Long Term 2.742 mg/kg bw/day 0.232 Combined routes, Systemic effects, Long Term 2.742 mg/kg bw/day 0.232 Contributing scenario controlling worker exposure: Industrial spraying with Local Exhaust Ventilation (LEV) (PROC 7) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 0.4 mg/m³ 0.048 Inhalation, Systemic effects, Long Term 0.4 mg/m³ 0.048 Inhalation, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Contributing scenario controlling worker exposure: Industrial spraying without Local Exhaust Ventilation (LEV) (PROC 7) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 0.795 mg/m³ 0.096 Inhalation, Systemic effects, Long Term 0.795 mg/m³ 0.096 Inhalation, Systemic effects, Long Term 0.795 mg/m³ 0.096 Inhalation, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Conbined routes, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726	Exposure route	Exposure estimate - Worker	Risk quantification (RCR)				
Dermal, Systemic effects, Long Term 0.69 mg/kg bw/day 0.179	Inhalation, Systemic effects, Long Term	1 mg/m³	0.12				
Combined routes, Systemic effects, Long Term 0.179 Contributing scenario controlling worker exposure: Chemical production where opportunity for exposure arises (PROC 4) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 5 mg/m³ 0.602 Inhalation, Systemic effects, Long Term 1.372 mg/kg bw/day 0.116 Combined routes, Systemic effects, Long Term 0.719 Contributing scenario controlling worker exposure: Mixing or blending in batch processes PROC 5) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 5 mg/m³ 0.602 Inhalation, Systemic effects, Long Term 2.742 mg/kg bw/day 0.232 Combined routes, Systemic effects, Long Term 2.742 mg/kg bw/day 0.232 Combined routes, Systemic effects, Long Term Exposure estimate - Worker Risk quantification (RCR) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 0.4 mg/m³ 0.048 Inhalation, Systemic effects, Long Term 0.4 mg/m³ 0.001 Dermal, Systemic e	Inhalation, Systemic effects, Acute	4 mg/m³	0.049				
Contributing scenario controlling worker exposure: Chemical production where opportunity for exposure arises (PROC 4) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 5 mg/m³ 0.602 Inhalation, Systemic effects, Long Term 1.372 mg/kg bw/day 0.116 Combined routes, Systemic effects, Long Term 0.719 Contributing scenario controlling worker exposure: Mixing or blending in batch processes (PROC 5) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 2.742 mg/kg bw/day 0.243 Dermal, Systemic effects, Long Term 2.742 mg/kg bw/day 0.232 Combined routes, Systemic effects, Long Term 0.885 Contributing scenario controlling worker exposure: Industrial spraying with Local Exhaust Ventilation (LEV) (PROC 7) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 0.4 mg/m³ 0.804 Inhalation, Systemic effects, Long Term 0.4 mg/m³ 0.043 Inhalation, Systemic effects, Acute 0.4 mg/m³ 0.726 Combined routes, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 0.795 mg/m³ 0.096 Inhalation, Systemic effects, Long Term 0.795 mg/m³ 0.096 Inhalation, Systemic effects, Long Term 0.795 mg/m³ 0.096 Inhalation, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 0.795 mg/m³ 0.096 Inhalation, Systemic effects, Long Term 0.795 mg/m³ 0.096 Inhalation, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 0.795 mg/m³ 0.096 Inhalation, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 0.795 mg/m³ 0.096 Inhalation, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Syste	Dermal, Systemic effects, Long Term	0.69 mg/kg bw/day	0.058				
Exposure route	Combined routes, Systemic effects, Long Term		0.179				
Inhalation, Systemic effects, Long Term 5 mg/m³ 0.243 Dermal, Systemic effects, Acute 20 mg/m³ 0.243 Dermal, Systemic effects, Long Term 1.372 mg/kg bw/day 0.116 Combined routes, Systemic effects, Long Term 0.719 Contributing scenario controlling worker exposure: Mixing or blending in batch processes (PROC 5) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 5 mg/m³ 0.602 Inhalation, Systemic effects, Long Term 2.742 mg/kg bw/day 0.232 Combined routes, Systemic effects, Long Term 2.742 mg/kg bw/day 0.232 Combined routes, Systemic effects, Long Term 2.742 mg/kg bw/day 0.232 Contributing scenario controlling worker exposure: Industrial spraying with Local Exhaust Ventilation (LEV) (PROC 7) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 0.4 mg/m³ 0.048 Inhalation, Systemic effects, Acute 0.4 mg/m³ 0.048 Inhalation, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Contributing scenario controlling worker exposure: Industrial spraying without Local Exhaust Ventilation (LEV) (PROC 7) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 0.795 mg/m³ 0.096 Inhalation, Systemic effects, Long Term 0.795 mg/m³ 0.096 Inhalation, Systemic effects, Long Term 0.795 mg/m³ 0.096 Combined routes, Systemic effects, Long Term 0.795 mg/m³ 0.096 Combined routes, Systemic effects, Long Term 0.795 mg/m³ 0.096 Inhalation, Systemic effects, Long Term 0.795 mg/m³ 0.096 Combined routes, Systemic effects, Long Term 0.795 mg/m³ 0.096 Combined routes, Systemic effects, Long Term 0.8572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 0.8572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 0.8572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 0.8572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 0.795 mg/m³ 0		re: Chemical production where opport	unity for exposure arises (PROC				
Inhalation, Systemic effects, Acute 20 mg/m³ 0.243 Dermal, Systemic effects, Long Term 1.372 mg/kg bw/day 0.116 Combined routes, Systemic effects, Long Term 0.719 Contributing scenario controlling worker exposure: Mixing or blending in batch processes (PROC 5) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 5 mg/m³ 0.602 Inhalation, Systemic effects, Long Term 2.742 mg/kg bw/day 0.232 Combined routes, Systemic effects, Long Term 2.742 mg/kg bw/day 0.232 Contributing scenario controlling worker exposure: Industrial spraying with Local Exhaust Ventilation (LEV) (PROC 7) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 0.4 mg/m³ 0.048 Inhalation, Systemic effects, Long Term 0.4 mg/m³ 0.048 Inhalation, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 8.572 mg/kg bw/day 0.775 Contributing scenario controlling worker exposure: Industrial spraying without Local Exhaust Ventilation (LEV) (PROC 7) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 0.795 mg/m³ 0.096 Inhalation, Systemic effects, Long Term 0.795 mg/m³ 0.096 Inhalation, Systemic effects, Long Term 0.795 mg/m³ 0.096 Combined routes, Systemic effects, Long Term 0.795 mg/m³ 0.096 Combined routes, Systemic effects, Long Term 0.795 mg/m³ 0.096 Combined routes, Systemic effects, Long Term 0.795 mg/m³ 0.096 Combined routes, Systemic effects, Long Term 0.795 mg/m³ 0.096 Combined routes, Systemic effects, Long Term 0.8522 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 0.8522 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 0.8522 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 0.8522 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 0.8522 mg/kg bw/day 0.726 Combined routes, Systemic ef	Exposure route	Exposure estimate - Worker	Risk quantification (RCR)				
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Contributing scenario controlling worker exposure: Mixing or blending in batch processes (PROC 5) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 5 mg/m³ 0.602 Inhalation, Systemic effects, Acute 20 mg/m³ 0.243 Dermal, Systemic effects, Long Term 2.742 mg/kg bw/day 0.232 Combined routes, Systemic effects, Long Term 0.835 Contributing scenario controlling worker exposure: Industrial spraying with Local Exhaust Ventilation (LEV) (PROC 7) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 0.4 mg/m³ 0.048 Inhalation, Systemic effects, Acute 0.4 mg/m³ 0.726 Combined routes, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 0.775 Contributing scenario controlling worker exposure: Industrial spraying without Local Exhaust Ventilation (LEV) (PROC 7) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 0.795 mg/m³ 0.096 Inhalation, Systemic effects, Long Term 0.795 mg/m³ 0.096 Inhalation, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 0.795 mg/m³ 0.096 Inhalation, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 0.795 mg/m³ 0.092 Contributing scenario controlling worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 5 mg/m³ 0.602 Inhalation, Systemic effects, Long Term 5 mg/m³ 0.602 Inhalation, Systemic effects, Long Term 5 mg/m³ 0.602	Dermal, Systemic effects, Long Term	1.372 mg/kg bw/day	0.116				
Exposure route Exposure estimate - Worker Risk quantification (RCR)	Combined routes, Systemic effects, Long Term		0.719				
Inhalation, Systemic effects, Long Term 5 mg/m³ 0.602 Inhalation, Systemic effects, Acute 20 mg/m³ 0.243 Dermal, Systemic effects, Long Term 2.742 mg/kg bw/day 0.232 Combined routes, Systemic effects, Long Term 0.835 Contributing scenario controlling worker exposure: Industrial spraying with Local Exhaust Ventilation (LEV) (PROC 7) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 0.4 mg/m³ 0.048 Inhalation, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 0.775 Contributing scenario controlling worker exposure: Industrial spraying without Local Exhaust Ventilation (LEV) (PROC 7) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 0.795 mg/m³ 0.096 Inhalation, Systemic effects, Long Term 0.795 mg/m³ 0.096 Inhalation, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 0.8572 mg/kg bw/day 0.726 Contributing scenario controlling worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 5 mg/m³ 0.602	Contributing scenario controlling worker exposu	re: Mixing or blending in batch process	ses (PROC 5)				
Inhalation, Systemic effects, Acute 20 mg/m³ 0.243 Dermal, Systemic effects, Long Term 2.742 mg/kg bw/day 0.232 Combined routes, Systemic effects, Long Term 0.835 Contributing scenario controlling worker exposure: Industrial spraying with Local Exhaust Ventilation (LEV) (PROC 7) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 0.4 mg/m³ 0.048 Inhalation, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 0.775 Contributing scenario controlling worker exposure: Industrial spraying without Local Exhaust Ventilation (LEV) (PROC 7) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 0.795 mg/m³ 0.096 Inhalation, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 0.795 mg/m³ 0.096 Inhalation, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 0.822 Contributing scenario controlling worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 5 mg/m³ 0.602 Inhalation, Systemic effects, Long Term 5 mg/m³ 0.602 Inhalation, Systemic effects, Acute 20 mg/m³ 0.243	Exposure route	Exposure estimate - Worker	Risk quantification (RCR)				
Dermal, Systemic effects, Long Term 2.742 mg/kg bw/day 0.232 Combined routes, Systemic effects, Long Term 0.835 Contributing scenario controlling worker exposure: Industrial spraying with Local Exhaust Ventilation (LEV) (PROC 7) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 0.4 mg/m³ 0.048 Inhalation, Systemic effects, Acute 0.4 mg/m³ 0.726 Combined routes, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Contributing scenario controlling worker exposure: Industrial spraying without Local Exhaust Ventilation (LEV) (PROC 7) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 0.795 mg/m³ 0.096 Inhalation, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 0.822 Contributing scenario controlling worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 5 mg/m³ 0.602 Inhalation, Systemic effects, Long Term 5 mg/m³ 0.602 Inhalation, Systemic effects, Acute 20 mg/m³ 0.602	Inhalation, Systemic effects, Long Term	5 mg/m³	0.602				
Combined routes, Systemic effects, Long Term Exposure route Exposure estimate - Worker Inhalation, Systemic effects, Long Term 0.4 mg/m³ 0.048 Inhalation, Systemic effects, Long Term 0.4 mg/m³ 0.048 Inhalation, Systemic effects, Acute 0.4 mg/m³ 0.726 Combined routes, Systemic effects, Long Term 8.572 mg/kg bw/day 0.775 Contributing scenario controlling worker exposure: Industrial spraying without Local Exhaust Ventilation (LEV) (PROC 7) Exposure route Exposure estimate - Worker Risk quantification (LEV) (PROC 7) Exposure route 1. main and the standard of the stand	Inhalation, Systemic effects, Acute	20 mg/m³	0.243				
Contributing scenario controlling worker exposure: Industrial spraying with Local Exhaust Ventilation (LEV) (PROC 7) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 0.4 mg/m³ 0.048 Inhalation, Systemic effects, Acute 0.4 mg/m³ < 0.01 Dermal, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 0.775 Contributing scenario controlling worker exposure: Industrial spraying without Local Exhaust Ventilation (LEV) (PROC 7) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 0.795 mg/m³ 0.096 Inhalation, Systemic effects, Acute 0.795 mg/m³ < 0.01 Dermal, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 0.822 Contributing scenario controlling worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 5 mg/m³ 0.602 Inhalation, Systemic effects, Acute 20 mg/m³ 0.243	Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232				
Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 0.4 mg/m³ 0.048 Inhalation, Systemic effects, Acute 0.4 mg/m³ 0.726 Combined routes, Systemic effects, Long Term 8.572 mg/kg bw/day 0.775 Contributing scenario controlling worker exposure: Industrial spraying without Local Exhaust Ventilation (LEV) (PROC 7) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 0.795 mg/m³ 0.096 Inhalation, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Contributing scenario controlling worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 5 mg/m³ 0.602 Inhalation, Systemic effects, Acute 20 mg/m³ 0.243	Combined routes, Systemic effects, Long Term		0.835				
Inhalation, Systemic effects, Long Term O.4 mg/m³ O.048 Inhalation, Systemic effects, Acute O.4 mg/m³ <o.01 (charging="" (lev)="" (proc="" (rcr)="" -="" 20="" 5="" 7)="" 8.572="" 8a)="" acute="" and="" at="" bw="" combined="" contributing="" controlling="" day="" dermal,="" discharging)="" effects,="" estimate="" exhaust="" exposure="" exposure:="" facilities="" industrial="" inhalation,="" kg="" local="" long="" mg="" mixture="" m³="" non-dedicated="" o.01="" o.096="" o.243<="" o.602="" o.726="" o.775="" o.795="" o.822="" of="" or="" quantification="" risk="" route="" routes,="" scenario="" spraying="" substance="" systemic="" td="" term="" transfer="" ventilation="" without="" worker=""><td></td><td>re: Industrial spraying with Local Exha</td><td>nust Ventilation (LEV) (PROC</td></o.01>		re: Industrial spraying with Local Exha	nust Ventilation (LEV) (PROC				
Inhalation, Systemic effects, Acute 0.4 mg/m³ < 0.01 Dermal, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 0.775 Contributing scenario controlling worker exposure: Industrial spraying without Local Exhaust Ventilation (LEV) (PROC 7) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 0.795 mg/m³ 0.096 Inhalation, Systemic effects, Acute 0.795 mg/m³ < 0.01 Dermal, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 0.822 Contributing scenario controlling worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 5 mg/m³ 0.602 Inhalation, Systemic effects, Acute 20 mg/m³ 0.243	Exposure route	Exposure estimate - Worker	Risk quantification (RCR)				
Dermal, Systemic effects, Long Term Combined routes, Systemic effects, Long Term Contributing scenario controlling worker exposure: Industrial spraying without Local Exhaust Ventilation (LEV) (PROC 7) Exposure route Exposure estimate - Worker Inhalation, Systemic effects, Long Term 0.795 mg/m³ 0.096 Inhalation, Systemic effects, Acute 0.795 mg/m³ <0.01 Dermal, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Contributing scenario controlling worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 5 mg/m³ 0.602 Inhalation, Systemic effects, Acute 20 mg/m³ 0.243	Inhalation, Systemic effects, Long Term	0.4 mg/m ³	0.048				
Contributing scenario controlling worker exposure: Industrial spraying without Local Exhaust Ventilation (LEV) (PROC 7) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 0.795 mg/m³ 0.096 Inhalation, Systemic effects, Acute 0.795 mg/m³ < 0.01 Dermal, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 0.822 Contributing scenario controlling worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 5 mg/m³ 0.602 Inhalation, Systemic effects, Acute 20 mg/m³ 0.243	Inhalation, Systemic effects, Acute	0.4 mg/m ³	< 0.01				
Contributing scenario controlling worker exposure: Industrial spraying without Local Exhaust Ventilation (LEV) (PROC 7) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 0.795 mg/m³ 0.096 Inhalation, Systemic effects, Acute 0.795 mg/m³ < 0.01 Dermal, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 0.822 Contributing scenario controlling worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 5 mg/m³ 0.602 Inhalation, Systemic effects, Acute 20 mg/m³ 0.243	Dermal, Systemic effects, Long Term	8.572 mg/kg bw/day	0.726				
Exposure route Exposure estimate - Worker Risk quantification (RCR)	Combined routes, Systemic effects, Long Term		0.775				
Inhalation, Systemic effects, Long Term 0.795 mg/m³ 0.096 Inhalation, Systemic effects, Acute 0.795 mg/m³ <0.01 Dermal, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 0.822 Contributing scenario controlling worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 5 mg/m³ 0.602 Inhalation, Systemic effects, Acute 20 mg/m³ 0.243		re: Industrial spraying without Local E	xhaust Ventilation (LEV)				
Inhalation, Systemic effects, Acute 0.795 mg/m³ < 0.01 Dermal, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 0.822 Contributing scenario controlling worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 5 mg/m³ 0.602 Inhalation, Systemic effects, Acute 20 mg/m³ 0.243	Exposure route	Exposure estimate - Worker	Risk quantification (RCR)				
Dermal, Systemic effects, Long Term 8.572 mg/kg bw/day 0.726 Combined routes, Systemic effects, Long Term 0.822 Contributing scenario controlling worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 5 mg/m³ 0.602 Inhalation, Systemic effects, Acute 20 mg/m³ 0.243	Inhalation, Systemic effects, Long Term	0.795 mg/m³	0.096				
Combined routes, Systemic effects, Long Term Contributing scenario controlling worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a) Exposure route Exposure estimate - Worker Inhalation, Systemic effects, Long Term 5 mg/m³ 0.602 Inhalation, Systemic effects, Acute 20 mg/m³ 0.243	Inhalation, Systemic effects, Acute	0.795 mg/m³	< 0.01				
Contributing scenario controlling worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 5 mg/m³ 0.602 Inhalation, Systemic effects, Acute 20 mg/m³ 0.243	Dermal, Systemic effects, Long Term	8.572 mg/kg bw/day	0.726				
non-dedicated facilities (PROC 8a) Exposure route Exposure estimate - Worker Risk quantification (RCR) Inhalation, Systemic effects, Long Term 5 mg/m³ 0.602 Inhalation, Systemic effects, Acute 20 mg/m³ 0.243	Combined routes, Systemic effects, Long Term		0.822				
Inhalation, Systemic effects, Long Term5 mg/m³0.602Inhalation, Systemic effects, Acute20 mg/m³0.243							
Inhalation, Systemic effects, Acute 20 mg/m³ 0.243	Exposure route	Exposure estimate - Worker	Risk quantification (RCR)				
	Inhalation, Systemic effects, Long Term	5 mg/m³	0.602				
Dermal, Systemic effects, Long Term 2.742 mg/kg bw/day 0.232	Inhalation, Systemic effects, Acute	20 mg/m³	0.243				
	Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232				
Combined routes, Systemic effects, Long Term 0.835	Combined routes, Systemic effects, Long Term		0.835				

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Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	1 mg/m³	0.12
Inhalation, Systemic effects, Acute	4 mg/m³	0.049
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.353
Contributing scenario controlling worker exposibiling line, including weighing) (PROC 9)	sure: Transfer of substance or mixture	into small containers (dedicated
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m³	0.602
Inhalation, Systemic effects, Acute	20 mg/m³	0.243
Dermal, Systemic effects, Long Term	1.372 mg/kg bw/day	0.116
Combined routes, Systemic effects, Long Term		0.719
Contributing scenario controlling worker expos	sure: Roller application or brushing (P	ROC 10)
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	3.59 mg/m³	0.433
Inhalation, Systemic effects, Acute	3.59 mg/m³	0.044
Dermal, Systemic effects, Long Term	5.486 mg/kg bw/day	0.465
Combined routes, Systemic effects, Long Term		0.897
Contributing scenario controlling worker expos	sure: Treatment of articles by dipping	and pouring (PROC 13)
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.525 mg/m³	0.063
Inhalation, Systemic effects, Acute	0.525 mg/m³	< 0.01
Dermal, Systemic effects, Long Term	2.743 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.296
Contributing scenario controlling worker expos	sure: Use as laboratory reagent (PROC	2 15)
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.5 mg/m³	0.06
Inhalation, Systemic effects, Acute	2 mg/m³	0.024
Dermal, Systemic effects, Long Term	0.34 mg/kg bw/day	0.029
Combined routes, Systemic effects, Long Term		0.089
Contributing scenario controlling worker expos	sure: Hand-mixing with intimate conta	ct and only PPE available (PROC
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	1.74 mg/m³	0.21
Inhalation, Systemic effects, Acute	1.74 mg/m³	0.021
Dermal, Systemic effects, Long Term	7.072 mg/kg bw/day	0.599
Combined routes, Systemic effects, Long Term		0.809
Contributing scenario controlling worker expos	ure: Manual maintenance (cleaning an	d repair) of machinery (PROC 28
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m³	0.602
· · · · · · · · · · · · · · · · · · ·	+	+

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Dermal, Systemic effects, Long Term Combined routes, Systemic effects, Long Term		2.742 mg/kg bw/day	0.232 0.835	
	SECTION 4: 6.16 Guidance the ES		to DU to evaluate whether he works	inside the boundaries set by

Remarks on exposure data from external estimation tools:

Stoffenmanager 8:

Explanation: Inhalation exposure concentration estimated using Stoffenmanager® (version 8)

- Activity/type of task: Handling of liquids at high pressure resulting in substantial generation of mist or spray/haze
- Distance to task: In the breathing zone of the worker (distance head-product < 1 m) (worst-case assumption)
- Local controls: No control measures at the source (refinement due to LEV done outside Stoffenmanager®, see below)
- Ventilation working room: General ventilation (mechanical)
- Volume of the working room: 100-1000 m3
- Regular cleaning of work area (daily): Yes
- Regular inspection and maintenance (at least monthly): Yes
- Presence of secondary emission sources (worst-case assumptions);

Other workers using the same substance simultaneously: Yes

A period of evaporation, drying or curing after the activity (with prolonged emission of vapours): Yes The concentration during the task due to the activity undertaken is estimated to be 7.95 mg/m3, resulting in an exposure concentration of 0.4 mg/m3 due to the use of LEV with an effectiveness of 95% (TRA effectiveness). As the task is performed for 8 hours, the daily average concentration equals the task concentration. In accordance with the ECHA Guidance (Chapter R.14), this estimated concentration is therefore considered to be the short-term as well as the long-term inhalation exposure estimate (90th percentiles).

Stoffenmanager 8:

Explanation: Inhalation exposure concentration estimated using Stoffenmanager® (version 8)

- Activity/type of task: Handling of liquids at high pressure resulting in substantial generation of mist or spray/haze
- Distance to task: In the breathing zone of the worker (distance head-product < 1 m) (worst-case assumption)
- Local controls: No control measures at the source
- Ventilation working room: General ventilation (mechanical)
- Volume of the working room: 100-1000 m3
- Regular cleaning of work area (daily): Yes
- Regular inspection and maintenance (at least monthly): Yes
- Presence of secondary emission sources (worst-case assumptions);

Other workers using the same substance simultaneously: Yes

A period of evaporation, drying or curing after the activity (with prolonged emission of vapours): Yes The concentration during the task due to the activity undertaken is estimated to be 7.95 mg/m3, resulting in an exposure concentration of 0.795 mg/m3 due to the use of respiratory protection with an effectiveness of 90%. As the task is performed for 8 hours, the daily average concentration equals the task concentration. In accordance with the ECHA Guidance (Chapter R.14), this estimated concentration is therefore considered to be the short-term as well as the long-term inhalation exposure estimate (90th percentiles).

Stoffenmanager 8:

Explanation: Inhalation exposure concentration estimated using Stoffenmanager® (version 8)

- Activity/type of task: Handling of liquids on large surfaces or large work pieces
- Distance to task: In the breathing zone of the worker (distance head-product < 1 m) (worst-case assumption)
- Local controls: No control measures at the source
- Ventilation working room: General ventilation (mechanical)
- Volume of the working room: 100-1000 m3
- Regular cleaning of work area (daily): Yes
- Regular inspection and maintenance (at least monthly): Yes
- Presence of secondary emission sources (worst-case assumptions);

Other workers using the same substance simultaneously: Yes

A period of evaporation, drying or curing after the activity (with prolonged emission of vapours): Yes

The concentration that can be inhaled by the worker during the task due to the activity undertaken is obtained. As the task is performed for 8 hours, the daily average concentration equals the task concentration. In accordance with the ECHA Guidance (Chapter R.14), this estimated concentration is therefore considered to be the short-term as well as the long-term inhalation exposure estimate (90th percentiles).

ECETOC TRA Workers 3.1:

Explanation: As solid is used as value for CSA, while liquid is used, it is considered appropriate to refine the exposure estimates, using the standalone version of TRA Workers (v3.1). The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-8 Pa (as calculated by Chesar).

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Stoffenmanager 8:

Explanation: Inhalation exposure concentration estimated using Stoffenmanager® (version 8)

- Activity/type of task: Handling of liquids using low pressure, low speed or on medium-sized surfaces
- Distance to task: In the breathing zone of the worker (distance head-product < 1 m) (worst-case assumption)
- Local controls: No control measures at the source
- Ventilation working room: General ventilation (mechanical)
- Volume of the working room: 100-1000 m3
- Regular cleaning of work area (daily): Yes
- Regular inspection and maintenance (at least monthly): Yes
- Presence of secondary emission sources (worst-case assumptions);

Other workers using the same substance simultaneously: Yes

A period of evaporation, drying or curing after the activity (with prolonged emission of vapours): Yes

The concentration that can be inhaled by the worker during the task due to the activity undertaken is obtained. As the task is performed for 8 hours, the daily average concentration equals the task concentration. In accordance with the ECHA Guidance (Chapter R.14), this estimated concentration is therefore considered to be the short-term as well as the long-term inhalation exposure estimate (90th percentiles).

ECETOC TRA Workers 3.1:

Explanation: The exposure estimates for PROC 8a are used, as TRA Workers cannot predict exposure for PROC 28 and these estimates can be considered suitable for estimating exposures during manual maintenance.

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7. Exposure Scenario 7:	Widespread use by professional workers - Use as additive in intumescent coatings	
ECTION 1:	Title of exposure scenario	

SECTI	ECTION 1: Title of exposure scenario					
	Widespread use by professional workers - Use as additive in intumescent coatings					
Contri	buting scenario controlli	ng environmental exposure				
CS1	CS1 Use as additive in intumescent coatings ERC5					
Contri	buting scenario controlli	ng worker exposure	·			
CS2	Mixing or blending in b	atch processes	PROC5			
CS3	Transfer of substance or facilities	mixture (charging and discharging) at non-dedicated	PROC8a			
CS4	Transfer of substance or	r mixture (charging and discharging) at dedicated facilities	PROC8b			
CS5	Transfer of substance or including weighing)	r mixture into small containers (dedicated filling line,	PROC9			
CS6	Roller application or bro	ushing	PROC10			
	Non industrial spraying		PROC11			
CS7	Treatment of articles by	dipping and pouring	PROC13			
CS8	Hand-mixing with intim	nate contact and only PPE available	PROC19			
CS9	Manual maintenance (cl	leaning and repair) of machinery	PROC28			
Subseq	quent service life exposur	e scenario(s):				
ES10	Service life (professiona	al worker) - Intumescent coatings - Professional Workers				
ES12	Service life (consumers)	- Intumescent coating – Consumers				
SECTI	ION 2:	Conditions of use				
2.1		Contributing scenario controlling environmental exposu 7.1 Use as additive in intumescent coatings (ERC 8c, ERC 8c, ER				
Amour	nt used, frequency and du	uration of use (or from service life)				
Daily lo	ocal widespread use amou	nt: not relevant for the assessment as scenario specific release	s are estimated			
Conditi	ions and measures related	to biological sewage treatment plant				
Dischar	ical STP: Standard [Effecti rge rate of STP: >= 2E3 m ation of the STP sludge on	3/day				
Other	given operational conditi	ons affecting environmental exposure				
Receiv	ing surface water flow: >=	1.8E4 m3/day				
2.2		Contributing scenario controlling worker exposure: 7.2 Mixing or blending in batch processes (PROC 5)				
Produc	ct characteristics					
	Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)					
Freque	Frequency and duration of use					
Duration of activity: <= 8 h/day						
Technical conditions and measures to control dispersion from source towards the worker						
Occupa	General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Basic Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]					
Condit	tions and measures relate	d to personal protection, hygiene and health evaluation				
Dermal	ntory protection: No [Effect I protection: Yes (Chemica iveness, Dermal: 80%]	tiveness, Inhalation: 0%] ally resistant gloves conforming to EN374) and (other) approp	riate dermal protection			

Other given operational conditions affecting workers exposure

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Operating temperature: <= 40 °C

2.3

Contributing scenario controlling worker exposure:

7.3 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a)

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Product characteristics

Percentage (w/w) of substance in mixture/article: <= 30 %

Physical form of the used product: Liquid

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Basic

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

1 5 1

Contributing scenario controlling worker exposure:

7.4 Transfer of substance or mixture (charging and discharging) at dedicated facilities

(PROC 8b)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Basic

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.5	Contributing scenario controlling worker exposure:
	7.5 Transfer of substance or mixture into small containers (dedicated filling line,
	including weighing) (PROC 9)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

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General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Basic

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

7.6 Roller application or brushing (PROC 10)

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.6 Contributing scenario controlling worker exposure:

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 30 %

Physical form of the used product: Liquid

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

Ventilation working room: General ventilation (mechanical) Occupational Health and Safety Management System: Basic

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.7	Contributing scenario controlling worker exposure:
	7.7 Non industrial spraying (PROC 11)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 30 %

Physical form of the used product: Liquid

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

Ventilation working room: General ventilation (mechanical) Occupational Health and Safety Management System: Basic

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

$Conditions \ and \ measures \ related \ to \ personal \ protection, hygiene \ and \ health \ evaluation$

Respiratory protection: Yes (Respirator with APF of 20) [Effectiveness, Inhalation: 95%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374 with basic employee training) and (other) appropriate dermal protection [Effectiveness, Dermal: 90%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

	Contributing scenario controlling worker exposure: 7.8 Treatment of articles by dipping and pouring (PROC 13)

Product characteristics

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Percentage (w/w) of substance in mixture/article: <= 30 %

Physical form of the used product: Liquid

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Basic

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

2.9 Contributing scenario controlling worker exposure: 7.9 Manual maintenance (cleaning and repair) of machinery (PROC 28)

Product characteristics

Percentage (w/w) of substance in mixture/article: <= 30 %

Physical form of the used product: Liquid

Frequency and duration of use

Duration of activity: <= 8 h/day

Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Basic

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%]

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection

[Effectiveness, Dermal: 80%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: \neq 40 °C

SECTION 3:	7.10 Exposure	7.10 Exposure estimation			
3.1. Environment					
Release	Release estin	mation method	Explanat	ions	
Water	Estimated re	Estimated release rate		Local release rate: 0 kg/day	
Air	Estimated re	Estimated release rate		ease rate: 0 kg/day	
Non-Agricultural Soil	Estimated re	Estimated release factor		actor after on-site RMM: 0%	
Protection target	Exposure concentration		Risk quantification (RCR)		

Protection target	Exposure concentration	Risk quantification (RCR)
Fresh water	Local PEC: 5.0E-3 mg/l	0.01
Sedimentation (Fresh water)	Local PEC: 0.025 mg/kg dw	0.01
Marine water	Local PEC: 5.0E-4 mg/l	0.01
Sedimentation (Marine water)	Local PEC: 2.4E-3 mg/kg dw	0.01
Sewage Treatment Plant	Local PEC: 0 mg/l	< 0.01
Agricultural soil	Local PEC: 2.52E-12 mg/kg dw	< 0.01
Man via Environment - Inhalation (Systemic	Concentration in air:	< 0.01

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effects)	1.62E-21 mg/m ³	
Man via Environment - Oral	Exposure via food consumption:	< 0.01
Than the Entholmion Office	1.74E-4 mg/kg bw/day	0.01
Man via Environment – Combined routes		< 0.01
3.2. Worker	= 1	
Contributing scenario controlling worker expos	ure: Mixing or blending in batch proce	sses (PROC 5)
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m³	0.602
Inhalation, Systemic effects, Acute	20 mg/m³	0.243
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835
Contributing scenario controlling worker expos non-dedicated facilities (PROC 8a)	ure: Transfer of substance or mixture (charging and discharging) at
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.525 mg/m ³	0.063
Inhalation, Systemic effects, Acute	0.525 mg/m³	< 0.01
Dermal, Systemic effects, Long Term	2.743 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.296
Contributing scenario controlling worker expos non-dedicated facilities (PROC 8b)	ure: Transfer of substance or mixture (charging and discharging) at
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m³	0.602
Inhalation, Systemic effects, Acute	20 mg/m³	0.243
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835
Contributing scenario controlling worker expos filling line, including weighing) (PROC 9)	ure: Transfer of substance or mixture is	nto small containers (dedicated
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m³	0.602
Inhalation, Systemic effects, Acute	20 mg/m³	0.243
Dermal, Systemic effects, Long Term	1.372 mg/kg bw/day	0.116
Combined routes, Systemic effects, Long Term		0.719
Contributing scenario controlling worker expos	ure: Roller application or brushing (PR	ROC 10)
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	3.61 mg/m³	0.435
Inhalation, Systemic effects, Acute	3.61 mg/m³	0.044
Dermal, Systemic effects, Long Term	5.486 mg/kg bw/day	0.465
Combined routes, Systemic effects, Long Term		0.9
Contributing scenario controlling worker expos	ure: Non industrial spraying (PROC 11	l)
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.398 mg/m³	0.048
	0.398 mg/m³	< 0.01
Inhalation, Systemic effects, Acute	0.396 Hig/III	V 0.01
Inhalation, Systemic effects, Acute Dermal, Systemic effects, Long Term	10.71 mg/kg bw/day	0.908

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Contributing scenario controlling worker exposure: Treatment of articles by dipping and pouring (PROC 13)			
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)	
Inhalation, Systemic effects, Long Term	0.525 mg/m³	0.063	
Inhalation, Systemic effects, Acute	0.525 mg/m³	< 0.01	
Dermal, Systemic effects, Long Term	2.743 mg/kg bw/day	0.232	
Combined routes, Systemic effects, Long Term		0.296	

Contributing scenario controlling worker exposure: Manual maintenance (cleaning and repair) of machinery (PROC 28)

Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.525 mg/m³	0.063
Inhalation, Systemic effects, Acute	0.525 mg/m³	< 0.01
Dermal, Systemic effects, Long Term	2.743 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.296

SECTION 4: 7.11 Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Remarks on exposure data from external estimation tools:

ECETOC TRA Workers 3.1:

Explanation: As solid is used as value for CSA, while liquid is used, it is considered appropriate to refine the exposure estimates, using the standalone version of TRA Workers (v3.1). The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-8 Pa (as calculated by Chesar).

Stoffenmanager 8:

Explanation: Inhalation exposure concentration estimated using Stoffenmanager® (version 8)

- Activity/type of task: Handling of liquids on large surfaces or large work pieces
- Distance to task: In the breathing zone of the worker (distance head-product < 1 m) (worst-case assumption)
- Local controls: No control measures at the source
- Ventilation working room: General ventilation (mechanical)
- Volume of the working room: 100-1000 m3
- Regular cleaning of work area (daily): No
- Regular inspection and maintenance (at least monthly): No
- Presence of secondary emission sources (worst-case assumptions);

Other workers using the same substance simultaneously: Yes

A period of evaporation, drying or curing after the activity (with prolonged emission of vapours): Yes

The concentration that can be inhaled by the worker during the task due to the activity undertaken is obtained. As the task is performed for 8 hours, the daily average concentration equals the task concentration. In accordance with the ECHA Guidance (Chapter R.14), this estimated concentration is therefore considered to be the short-term as well as the long-term inhalation exposure estimate (90th percentiles).

Stoffenmanager 8:

Explanation: Inhalation exposure concentration estimated using Stoffenmanager® (version 8)

- Activity/type of task: Handling of liquids at high pressure resulting in substantial generation of mist or spray/haze
- Distance to task: In the breathing zone of the worker (distance head-product < 1 m) (worst-case assumption)
- Local controls: No control measures at the source
- Ventilation working room: General ventilation (mechanical)
- Volume of the working room: 100-1000 m3
- Regular cleaning of work area (daily): No
- Regular inspection and maintenance (at least monthly): No
- Presence of secondary emission sources (worst-case assumptions);

Other workers using the same substance simultaneously: Yes

A period of evaporation, drying or curing after the activity (with prolonged emission of vapours): Yes

The concentration during the task due to the activity undertaken is estimated to be 7.96 mg/m3, resulting in an exposure concentration of 0.398 mg/m3 due to the use of respiratory protection. As the task is performed for 8 hours, the daily average concentration equals the task concentration. In accordance with the ECHA Guidance (Chapter R.14), this estimated concentration is therefore considered to be the short-term as well as the long-term inhalation exposure estimate (90th percentiles).

ECETOC TRA Workers 3.1:

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Explanation: The exposure estimates for PROC 8a are used, as TRA Workers cannot predict exposure for PROC 28 and these estimates can be considered suitable for estimating exposures during manual maintenance. The exposure estimates are calculated for using a liquid, with the standalone version of TRA Workers (v3.1). The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-8 Pa (as calculated by Chesar).

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8.	Exposure Scena	rio 8: Service lif	e (worker at industrial	site) - PU foams -	- Workers (industrial)
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8. Exposure Scenario SECTION 1:	8: Service life (worker at industrial site) - PU foams - Worker Title of exposure scenario	s (industrial)		
SECTION 1.	Service life (worker at industrial site) - PU foams - Worke	are (industrial)		
Contributing scenario contro	· · · · · · · · · · · · · · · · · · ·	ers (muustriar)		
CS1 PU foams - Workers	-	ERC12a		
	·	ERC12a		
Contributing scenario contro		PD-CC21		
	tion of substances bound in materials and/or articles	PROC21		
	ergy work-up of substances bound in materials and/or articles	PROC24		
	ses leading to the inclusion of the substance into the article(s):	: T		
	- Use as additive in foams			
SECTION 2:	Conditions of use			
2.1	Contributing scenario controlling environmental exposur 8.1 PU foams - Workers (industrial) (ERC 12a)	e:		
Amount used, frequency and	duration of use (or from service life)			
	levant for the assessment as scenario specific releases are estimat relevant for the assessment as scenario specific releases are estim			
	d to biological sewage treatment plant			
Biological STP: Standard [Effe Discharge rate of STP: >= 2E3 Application of the STP sludge	m3/day on agricultural soil: Yes			
Other given operational cond	itions affecting environmental exposure			
Receiving surface water flow:	= 1.8E4 m3/day			
2.2 Contributing scenario controlling worker exposure: 8.2 Low energy manipulation of substances bound in materials and/or articles (PROC 21)				
Product characteristics				
Percentage (w/w) of substance Physical form of the used produ				
Frequency and duration of us	e			
Duration of activity: <= 8 h/da				
•	sures to control dispersion from source towards the worker			
General ventilation: Basic gene Occupational Health and Safety	ral ventilation (1-3 air changes per hour) [Effectiveness, Inhalation Management System: Advanced Effectiveness, Inhalation: 0%, Dermal: 0%]	on: 0%]		
Conditions and measures rela	ted to personal protection, hygiene and health evaluation			
Respiratory protection: No [Eff Dermal protection: No [Effecti				
Other given operational cond	itions affecting workers exposure			
Place of use: Indoor Operating temperature: <= 40 °	С			
2.3	Contributing scenario controlling worker exposure: 8.3 High (mechanical) energy work-up of substances bound i (PROC 24)	n materials and/or articles		
Product characteristics				
Percentage (w/w) of substance Physical form of the used produced				
Frequency and duration of us	<u>-</u>			
7 6				

Duration of activity: <= 8 h/day

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Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: \leq 40 °C

SECTION 3:	8.4 Exposure estimation				
3.1. Environment					
Release	Release esti	mation method	Explanat	tions	
Water	Estimated re	lease rate	Local rele	ease rate: 0 kg/day	
Air	Estimated re	lease rate	Local rele	ease rate: 0 kg/day	
Non-Agricultural Soil	Estimated re	lease factor	Release fa	actor after on-site RMM: 0%	
Protection target		Exposure concentration		Risk quantification (RCR)	
Fresh water		Local PEC: 5.0E-3 mg/l		0.01	
Sedimentation (Fresh water)		Local PEC: 0.025 mg/kg dw		0.01	
Marine water		Local PEC: 5.0E-4 mg/l		0.01	
Sedimentation (Marine water)		Local PEC: 2.4E-3 mg/kg	g dw	0.01	
Sewage Treatment Plant		Local PEC: 0 mg/l		< 0.01	
Agricultural soil		Local PEC: 2.52E-12 mg/	/kg dw	< 0.01	
Man via Environment - Inhalation (Systemic effects)		Concentration in air: 1.62E-21 mg/m³		< 0.01	
Man via Environment - Oral		Exposure via food consun 1.74E-4 mg/kg bw/day	nption:	< 0.01	
Man via Environment – Combined routes				< 0.01	

3.2. Worker

Contributing scenario controlling worker exposure: Mixing or blending in batch processes (PROC 5)

Exposure route	Exposure estimate - Worker	Risk quantification (RCR)	
Inhalation, Systemic effects, Long Term	3 mg/m³	0.361	
Inhalation, Systemic effects, Acute	12 mg/m³	0.146	
Dermal, Systemic effects, Long Term	2.83 mg/kg bw/day	0.24	
Combined routes, Systemic effects, Long Term		0.601	

Contributing scenario controlling worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a)

Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	1 mg/m³	0.12
Inhalation, Systemic effects, Acute	4 mg/m³	0.049
Dermal, Systemic effects, Long Term	2.83 mg/kg bw/day	0.24
Combined routes, Systemic effects, Long Term		0.36

SECTION 4:	8.5 Guidance to DU to evaluate whether he works inside the boundaries set by
	the ES

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

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Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling could be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use, additional RMMs or a site-specific chemical safety assessment is required.

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9.	Exposure Scenar	io 9: Service	life (worker a	nt industrial site) - Intumo	escent coatings - Wa	orkers (industrial)

	Service life (worker at industrial site) - Intumescent coating	s - workers (industrial)	
SECTION 1:	Title of exposure scenario		
	Service life (worker at industrial site) - Intumescent coatin	gs - Workers (industrial)	
Contributing scenario controlli	ng environmental exposure		
CS1 Intumescent coatings - '	CS1 Intumescent coatings - Workers (industrial) ERC12a		
Contributing scenario controlli	ng worker exposure		
CS2 Low energy manipulation	on of substances bound in materials and/or articles	PROC21	
CS3 High (mechanical) energy	gy work-up of substances bound in materials and/or articles	PROC24	
Exposure scenario(s) of the uses	s leading to the inclusion of the substance into the article(s):		
ES6 Use at industrial sites -	Use as additive in intumescent coatings		
SECTION 2:	Conditions of use		
2.1	Contributing scenario controlling environmental exposure 9.1 Intumescent coatings - Workers (industrial) (ERC 12a)	:	
Amount used, frequency and du	uration of use (or from service life)		
	vant for the assessment as scenario specific releases are estimate evant for the assessment as scenario specific releases are estimated as scenarios as scenarios specific releases are estimated as scenarios specificares are estimated		
Conditions and measures related	to biological sewage treatment plant		
Biological STP: Standard [Effect:			
Discharge rate of STP: >= 2E3 m Application of the STP sludge on			
Other given operational conditi	ons affecting environmental exposure		
Receiving surface water flow: >=	1.8E4 m3/day		
2.2	Contributing scenario controlling worker exposure: 9.2 Low energy manipulation of substances bound in material (PROC 21)	s and/or articles	
Product characteristics			
Percentage (w/w) of substance in Physical form of the used product			
Frequency and duration of use			
Duration of activity: <= 8 h/day			
Technical conditions and measu	res to control dispersion from source towards the worker		
Occupational Health and Safety M	l ventilation (1-3 air changes per hour) [Effectiveness, Inhalatio Management System: Advanced fectiveness, Inhalation: 0%, Dermal: 0%]	n: 0%]	
Conditions and measures relate	d to personal protection, hygiene and health evaluation		
Respiratory protection: No [Effective Dermal protection: No [Effective			
Other given operational conditi	ons affecting workers exposure		
Place of use: Indoor Operating temperature: <= 40 °C			
2.3	Contributing scenario controlling worker exposure: 9.3 High (mechanical) energy work-up of substances bound in (PROC 24)	ı materials and/or articles	
Product characteristics			
Percentage (w/w) of substance in Physical form of the used product			
Frequency and duration of use			
Duration of activity: <= 8 h/day			

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Technical conditions and measures to control dispersion from source towards the worker

General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]

Occupational Health and Safety Management System: Advanced

Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]

Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]

Man via Environment - Inhalation (Systemic

Man via Environment - Combined routes

Other given operational conditions affecting workers exposure

Place of use: Indoor

Operating temperature: <= 40 °C

SECTION 3:	9.4 Exposure	estimation			
3.1. Environment					
Release	Release estimation method		Explanat	Explanations	
Water	Estimated re	lease rate	Local rele	ease rate: 0 kg/day	
Air	Estimated re	lease rate	Local rele	ease rate: 0 kg/day	
Non-Agricultural Soil	Estimated re	lease factor	Release fa	actor after on-site RMM: 0%	
Protection target		Exposure concentration		Risk quantification (RCR)	
Fresh water		Local PEC: 5.0E-3 mg/l		0.01	
Sedimentation (Fresh water)		Local PEC: 0.025 mg/kg	dw	0.01	
Marine water		Local PEC: 5.0E-4 mg/l		0.01	
Sedimentation (Marine water)		Local PEC: 2.4E-3 mg/kg dw		0.01	
Sewage Treatment Plant		Local PEC: 0 mg/l		< 0.01	
Agricultural soil		Local PEC: 2.52E-12 mg/	/kg dw	< 0.01	

3.2. Worker

Man via Environment - Oral

effects)

Contributing scenario controlling worker exposure: Low energy manipulation of substances bound in materials and/or articles (PROC 21)

Concentration in air:

1.74E-4 mg/kg bw/day

Exposure via food consumption:

1.62E-21 mg/m³

< 0.01

< 0.01

< 0.01

Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	3 mg/m ³	0.361
Inhalation, Systemic effects, Acute	12 mg/m³	0.146
Dermal, Systemic effects, Long Term	2.83 mg/kg bw/day	0.24
Combined routes, Systemic effects, Long Term		0.601

Contributing scenario controlling worker exposure: High (mechanical) energy work-up of substances bound in materials and/or articles (PROC 24)

Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	1 mg/m³	0.12
Inhalation, Systemic effects, Acute	4 mg/m³	0.049
Dermal, Systemic effects, Long Term	2.83 mg/kg bw/day	0.24
Combined routes, Systemic effects, Long Term		0.36

SECTION 4:	9.5 Guidance to DU to evaluate whether he works inside the boundaries set by
	the ES

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are

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managed to at least equivalent levels.

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling could be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use, additional RMMs or a site-specific chemical safety assessment is required.

Release factor after on-site RMM: 0%

Risk quantification (RCR)

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SECTI	ON 1:	Title of exposure scenario	
		Service life (professional worker) - Intumes	scent coatings - Professional Workers
Contril	buting scenario controlli	ng environmental exposure	
CS1	Intumescent coatings - F	Professional Workers	ERC10a, ERC11a
Contril	buting scenario controlli	ng worker exposure	
CS2	Low energy manipulation	on of substances bound in materials and/or artic	les PROC21
Exposu	re scenario(s) of the uses	leading to the inclusion of the substance into	o the article(s):
ES6	Use at industrial sites - U	Jse as additive in intumescent coatings	
ES7	Widespread use by profe	essional workers - Use as additive in intumesce	nt coatings
SECTI	ON 2:	Conditions of use	·
2.1		Contributing scenario controlling environm 10.1 Intumescent coatings - Professional Wor	
Amoun	t used, frequency and du	ration of use (or from service life)	
Daily lo	ocal widespread use amour	nt: not relevant for the assessment as scenario s	pecific releases are estimated
Conditi	ons and measures related t	o biological sewage treatment plant	
Dischar	cal STP: Standard [Effecting rate of STP: >= 2E3 mation of the STP sludge on	3/day	
		ons affecting environmental exposure	
	ng surface water flow: >=		
	_	<u> </u>	
2.2		Contributing scenario controlling worker et 10.2 Low energy manipulation of substances 21)	
	et characteristics	10.2 Low energy manipulation of substances	
Produc Percent	age (w/w) of substance in	10.2 Low energy manipulation of substances 21)	
Produce Percent Physica	age (w/w) of substance in	10.2 Low energy manipulation of substances 21) mixture/article: <= 100 %	
Product Percent Physica Freque	age (w/w) of substance in al form of the used product	10.2 Low energy manipulation of substances 21) mixture/article: <= 100 %	
Produce Percent Physica Freque Duratio	age (w/w) of substance in all form of the used product ency and duration of use on of activity: <= 8 h/day	10.2 Low energy manipulation of substances 21) mixture/article: <= 100 %	bound in materials and/or articles (PRO
Produce Percent Physica Freque Duratio Technic General Occupa	age (w/w) of substance in all form of the used product ency and duration of use on of activity: <= 8 h/day cal conditions and measured to the condition of the	10.2 Low energy manipulation of substances 21) mixture/article: <= 100 % : Solid (medium dusty form)	bound in materials and/or articles (PRO
Produce Percent Physica Freque Duratio Technic General Occupa Local e	age (w/w) of substance in all form of the used product ency and duration of use on of activity: <= 8 h/day cal conditions and measured ventilation: Basic general tional Health and Safety Machaust ventilation: No [Effective of the substance of t	10.2 Low energy manipulation of substances 21) mixture/article: <= 100 % : Solid (medium dusty form) res to control dispersion from source toward ventilation (1-3 air changes per hour) [Effective danagement System: Basic	ds the worker veness, Inhalation: 0%]
Produce Percent Physica Freque Duratio Technic General Occupa Local e Condit Respira	age (w/w) of substance in all form of the used product ency and duration of use on of activity: <= 8 h/day cal conditions and measured ventilation: Basic general tional Health and Safety Machaust ventilation: No [Effective of the substance of t	mixture/article: <= 100 % : Solid (medium dusty form) res to control dispersion from source toward ventilation (1-3 air changes per hour) [Effective fanagement System: Basic fectiveness, Inhalation: 0%, Dermal: 0%] d to personal protection, hygiene and health tiveness, Inhalation: 0%]	ds the worker veness, Inhalation: 0%]
Produce Percent Physica Freque Duratio Technic General Occupa Local e Condit Respira Dermal	age (w/w) of substance in al form of the used product ency and duration of use on of activity: <= 8 h/day cal conditions and measured ency and Health and Safety Manust ventilation: No [Efficions and measures related tory protection: No [Effectives]	mixture/article: <= 100 % : Solid (medium dusty form) res to control dispersion from source toward ventilation (1-3 air changes per hour) [Effective fanagement System: Basic fectiveness, Inhalation: 0%, Dermal: 0%] d to personal protection, hygiene and health tiveness, Inhalation: 0%]	ds the worker veness, Inhalation: 0%]
Produce Percent Physica Freque Duratio Technic General Occupa Local e Condit Respira Dermal Other g Place o	age (w/w) of substance in al form of the used product ency and duration of use on of activity: <= 8 h/day cal conditions and measured ency and Health and Safety Manust ventilation: No [Efficions and measures related tory protection: No [Effectives]	mixture/article: <= 100 % : Solid (medium dusty form) res to control dispersion from source toward ventilation (1-3 air changes per hour) [Effective factiveness, Inhalation: 0%, Dermal: 0%] d to personal protection, hygiene and health tiveness, Inhalation: 0%] hess, Dermal: 0%]	ds the worker veness, Inhalation: 0%]
Produce Percent Physical Freque Duratio Technic General Occupa Local e Condit Respira Dermal Other §	age (w/w) of substance in al form of the used product ency and duration of use on of activity: <= 8 h/day cal conditions and measured entitional Health and Safety Manust ventilation: No [Efficians and measures related tory protection: No [Effective protection: No [Effective given operational condition of use: Indoor ng temperature: <= 40 °C	mixture/article: <= 100 % : Solid (medium dusty form) res to control dispersion from source toward ventilation (1-3 air changes per hour) [Effective factiveness, Inhalation: 0%, Dermal: 0%] d to personal protection, hygiene and health tiveness, Inhalation: 0%] hess, Dermal: 0%]	ds the worker veness, Inhalation: 0%]
Product Percent Physical Freque Duration Technic General Occupation Local e Condition Respiration Dermal Other games Place of Operation SECTI	age (w/w) of substance in al form of the used product ency and duration of use on of activity: <= 8 h/day cal conditions and measured entitional Health and Safety Manust ventilation: No [Efficians and measures related tory protection: No [Effective protection: No [Effective given operational condition of use: Indoor ng temperature: <= 40 °C	mixture/article: <= 100 % : Solid (medium dusty form) res to control dispersion from source toward ventilation (1-3 air changes per hour) [Effective factiveness, Inhalation: 0%, Dermal: 0%] d to personal protection, hygiene and health tiveness, Inhalation: 0%] ness, Dermal: 0%] ons affecting workers exposure	ds the worker veness, Inhalation: 0%]
Product Percent Physical Freque Duration Technic General Occupation Local e Condition Respiration Dermal Other grant Place of Operation SECTI	age (w/w) of substance in al form of the used product ency and duration of use on of activity: <= 8 h/day cal conditions and measured tonal Health and Safety Manust ventilation: No [Effectivery protection: No [Effectivery prot	mixture/article: <= 100 % : Solid (medium dusty form) res to control dispersion from source toward ventilation (1-3 air changes per hour) [Effective factiveness, Inhalation: 0%, Dermal: 0%] d to personal protection, hygiene and health tiveness, Inhalation: 0%] ness, Dermal: 0%] ons affecting workers exposure	ds the worker veness, Inhalation: 0%]
Produce Percent Physical Freque Duratio Technic General Occupal Local e Condit: Respiral Dermal Other g Place of Operati SECTI 3.1. En	age (w/w) of substance in al form of the used product ency and duration of use on of activity: <= 8 h/day cal conditions and measured tonal Health and Safety Manust ventilation: No [Effectivery protection: No [Effectivery prot	mixture/article: <= 100 % : Solid (medium dusty form) res to control dispersion from source toward ventilation (1-3 air changes per hour) [Effective factiveness, Inhalation: 0%, Dermal: 0%] d to personal protection, hygiene and health tiveness, Inhalation: 0%] ness, Dermal: 0%] ness, Dermal: 0%] ons affecting workers exposure 10.3 Exposure estimation	ds the worker veness, Inhalation: 0%]

Estimated release factor

Exposure concentration

Non-Agricultural Soil

Protection target

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Fresh water	Local PEC: 5.0E-3 mg/l	0.01
Sedimentation (Fresh water)	Local PEC: 0.025 mg/kg dw	0.01
Marine water	Local PEC: 5.0E-4 mg/l	0.01
Sedimentation (Marine water)	Local PEC: 2.4E-3 mg/kg dw	0.01
Sewage Treatment Plant	Local PEC: 0 mg/l	< 0.01
Agricultural soil	Local PEC: 2.52E-12 mg/kg dw	< 0.01
Man via Environment - Inhalation (Systemic effects)	Concentration in air: 1.62E-21 mg/m³	< 0.01
Man via Environment - Oral	Exposure via food consumption: 1.74E-4 mg/kg bw/day	< 0.01
Man via Environment – Combined routes		< 0.01

3.2. Worker

Contributing scenario controlling worker exposure: Low energy manipulation of substances bound in materials and/or articles (PROC 21)

Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	2.83 mg/kg bw/day	0.24
Combined routes, Systemic effects, Long Term		0.842

SECTION 4:	10.4 Guidance to DU to evaluate whether he works inside the boundaries set by
	the ES

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling could be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use, additional RMMs or a site-specific chemical safety assessment is required.

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11. Exposure Scenario 11: Service life (consumers) - PU foams - Consumers

SECTION 1:		Title of exposure scenario					
			-	umers) - PU foams – Const	ımers		
Contrib	outing scenario controllir		` `				
CS1	PU foams – Consumers					ERC10a, ERC11a	
Contrib	outing scenario controllir	ng wo	orker exposur	e		i	
CS2	ontributing scenario controlling worker exposur Use of articles containing foam with encaps					AC1, AC1a, AC 13, AC 13e	
Exposu	re scenario(s) of the uses	lead	ling to the incl	lusion of the substance into	the article	e(s):	
ES5	Use at industrial sites - U	Jse a	s additive in fo	oams			
SECTION	ON 2:	Cor	nditions of use				
2.1			ntributing scenario controlling environmental exposure: 1 PU foams – Consumers (ERC 10a, ERC 11a)				
Amoun	t used, frequency and du	ratio	on of use (or fi	rom service life)			
Daily lo	ocal widespread use amour	nt: no	t relevant for t	he assessment as scenario sp	ecific relea	ses are estimated	
Condition	ons and measures related t	o bio	logical sewage	e treatment plant			
Biological STP: Standard [Effectiveness, Water: 0.169%] Discharge rate of STP: >= 2E3 m3/day Application of the STP sludge on agricultural soil: Yes							
Other g	given operational condition	ons a	ffecting envir	onmental exposure			
Receivi	ng surface water flow: >=	1.8E	4 m3/day				
			nario controlling consumer exposure: es containing foam with encapsulated the substance (AC1, AC1a, AC				
Produc	t characteristics						
Percentage (w/w) of substance in mixture/article: <= 30 % Exposure via inhalation route: Inhalation exposure is considered to be not relevant Exposure via oral route: Oral exposure is considered to be not relevant							
SECTION	TION 3:		11.3 Exposure estimation				
3.1. Env	vironment						
Release	;		Release estimation method		Explanations		
Water			Estimated release rate		Local release rate: 0 kg/day		
Air			Estimated release rate		Local release rate: 0 kg/day		
Non-Ag	on-Agricultural Soil		Estimated release factor		Release factor after on-site RMM: 0%		
Protect	Protection target			Exposure concentration		Risk quantification (RCR)	
Fresh w	Fresh water			Local PEC: 5.0E-3 mg/l		0.01	
Sedime	Sedimentation (Fresh water)			Local PEC: 0.025 mg/kg dw		0.01	
Marine water			Local PEC: 5.0E-4 mg/l		0.01		
Sedimentation (Marine water)			Local PEC: 2.4E-3 mg/kg dw		0.01		
Sewage Treatment Plant			Local PEC: 0 mg/l		< 0.01		
Agricultural soil			Local PEC: 2.52E-12 mg/kg dw		< 0.01		
Man via Environment - Inhalation (Systemic effects)			Concentration in air: 1.62E-21 mg/m ³		< 0.01		
Man via Environment - Oral			Exposure via food consumption: 1.74E-4 mg/kg bw/day		< 0.01		

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3.2. Consumer

Contributing scenario controlling consumer exposure: Use of articles containing foam with encapsulated the substance (AC1, AC1a, AC 13, AC13e)

Exposure route	Exposure estimate - Consumer	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	Negligible (Migration study)	< 0.01
Dermal, Systemic effects, Long Term	0.1484 mg/kg bw/day: for a baby, when using additional sheets for mattress protection and comfort (Migration study)	0.035
	0.06375 mg/kg bw/day: for an adult, when using additional sheets for mattress protection and comfort (Migration study)	0.015
	0.6375 mg/kg bw/day: for an adult, when sleeping directly on the mattress cover (Migration study)	
	1.484 mg/kg bw/day: for a baby, when sleeping directly on the mattress cover (Migration study)	
Oral, Systemic effects, Long Term	Negligible (Migration study)	< 0.01
Combined routes, Systemic effects, Long Term		0.035 for a baby 0.015 for an adult

SECTION 4: 11.4 Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Remarks on exposure data:

Migration study:

Explanation: The substance is used in foam mattresses, as a non-halogenated flame retardant. The European association of flexible polyurethane foam blocks manufacturers (EUROPUR) commissioned a migration study, to evaluate the potential exposure of humans from melamine used in flexible PU foam used in mattresses. The study was submitted to ECHA by EUROPUR, as part of their response to the public consultation on the CLH report for melamine dated November 2019 and can be found on the ECHA website.

Based on the vapour pressure of the substance and since mattresses are flat and not mouthed, inhalation and oral exposure are considered negligible, while potential dermal exposure is deemed the most relevant route of exposure due to the prolonged contact duration, with a large part of the body and the possible effect of sweat as a vehicle.

The migration of melamine into synthetic sweat soaked filter papers from these foams was investigated. As a mattress typically consists of a PUR foam core surrounded with a fabric layer, migration was investigated with and without the use of a polyester-polypropylene mattress cover placed between the foam and filter paper. The set-up was compressed to 70% of its depth in order to simulate a person sleeping on the mattress and incubated at 40°C for 2 hours.

When the foam was covered, a standard practice for every mattress with flexible PU foam, the migration was below the limit of detection (LOD) and LOD/2 was used as estimate for people sleeping directly on the mattress cover (0.6375 mg/kg bw/day for an adult and 1.484 for a baby). Note that this is a worst-case assessment as usually people don't sleep directly on the mattress cover but put additional sheets for additional mattress protection and comfort. When refined due to the use of additional sheets for mattress protection and comfort, the dermal exposure estimates were concluded to be 0.06375 for an adult and 0.1484 for a baby. Note that no melamine was detected when the mattress cover was included in the test set-up and that the calculations are therefore done based on the LOD/2.

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< 0.01

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Melamin

				Melamin			
				ımers) - Intumescent coati	ng – Consu	imers	
SECTION 1: Title			e of exposure				
		Ser	vice life (cons	umers) - Intumescent coati	ng – Consi	umers	
Contril	buting scenario controllin	ng en	vironmental e	exposure		I	
CS1	Intumescent coating – C	onsu	mers			ERC10a, ERC11a	
Contril	buting scenario controllin	ng wo	orker exposur	e			
CS2	Use of articles with intu	mesc	ent coating wit	th encapsulated the substanc	e	AC13	
Exposu	ure scenario(s) of the uses leading to the inclusion of the substance into the article(s):						
ES6	Use at industrial sites - U	at industrial sites - Use as additive in intumescent coatings					
ES7	Widespread use by profe	Widespread use by professional workers - Use as additive in intumescent coatings					
SECTI	ON 2:	Cor	nditions of use				
2.1	2.1 Con 12.1		ontributing scenario controlling environmental exposure: .1 Intumescent coating – Consumers (ERC 10a, ERC 11a)				
Amoun	nt used, frequency and du	ratio	on of use (or fi	rom service life)			
Daily lo	ocal widespread use amour	ıt: no	t relevant for t	he assessment as scenario sp	ecific relea	ses are estimated	
Conditi	ons and measures related t	o bio	logical sewage	e treatment plant			
Dischar	cal STP: Standard [Effecting rate of STP: >= 2E3 mation of the STP sludge on	3/day	•				
Other g	given operational condition	ons a	ffecting envir	onmental exposure			
Receivi	ing surface water flow: >=	1.8E	4 m3/day				
2.2 Con			ontributing scenario controlling consumer exposure: 2.2 Use of articles with intumescent coating with encapsulated the substance (AC 13)				
Produc	ct characteristics						
Exposu Exposu	rage (w/w) of substance in re via inhalation route: Inh re via dermal route: Derma re via oral route: Oral expo	alatio	on exposure is posure assume	considered to be not relevant to be negligible	ıt		
SECTI	SECTION 3:		12.3 Exposure estimation				
3.1. En	vironment	•					
Release	e		Release estimation method		Explanations		
Water	ſ		Estimated release rate		Local release rate: 0 kg/day		
Air			Estimated release rate		Local release rate: 0 kg/day		
Non-Ag	on-Agricultural Soil		Estimated release factor		Release factor after on-site RMM: 0%		
Protect	Protection target			Exposure concentration		Risk quantification (RCR)	
Fresh w	Fresh water			Local PEC: 5.0E-3 mg/l		0.01	
Sedimentation (Fresh water)			Local PEC: 0.025 mg/kg dw		0.01		
Marine water			Local PEC: 5.0E-4 mg/l		0.01		
Sedimentation (Marine water)			_		0.01		
Sewage Treatment Plant					< 0.01		
	Agricultural soil					< 0.01	
Man via Environment - Inhalation (Systemic effects)					< 0.01		
Man via Environment - Oral			Exposure via food consumption: 1.74E-4 mg/kg bw/day		< 0.01		
						0.04	

Man via Environment – Combined routes

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3.2 Consumer

Contributing scenario controlling consumer exposure: Use of articles with intumescent coating with encapsulated the substance (AC 13)

As any (dermal) contact by consumers with these coatings will be incidental and as the substance is embedded in a matrix, inhalation, dermal and oral exposure (and therefore risks) are considered to be negligible.

SECTION 4:	12.4 Guidance to DU to evaluate whether he works inside the boundaries set by			
	the ES			

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling could be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use, additional RMMs or a site-specific chemical safety assessment is required.