PRIMER ADW

Fișa cu date de securitate din data 12/06/2026 versiunea 2

SECȚIUNEA 1: Identificarea substanței/amestecului și a societății/întreprinderii

1.1. Identificator de produs

Identificarea preparatului:

Nume comercial: PRIMER ADW

Cod comercial: 582K

UFI: WYK1-H08D-G008-N88Y

1.2. Utilizări relevante identificate ale substanței sau ale amestecului și utilizări contraindicate

Utilizarea recomandată: Rășină consolidantă și izolatoare pentru șape de ciment; Numai pentru uz profesional

Utilizări de evitat: Nu este destinat utilizării de către consumator

1.3. Detalii privind furnizorul fișei cu date de securitate

Compania: FASSA Srl

Via Lazzaris, 3 - 31027 Spresiano (TV) - ITALY

Tel. +39 0422 7222

Fax +39 0422 887509

Responsabil: laboratorio.spresiano@fassabortolo.it

1.4. Număr de telefon care poate fi apelat în caz de urgență

+40213183606

SECȚIUNEA 2: Identificarea pericolelor



2.1. Clasificarea substanței sau a amestecului

Regulamentul (CE) nr. 1272/2008 (CLP)

Flam. Liq. 2	Lichid şi vapori foarte inflamabili.
Acute Tox. 4	Nociv în caz de inhalare.
Skin Irrit. 2	Provoacă iritarea pielii.
Eye Irrit. 2	Provoacă o iritare gravă a ochilor.
Resp. Sens. 1	Poate provoca simptome de alergie sau astm sau dificultăţi de respiraţie în caz de inhalare.
Skin Sens. 1	Poate provoca o reacţie alergică a pielii.
Carc. 2	Susceptibil de a provoca cancer.
STOT SE 3	Poate provoca iritarea căilor respiratorii.
STOT SE 3	Poate provoca somnolenţă sau ameţeală.
STOT RE 2	Poate provoca leziuni ale organelor în caz de expunere prelungită sau repetată.

Efecte fizico-chimice dăunătoare sănătăţii omului şi mediului înconjurător:

Nici un alt risc

2.2. Elemente de etichetare

Regulamentul (CE) nr. 1272/2008 (CLP)

Pictograme de pericol și cuvânt de avertizare



Pericol

Fraze de pericol

H225	Lichid şi vapori foarte inflamabili.
H315	Provoacă iritarea pielii.
H317	Poate provoca o reacţie alergică a pielii.
H319	Provoacă o iritare gravă a ochilor.
H332	Nociv în caz de inhalare.
H334	Poate provoca simptome de alergie sau astm sau dificultăţi de respiraţie în caz de inhalare.

H335	Poate provoca iritarea căilor respiratorii.
H336	Poate provoca somnolenţă sau ameţeală.
H351	Susceptibil de a provoca cancer.
H373	Poate provoca leziuni ale organelor în caz de expunere prelungită sau repetată.

Fraze de precauţie

P210	A se păstra departe de surse de căldură, suprafețe fierbinți, scântei, flăcări și alte surse de aprindere. Fumatul interzis.
P261	Evitaţi să inspiraţi fumul/gazul/ceaţa/vaporii/spray-ul.
P280	Purtaţi mănuşi/echipamente de protecţie şi protejaţi ochii/vederea.
P304+P340	ÎN CAZ DE INHALARE: transportați persoana la aer liber și mențineți-o într-o poziție confortabilă pentru respirație.
P342+P311	În caz de simptome respiratorii: sunați la un CENTRU DE INFORMARE TOXICOLOGICĂ/un medic.
P370+P378	În caz de incendiu: a se utiliza extinctorul cu CO2 pentru a stinge.

Prevederi speciale:

EUH204	Conţine izocianaţi. Poate provoca o reacţie alergică.

Conţine:

acetat de etil

4,4'-diizocianat de difenil-metan

acid izocianic, ester polimetilenicpolifenilenic, polimer cu .alfa.-hidro-.omega.-hidroxi-poli[oxi(metil-1,2-etandiil)]

Amestec de: 4,4'-diizocianat de metilendifenil și a izocianat de o-(p-izocianatobenzil)fenil

acid izocianic, ester polimetilenicpolifenilenic

Dispoziţii speciale conform Anexei XVII (REACH) cu modificările şi completările ulterioare:

După data de 24 august 2023, este necesară o formare adecvată înainte de uzul industrial sau profesional.

2.3. Alte pericole

Nu conține PBT, vPvB sau perturbatori endocrini prezenți în concentrații >= 0,1%.

Nici un alt risc

SECȚIUNEA 3: Compoziție/informații privind componenții

3.1. Substanțe

N.A.

3.2. Amestecuri

Identificarea preparatului: PRIMER ADW

Componente periculoase în sensul Regulamentului CLP şi clasificarea corespunzătoare:

Cantitate	Nume	Nr. de Ident.	Clasificare	Număr de înregistrare:
≥50 - <80 %	acetat de etil	CAS:141-78-6 EC:205-500-4 Index:607-022-00-5	Flam. Liq. 2, H225; Eye Irrit. 2, H319; STOT SE 3, H336, EUH066	01-2119475103-46-xxxx
≥20 - <30 %	acid izocianic, ester polimetilenicpolifenilenic, polimer cu .alfa.-hidro-.omega.-hidroxi-poli[oxi(metil-1,2-etandiil)]	CAS:53862-89-8 EC:670-234-1	Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Resp. Sens. 1, H334 Skin Sens. 1, H317 Carc. 2, H351 STOT SE 3, H335 STOT RE 2, H373 Toxicitate Acută Estimată: ATE - Inhalare (Praf/ceaţă): 1.5mg/l ATE - Inhalare (Vapori): 11mg/l	
≥10 - <20 %	acid izocianic, ester polimetilenicpolifenilenic	CAS:9016-87-9 EC:618-498-9	Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Resp. Sens. 1, H334 Skin Sens. 1, H317	

			Carc. 2, H351 STOT SE 3, H335 STOT RE 2, H373 Limite de concentrație specifice: 5% ≤ C < 100%: Skin Irrit. 2 H315 5% ≤ C < 100%: Eye Irrit. 2 H319 0.1% ≤ C < 100%: Resp. Sens. 1 H334 5% ≤ C < 100%: STOT SE 3 H335 Toxicitate Acută Estimată: ATE - Inhalare (Praf/ceaţă): 1.5mg/l	
≥3 - <5 %	4,4'-diizocianat de difenil-metan	CAS:101-68-8 EC:202-966-0 Index:615-005-00-9	Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Resp. Sens. 1, H334 Skin Sens. 1, H317 Carc. 2, H351 STOT SE 3, H335 STOT RE 2, H373 Limite de concentrație specifice: 5% ≤ C < 100%: Skin Irrit. 2 H315 5% ≤ C < 100%: Eye Irrit. 2 H319 0.1% ≤ C < 100%: Resp. Sens. 1 H334 5% ≤ C < 100%: STOT SE 3 H335 Toxicitate Acută Estimată: ATE - Inhalare (Praf/ceaţă): 1.5mg/l	01-2119457014-47-xxxx
≥1 - <3 %	Amestec de: 4,4'-diizocianat de metilendifenil și a izocianat de o-(p-izocianatobenzil)fenil	EC:905-806-4	Carc. 2, H351 Acute Tox. 4, H332 STOT RE 2, H373 Eye Irrit. 2, H319 Skin Irrit. 2, H315 STOT SE 3, H335 Resp. Sens. 1, H334 Skin Sens. 1, H317 Toxicitate Acută Estimată: ATE - Inhalare (Vapori): 11mg/l	01-2119457015-45-xxxx

SECȚIUNEA 4: Măsuri de prim ajutor

4.1. Descrierea măsurilor de prim ajutor

În caz de contact cu pielea:

Îndepărtaţi imediat hainele contaminate şi eliminaţi-l în mod sigur.

Zonele corpului care au venit, sau se presupune numai că au venit, în contact cu produsul trebuie spălate imediat şi abundent cu apă curentă.

Spălaţi complet corpul (duş sau baie).

În caz de contact cu ochii:

În caz de contact cu ochii, clătiţi cu apă pentru un interval de timp corespunzător şi ţineţi deschise pleoapele, după care consultaţi imediat un oftalmolog.

Protejaţi ochiul lezat.

În caz de ingerare:

Nu provocaţi vomitarea, adresaţi-vă unui medic arătând Fişa de Siguranţă şi eticheta produsului.

În caz de inhalare:

Conduceţi accidentatul la aer liber şi ţineţi-l la cald şi în repaus.

În caz de respiraţie neregulată sau absentă, efectuaţi respiraţia artificială.

În caz de inhalare consultaţi de îndată un medic şi arătaţi cutia sau eticheta.

4.2. Cele mai importante simptome și efecte, atât acute, cât și întârziate

Simptomele şi efectele sunt cele preconizate în secIiunea 2 cu privire la pericole.

4.3. Indicații privind orice fel de asistență medicală imediată și tratamentele speciale necesare

În caz de accident sau stare proastă consultaţi imediat un medic (dacă este posibil arătaţi instrucţiunile de folosinţă sau fişa de siguranţă).

SECȚIUNEA 5: Măsuri de combatere a incendiilor

5.1. Mijloace de stingere a incendiilor

Mijloace de stingere corespunzătoare:

În caz de incendiu: a se utiliza extinctorul cu CO2 pentru a stinge.

CO2, stingătoare cu pulbere, spumă, apă pulverizată.

Mijloace de stingere care nu trebuie să fie utilizate din motive de siguranţă:

Jeturi de apă.

5.2. Pericole speciale cauzate de substanță sau de amestec

Combustia produce fum greu.

Nu inhalați gazele produse prin explozie și/sau prin combustie (monoxid de carbon, dioxid de carbon, oxizi de azot).

5.3. Recomandări destinate pompierilor

Folosiţi dispozitive respiratorii corespunzătoare.

Strângeţi separat apa contaminată folosită pentru stingerea incendiului. Nu o descărcaţi în reţeaua de canalizare.

Dacă este posibil din punct de vedere al siguranţei, îndepărtaţi din zona de pericol imediat recipientele neafectate.

SECȚIUNEA 6: Măsuri împotriva pierderilor accidentale

6.1. Precauții personale, echipament de protecție și proceduri de urgență

Pentru personalul care nu este implicat în situații de urgență:

Îmbrăcaţi dispozitivele de protecţie individuală.

Îndepărtaţi orice sursă de aprindere.

În caz de expunere la vapori/pulberi/aerosoli folosiţi dispozitive de respirat.

Asiguraţi o aerisire corespunzătoare.

Utilizaţi o protecţie respiratorie corespunzătoare.

Citiţi măsurile de protecţie prezentate la punctele 7 şi 8.

Pentru personalul care intervine în situații de urgență:

Îmbrăcaţi dispozitivele de protecţie individuală.

6.2. Precauții pentru mediul înconjurător

Împiedicaţi penetrarea în sol/subsol. Împiedicaţi vărsarea în apele de suprafaţă sau în reţeaua de canalizare.

În caz de scurgere de gaz sau penetrare în cursuri de apă, sol sau sistemul de canalizare, informaţi autorităţile răspunzătoare.

6.3. Metode și material pentru izolarea incendiilor și pentru curățenie

Material corespunzător pentru colectare: material absorbant inert (de exemplu, nisip, vermiculit)

Dupa ce produsul a fost recuperat, clatiti suprafata si materialele folosite cu apa

Reţineţi apa de spălat contaminată şi eliminaţi-o.

6.4. Trimiteri către alte secțiuni

Vezi şi paragrafele 8 şi 13

SECȚIUNEA 7: Manipulare și depozitare

7.1. Precauții pentru manipularea în condiții de securitate

Evitați contactul cu pielea și ochii, precum și inhalarea vaporilor și a ceții.

Folosiţi un sistem de ventilare localizat.

Nu folosiţi recipiente goale înainte de a fi curăţate.

Înaintea operaţiilor de transfer, asiguraţi-vă că în recipiente nu sunt materiale rezidue incompatibile.

Sfaturi privind igiena generală la locul de muncă:

Hainele contaminate trebuie înlocuite înainte de accesul la zona de prânz.

Nu mincati sau beti in timpul lucrului

Se face trimitere şi la paragraful 8 pentru dispozitivele de protecţie recomandate.

7.2. Condiții de depozitare în condiții de securitate, inclusiv eventuale incompatibilități

Păstrați recipientele bine închise într-un spațiu răcoros și bine ventilat, la distanță de surse de căldură.

A se feri de flacari necontrolate, scintei si surse de caldura. Evitati expunerea directa la soare

Ţineţi departe de alimente, băuturi şi hrană pentru animale.

Materiale incompatibile

Vezi pct. 10.5

Instructiuni privind spatiile de depozitare:

Racoros si ventilat corespunzator

7.3. Utilizare (utilizări) finală (finale) specifică (specifice)

Recomandări

Vezi pct. 1.2

Soluţii specifice pentru sectorul industrial

Nici o utilizare particulară

SECȚIUNEA 8: Controale ale expunerii/protecția personală

8.1. Parametri de control

Limitele de expunere profesională

acetat de etil

CAS: 141-78-6	Tip OEL	ACGIH		Termen lung 400 ppm Note: URT and eye irr
	Tip OEL	UE		Termen lung 734 mg/m3 - 200 ppm; Termen scurt 1468 mg/m3 - 400 ppm
	Tip OEL	MAK	Austria	Termen lung 734 mg/m3 - 200 ppm; Termen scurt 1468 mg/m3 - 400 ppm
	Tip OEL	MAK	Germania	Termen lung 750 mg/m3 - 200 ppm; Termen scurt 1500 mg/m3 - 400 ppm
	Tip OEL	VLEP	Belgia	Termen lung 734 mg/m3 - 200 ppm; Termen scurt 1468 mg/m3 - 400 ppm
	Tip OEL	VLEP	Franţa	Termen lung 734 mg/m3 - 200 ppm; Termen scurt 1468 mg/m3 - 400 ppm
	Tip OEL	VLEP	Italia	Termen lung 734 mg/m3 - 200 ppm; Termen scurt 1468 mg/m3 - 400 ppm
	Tip OEL	VLEP	România	Termen lung 734 mg/m3 - 200 ppm; Termen scurt 400 mg/m3 - 1468 ppm
	Tip OEL	TLV	Bulgaria	Termen lung 734 mg/m3 - 200 ppm; Termen scurt 1468 mg/m3 - 400 ppm
	Tip OEL	TLV	Cehia	Termen lung 700 mg/m3 - 191.1 ppm; Termen scurt 900 mg/m3 - 245.7 ppm
	Tip OEL	VLA	Spania	Termen lung 734 mg/m3 - 200 ppm; Termen scurt 1460 mg/m3 - 400 ppm
	Tip OEL	ÁK	Ungaria	Termen lung 734 mg/m3; Termen scurt 1468 mg/m3
	Tip OEL	MAC	Olanda	Termen lung 734 mg/m3 - 200 ppm; Termen scurt 1468 mg/m3 - 400 ppm
	Tip OEL	VLE	Portugalia	Termen lung 734 mg/m3 - 200 ppm; Termen scurt 1468 mg/m3 - 400 ppm
	Tip OEL	SUVA	Elveţia	Termen lung 730 mg/m3 - 200 ppm; Termen scurt 1470 mg/m3 - 400 ppm
	Tip OEL	WEL	U.K.	Termen lung 730 mg/m3 - 200 ppm; Termen scurt 1468 mg/m3 - 400 ppm
	Tip OEL	GVI	Croaţia	Termen lung 734 mg/m3 - 200 ppm; Termen scurt 1468 mg/m3 - 400 ppm
	Tip OEL	AGW	Germania	Termen lung 730 mg/m3 - 200 ppm; Termen scurt 1460 mg/m3 - 400 ppm
	Tip OEL	NDS	Polonia	Termen lung 734 mg/m3 - 200 ppm; Termen scurt 1468 mg/m3 - 400 ppm
	Tip OEL	MV	Slovenia	Termen lung 734 mg/m3 - 200 ppm; Termen scurt 1468 mg/m3 - 400 ppm
	Tip OEL	IPRV	Lituania	Termen lung 500 mg/m3 - 150 ppm; Termen scurt 1100 mg/m3 - 300 ppm
	Tip OEL	RV	Letonia	Termen lung 200 mg/m3 - 54 ppm; Termen scurt 1468 mg/m3 - 400 ppm

acid izocianic, ester polimetilenicpolifenilenic

CAS: 9016-87-9	Tip OEL	MAK	Germania	Termen lung 0.05 mg/m3; Termen scurt 0.05 mg/m3 Note: Inhalable fraction , Skin Termen scurt 0.1 mg/m3 Note: Inhalable fraction , Skin, Ceiling
	Tip OEL	AGW	Germania	Termen lung 0.05 mg/m3; Termen scurt 0.05 mg/m3 Note: Inhalable fraction , Skin Termen scurt 0.1 mg/m3 Note: Inhalable fraction , Skin, Ceiling

4,4'-diizocianat de difenil-metan

CAS: 101-68-8	Tip OEL	ACGIH		Termen lung 0.005 ppm Note: Resp sens
	Tip OEL	UE		Termen lung 0.006 mg/m3; Termen scurt 0.012 mg/m3 Note: Skin; Dermal and respiratory sensitisation
	Tip OEL	MAK	Austria	Termen lung 0.05 mg/m3 - 0.005 ppm; Termen scurt 0.1 mg/m3 - 0.001 ppm
	Tip OEL	MAK	Germania	Termen lung 0.05 mg/m3; Termen scurt 0.05 mg/m3 Note: Inhalable fraction and vapour, Skin Termen scurt 0.1 mg/m3 Note: Inhalable fraction and vapour, Skin
	Tip OEL	VLEP	Belgia	Termen lung 0.052 mg/m3 - 0.005 ppm
	Tip OEL	VLEP	Franţa	Termen lung 0.1 mg/m3 - 0.01 ppm; Termen scurt 0.2 mg/m3 - 0.02 ppm
	Tip OEL	VLEP	România	Termen scurt 0.15 mg/m3
	Tip OEL	TLV	Cehia	Termen lung 0.05 mg/m3; Termen scurt 0.1 mg/m3
	Tip OEL	VLA	Spania	Termen lung 0.005 mg/m3 - 0.052 ppm
	Tip OEL	ÁK	Ungaria	Termen lung 0.05 mg/m3; Termen scurt 0.05 mg/m3
	Tip OEL	AGW	Germania	Termen lung 0.05 mg/m3; Termen scurt 0.05 mg/m3 Note: Inhalable fraction and vapour, Skin Termen scurt 0.1 mg/m3 Note: Inhalable fraction and vapour, Skin

Tip OEL	NDS	Polonia	Termen lung 0.03 mg/m3; Termen scurt 0.09 mg/m3
Tip OEL	MV	Slovenia	Termen lung 0.05 mg/m3; Termen scurt 0.05 mg/m3 Note: Inhalable
			Termen lung 0.005 ppm; Termen scurt 0.005 ppm Note: Skin
Tip OEL	IPRV	Lituania	Termen lung 0.05 mg/m3 - 0.005 ppm; Termen scurt 0.1 mg/m3 - 0.001 ppm

Amestec de: 4,4'-diizocianat de metilendifenil și a izocianat de o-(p-izocianatobenzil)fenil

Tip OEL	TLV	România	Termen scurt 0.15 mg/m3
Tip OEL	NDS	Polonia	Termen lung 0.03 mg/m3; Termen scurt 0.09 mg/m3

Valori limită de expunere PNEC

acetat de etil

CAS: 141-78-6
Cale de expunere: Apă sărată; PNEC Limită: 0.024 mg/l
Cale de expunere: Apă dulce; PNEC Limită: 0.24 mg/l
Cale de expunere: Sedimente în apă sărată; PNEC Limită: 0.115 mg/kg
Cale de expunere: Sedimente în apă dulce; PNEC Limită: 1.15 mg/kg
Cale de expunere: Microorganisme în tratamente de epurare; PNEC Limită: 650 mg/l
Cale de expunere: Sol (agricol); PNEC Limită: 0.148 mg/kg
Cale de expunere: Otrăvire secundară; PNEC Limită: 0.2 mg/kg

4,4'-diizocianat de difenil-metan

CAS: 101-68-8
Cale de expunere: Apă dulce; PNEC Limită: 1 mg/l
Cale de expunere: Apă sărată; PNEC Limită: 0.1 mg/l
Cale de expunere: Microorganisme în tratamente de epurare; PNEC Limită: 1 mg/l
Cale de expunere: Sol (agricol); PNEC Limită: 1 mg/kg

Amestec de: 4,4'-diizocianat de metilendifenil și a izocianat de o-(p-izocianatobenzil)fenil

Cale de expunere: Apă dulce; PNEC Limită: 0.003 mg/l
Cale de expunere: Apă sărată; PNEC Limită: 0.001 mg/l
Cale de expunere: Sedimente în apă dulce; PNEC Limită: 11.7 mg/kg
Cale de expunere: Sedimente în apă sărată; PNEC Limită: 1.17 mg/kg
Cale de expunere: Sol; PNEC Limită: 2.33 mg/kg

Nivel Derivat Fără Efect (DNEL)

acetat de etil

CAS: 141-78-6
Cale de expunere: Prin inhalare umană; Frecvenţă de expunere: Pe termen lung, efecte sistemice
Lucrător: 734 mg/m3; Consumator: 367 mg/m3

Cale de expunere: Prin inhalare umană; Frecvenţă de expunere: Pe termen lung, efecte locale
Lucrător: 734 mg/m3; Consumator: 367 mg/m3

Cale de expunere: Prin inhalare umană; Frecvenţă de expunere: Pe termen scurt, efecte sistemice
Lucrător: 1468 mg/m3; Consumator: 734 mg/m3

Cale de expunere: Prin inhalare umană; Frecvenţă de expunere: Pe termen scurt, efecte locale
Lucrător: 1468 mg/m3; Consumator: 734 mg/m3

Cale de expunere: Epidermic uman; Frecvenţă de expunere: Pe termen lung, efecte sistemice
Lucrător: 63 mg/kg; Consumator: 37 mg/kg

Cale de expunere: Oral uman; Frecvenţă de expunere: Pe termen lung, efecte sistemice
Consumator: 4.5 mg/kg

4,4'-diizocianat de difenil-metan

CAS: 101-68-8
Cale de expunere: Prin inhalare umană; Frecvenţă de expunere: Pe termen scurt, efecte locale
Lucrător: 0.1 mg/m3; Consumator: 0.05 mg/m3

Cale de expunere: Prin inhalare umană; Frecvenţă de expunere: Pe termen lung, efecte locale
Lucrător: 0.05 mg/m3; Consumator: 0.025 mg/m3

Amestec de: 4,4'-diizocianat de metilendifenil și a izocianat de o-(p-izocianatobenzil)fenil

Cale de expunere: Prin inhalare umană; Frecvenţă de expunere: Pe termen scurt (acută)
Lucrător industrial: 0.1 mg/m3

Cale de expunere: Prin inhalare umană; Frecvenţă de expunere: Pe termen lung (repetată)

Lucrător industrial: 0.05 mg/m3

8.2. Controale ale expunerii

Asigurați o ventilație adecvată. Atunci când este rezonabil posibil, aceasta se poate obține prin utilizarea de ventilație de schimb și a unei aspirații generale bune.

Protectia ochilor

Ochelari cu protecție laterală (EN 16321).

Protectia pielii

Personalul trebuie să poarte îmbrăcăminte antistatică din fibre naturale sau din fibre sintetice rezistente la temperaturi ridicate.

Protectia mainilor

Nu există niciun material sau combinație de materiale pentru mănuși care să poată garanta o rezistență nelimitată la orice produs chimic sau combinație de produse.

Pentru manipulare prelungită sau repetată, utilizați mănuși rezistente la produse chimice.

Tipul de mănuși adecvate (EN 374/EN 16523); FKM (fluor cauciuc): grosime >= 0.4 mm; timp de penetrare >= 480 min. NBR (cauciuc nitrilic): grosime >= 0.4 mm; timp de penetrare >= 480 min

Alegerea mănușilor potrivite nu depinde numai de material, ci și de alte caracteristici de calitate care variază de la un producător la altul, precum și de metodele și timpii de utilizare a amestecului.

Protectie respiratorie

Dacă lucrătorii sunt expuși la concentrații mai mari decât limitele de expunere, trebuie să poarte aparate respiratorii certificate.

Filtru amestec (EN 14387): mască cu filtru A-P2.

Controale de expunere ambientală:

Vezi pct. 6.2

Măsurile de igienă și tehnice

Vezi alineatul 7.

SECȚIUNEA 9: Proprietățile fizice și chimice

9.1. Informații privind proprietățile fizice și chimice de bază

Stare fizică: Lichid

Aspect: Lichid

Culoare: maro închis

Miros: fructat

Punctul de topire/punctul de înghețare: N.D.

Punctul de fierbere sau punctul inițial de fierbere și intervalul de fierbere: N.D.

Inflamabilitatea: Produsul este clasificat Flam. Liq. 2 H225

Limita inferioară și superioară de explozie: N.D.

Punctul de aprindere: < 23°C

Temperatura de autoaprindere: N.D.

Temperatura de descompunere: N.A.

pH: N.A.

Viscozitatea cinematică: N.A.

Solubilitatea in apa: N.A.

Solubilitate în ulei: N.A.

Coeficientul de partiție n-octanol/apă (valoarea log): N.A.

Presiunea vaporilor: N.D.

Densitatea și/sau densitatea relativă: N.A.

Densitatea relativă a vaporilor: N.D. N.A.

Caracteristicile particulei:

Dimensiunea particulei: N.A.

9.2. Alte informații

Proprietati explozive: N.A.

Proprietati oxidante: N.A.

SECȚIUNEA 10: Stabilitate și reactivitate

10.1. Reactivitate

Stabilă în condiţii normale

10.2. Stabilitate chimică

Stabilă în condiţii normale

10.3. Posibilitatea de reacții periculoase

Din cauza efectului căldurii sau în caz de incendiu, se pot elibera oxizi de carbon și vapori care pot fi dăunători pentru sănătate.

A se păstra la distanță de agenți oxidanți, materiale puternic alcaline și puternic acide pentru a evita reacțiile exotermice.

10.4. Condiții de evitat

Evitați apropierea de surse de căldură.

10.5. Materiale incompatibile

Evitați contactul cu materiale oxidante. Produsul ar putea să se aprindă.

Vezi pct. 10.3

10.6. Produși de descompunere periculoși

În cazul depozitării și manipulării adecvate, nu există produse de descompunere periculoase.

Vezi pct. 5.2

SECȚIUNEA 11: Informații toxicologice

11.1. Informații privind clasele de pericol definite în Regulamentul (CE) nr. 1272/2008

Informații toxicologice ale produsului:

a) toxicitate acută	Produsul este clasificat: Acute Tox. 4(H332)
b) corodarea/iritarea pielii	Produsul este clasificat: Skin Irrit. 2(H315)
c) lezarea gravă/iritarea ochilor	Produsul este clasificat: Eye Irrit. 2(H319)
d) sensibilizarea căilor respiratorii sau a pielii	Produsul este clasificat: Resp. Sens. 1(H334), Skin Sens. 1(H317)
e) mutagenitatea celulelor germinative	Neclasificat Pe baza datelor disponibile, criteriile de clasificare nu sunt îndeplinite.
f) cancerogenitatea	Produsul este clasificat: Carc. 2(H351)
g) toxicitatea pentru reproducere	Neclasificat Pe baza datelor disponibile, criteriile de clasificare nu sunt îndeplinite.
h) STOT (toxicitate asupra organelor țintă specifice) - expunere unică	Produsul este clasificat: STOT SE 3(H335), STOT SE 3(H336)
i) STOT (toxicitate asupra organelor țintă specifice) - expunere repetată	Produsul este clasificat: STOT RE 2(H373)
j) pericol prin aspirare	Neclasificat Pe baza datelor disponibile, criteriile de clasificare nu sunt îndeplinite.

Informații toxicologice referitoare la substanțele principale găsite în acest produs:

acetat de etil

CAS: 141-78-6	a) toxicitate acută	LD50 Oral Șobolan 4934 mg/kg LD50 Piele Iepure > 20000 mg/kg LC50 Vapori de inhalare Șobolan > 22.5 mg/l 6h

acid izocianic, ester polimetilenicpolifenilenic, polimer cu .alfa.-hidro-.omega.-hidroxi-poli[oxi(metil-1,2-etandiil)]

CAS: 53862-89-8	a) toxicitate acută	ATE - Inhalare (Praf/ceaţă): 1.5 mg/l ATE - Inhalare (Vapori): 11 mg/l

acid izocianic, ester polimetilenicpolifenilenic

CAS: 9016-87-9	a) toxicitate acută	ATE - Inhalare (Praf/ceaţă): 1.5 mg/l LD50 Oral Șobolan > 10000 mg/kg LD50 Piele Iepure > 9400 mg/kg

4,4'-diizocianat de difenil-metan

CAS: 101-68-8	a) toxicitate acută	ATE - Inhalare (Praf/ceaţă): 1.5 mg/l LD50 Oral Șobolan > 5000 mg/kg LD50 Piele Iepure > 9400 mg/kg

Amestec de: 4,4'-diizocianat de metilendifenil și a izocianat de o-(p-izocianatobenzil)fenil

a) toxicitate acută	ATE - Inhalare (Vapori): 11 mg/l

11.2. Informații privind alte pericole

Proprietăți de perturbator endocrin:

Nu conține perturbatori endocrini prezenți în concentrații >= 0,1%

SECȚIUNEA 12: Informații ecologice

A se adopta bune practici de productie astfel incat produsul sa nu fie eliberat in mediu

12.1. Toxicitate

Informaţii Ecotoxicologice:

Lista proprietatilor Eco-toxicologice ale produsului

Nu este clasificat pentru pericole pentru mediu

Nu sunt disponibile informații pentru acest produs

Lista componentelor cu proprietăţi ecotoxicologice

acetat de etil

CAS: 141-78-6 a) Toxicitate acvatică acută: LC50 Pește 230 mg/l 96h

a) Toxicitate acvatică acută: EC50 Daphnia 165 mg/l 48h

acid izocianic, ester polimetilenicpolifenilenic

CAS: 9016-87-9 a) Toxicitate acvatică acută: LC50 Pește > 1000 mg/l 96h

a) Toxicitate acvatică acută: LC50 Daphnia > 1000 mg/l 24h

b) Toxicitatea acvatică cronică: NOEC Daphnia > 10 mg/l - 21d

a) Toxicitate acvatică acută: ErC50 Alge > 1640 mg/l 72h

4,4'-diizocianat de difenil-metan

CAS: 101-68-8 a) Toxicitate acvatică acută: LL50 Pește > 100 mg/l 96h

a) Toxicitate acvatică acută: EC50 Daphnia > 1000 mg/l 24h

a) Toxicitate acvatică acută: EL50 Alge > 100 mg/l 72h

b) Toxicitatea acvatică cronică: NOEC Daphnia > 10 mg/l - 21d

12.2. Persistență și degradabilitate

A se utiliza în conformitate cu bunele practici de lucru, evitându-se dispersarea produsului în mediul înconjurător. Anunțați autoritățile competente dacă produsul ajunge în cursuri de apă sau sisteme de canalizare sau dacă a contaminat solul sau vegetația.

acetat de etil

CAS: 141-78-6 Degradabil în mod rapid

acid izocianic, ester polimetilenicpolifenilenic, polimer cu .alfa.-hidro-.omega.-hidroxi-poli[oxi(metil-1,2-etandiil)]

CAS: 53862-89-8 Degradabil în mod lent

acid izocianic, ester polimetilenicpolifenilenic

CAS: 9016-87-9 Degradabil în mod lent

4,4'-diizocianat de difenil-metan

CAS: 101-68-8 Degradabil în mod lent

12.3. Potențial de bioacumulare

4,4'-diizocianat de difenil-metan

CAS: 101-68-8 Nu este supus bioacumulării

12.4. Mobilitate în sol

4,4'-diizocianat de difenil-metan

CAS: 101-68-8 Test: Log Koc; Valoare: 4.500

12.5. Rezultatele evaluărilor PBT și vPvB

În baza datelor disponibile, produsul nu conţine substanţe PBT/vPvB în procentaj ≥ de 0.1%.

12.6. Proprietăți de perturbator endocrin

Nu conține perturbatori endocrini prezenți în concentrații >= 0,1%

12.7. Alte efecte adverse

N.A.

SECȚIUNEA 13: Considerații privind eliminarea

13.1. Metode de tratare a deșeurilor

A se recupera, daca este posibil. A se trimite catre punctele de depozitare sau de incinerare, in conditii controlate. A se respecta regulamentele locale in vigoare

Nu permiteți pătrunderea produsului în sistemul de canalizare sau în cursurile de apă.

Recipientele contaminate cu produs, în conformitate cu dispozițiile legale locale sau naționale.

Odată ce produsul a expirat, acesta trebuie eliminat în conformitate cu reglementările în vigoare.

SECȚIUNEA 14: Informații referitoare la transport



14.1. Numărul ONU sau numărul de identificare

1866

14.2. Denumirea corectă ONU pentru expediție

ADR-Nume transport îmbarcare: RĂȘINĂ ÎN SOLUȚIE

IATA-Nume transport îmbarcare: RESIN SOLUTION

IMDG-Nume transport îmbarcare: RESIN SOLUTION

14.3. Clasa (clasele) de pericol pentru transport

ADR-clasa: 3

IATA-Clasa: 3

IMDG-Clasa: 3

14.4. Grupul de ambalare

ADR-Grup Ambalare: II

IATA-Grup Ambalare: II

IMDG-Grup Ambalare: II

14.5. Pericole pentru mediul înconjurător

Poluant marin: Nu

Poluant ambiental: Nu

IMDG-EMS: F-E, S-E

14.6. Precauții speciale pentru utilizatori

Drumuri şi Căi Ferate (ADR-RID):

ADR-Etichetă: 3

ADR - Număr de identificare a pericolului: 33

ADR-Dispoziţii Speciale: 640C

ADR-Cod de restricţie în tunel:

Aer (IATA):

IATA-Aeronavă de pasagerit: 353

IATA-Aeronavă de marfă: 364

IATA-Etichetă: 3

IATA-Riscul secundar: -

IATA-Erg: 3L

IATA-Dispoziţii Speciale: A3

Mare (IMDG):

IMDG-Depozitare și manipulare: Category B

IMDG-Segregare: -

IMDG-Riscul secundar: -

IMDG-Dispoziţii Speciale: -

14.7. Transportul maritim în vrac în conformitate cu instrumentele OMI

N.A.

SECȚIUNEA 15: Informații de reglementare

15.1. Regulamente/legislație în domeniul securității, al sănătății și al mediului specifice (specifică) pentru substanța sau amestecul în cauză

Directiva 98/24/CE (Riscuri în legătură cu agenţii chimici la locul de muncă)

Directiva 2000/39/CE (Valori limită a expunerii profesionale)

Directiva 2010/75/UE

Regulamentul (CE) nr. 1907/2006 (REACH)

Regulamentul (CE) nr. 1272/2008 (CLP)

Regulamentul (CE) nr. 790/2009 (ATP 1 CLP) și (EU) nr. 758/2013

Regulamentul (EU) nr. 2020/878

Regulamentul (EU) nr. 286/2011 (ATP 2 CLP)

Regulamentul (EU) nr. 618/2012 (ATP 3 CLP)

Regulamentul (EU) nr. 487/2013 (ATP 4 CLP)

Regulamentul (EU) nr. 944/2013 (ATP 5 CLP)

Regulamentul (EU) nr. 605/2014 (ATP 6 CLP)

Regulamentul (EU) nr. 2015/1221 (ATP 7 CLP)

Regulamentul (EU) nr. 2016/918 (ATP 8 CLP)

Regulamentul (EU) nr. 2016/1179 (ATP 9 CLP)
Regulamentul (EU) nr. 2017/776 (ATP 10 CLP)
Regulamentul (EU) nr. 2018/669 (ATP 11 CLP)
Regulamentul (EU) nr. 2018/1480 (ATP 13 CLP)
Regulamentul (EU) nr. 2019/521 (ATP 12 CLP)
Regulamentul (EU) nr. 2020/217 (ATP 14 CLP)
Regulamentul (EU) nr. 2020/1182 (ATP 15 CLP)
Regulamentul (EU) nr. 2021/643 (ATP 16 CLP)
Regulamentul (EU) nr. 2021/849 (ATP 17 CLP)
Regulamentul (EU) nr. 2022/692 (ATP 18 CLP)
Regulamentul (UE) nr. 2023/707
Regulamentul (EU) nr. 2023/1434 (ATP 19 CLP)
Regulamentul (EU) nr. 2023/1435 (ATP 20 CLP)
Regulamentul (EU) nr. 2024/197 (ATP 21 CLP)
Regulamentul (EU) nr. 2024/2564 (ATP 22 CLP)
Regulamentul (EU) nr. 2024/2865
Regulamentul (EU) nr. 2025/1222 (ATP 23 CLP)

Restricţii referitoare la produsele sau substanţele conţinute de acestea conform Anexei XVII Regulamentul (CE) 1907/2006 (REACH) cu modificările ulterioare:

Restricții referitoare la produs: 3, 40

Restricții referitoare la substanțele conținute: 56, 74, 75

Dispoziții în legătură cu directiva EU 2012/18 (Seveso III):

Categoria Seveso III conform Anexei 1, partea 1	Limită nivel inferior (tone)	Limită nivel superior (tone)
Produsul face parte din categoria: P5c	5000	50000

Regulamentul (UE) nr. 649/2012 (Regulamentul PIC)

Nu există substanțe menționate

Clasa Germană a Periculozităţii Apei

Clasa 3: foarte periculos.

Substanţe SVHC:

În baza datelor disponibile, produsul nu conţine substanţe SVHC în procentaj ≥ de 0.1%.

Valoarea limită UE pentru conținutul de COV (Directiva 2004/42/CE) Cat. A/h: 750 g/l; COV < 750 g/l

15.2. Evaluarea securităţii chimice

Nu a fost efectuată nici o Evaluare de Securitate Chimică pentru amestecul.

SECȚIUNEA 16: Alte informații

Cod	Descriere
EUH066	Expunerea repetată poate provoca uscarea sau crăparea pielii.
H225	Lichid şi vapori foarte inflamabili.
H315	Provoacă iritarea pielii.
H317	Poate provoca o reacţie alergică a pielii.
H319	Provoacă o iritare gravă a ochilor.
H332	Nociv în caz de inhalare.
H334	Poate provoca simptome de alergie sau astm sau dificultăţi de respiraţie în caz de inhalare.
H335	Poate provoca iritarea căilor respiratorii.
H336	Poate provoca somnolenţă sau ameţeală.
H351	Susceptibil de a provoca cancer.
H373	Poate provoca leziuni ale organelor în caz de expunere prelungită sau repetată.
H373	Poate provoca daune organelor în caz de expunere îndelungată sau repetată prin inhalare.
H373	Poate provoca daune organelor (tractul respirator) în caz de expunere îndelungată sau repetată prin inhalare.

Cod	Clasa de pericol şi categoria de pericol	Descriere
2.6/2	Flam. Liq. 2	Lichid inflamabil, Categoria 2
3.1/4/Inhal	Acute Tox. 4	Toxicitate acută (inhalare), Categoria 4
3.2/2	Skin Irrit. 2	Iritarea pielii, Categoria 2

3.3/2	Eye Irrit. 2	Iritarea ochilor, Categoria 2
3.4.1/1	Resp. Sens. 1	Sensibilizarea căilor respiratorii, Categoria 1
3.4.2/1	Skin Sens. 1	Sensibilizarea pielii, Categoria 1
3.6/2	Carc. 2	Cancerigenitate, Categoria 2
3.8/3	STOT SE 3	Toxicitate asupra unui organ ţintă specific – o singură expunere, Categoria 3
3.9/2	STOT RE 2	Toxicitate asupra unui organ ţintă specific – expunere repetată, Categoria 2

Clasificarea și procedura utilizate pentru realizarea clasificării pentru amestecuri în conformitate cu Regulamentul (CE) nr. 1272/2008 [CLP]:

Clasificare conform Regulamentului (CE) nr. 1272/2008	Procedura de clasificare
Flam. Liq. 2, H225	Pe baza datelor colectate în timpul testului
Acute Tox. 4, H332	Metoda de calcul
Skin Irrit. 2, H315	Metoda de calcul
Eye Irrit. 2, H319	Metoda de calcul
Resp. Sens. 1, H334	Metoda de calcul
Skin Sens. 1, H317	Metoda de calcul
Carc. 2, H351	Metoda de calcul
STOT SE 3, H335	Metoda de calcul
STOT SE 3, H336	Metoda de calcul
STOT RE 2, H373	Metoda de calcul

Acest document a fost întocmit de un tehnician competent în domeniul SDS şi care este pregătit în mod corespunzător.

Principalele surse bibliografice:

ECDIN - Rețeaua de date și informații de mediu privind produsele chimice - Centrul comun de cercetare, Comisia Comunităților Europene

SAX PROPRIETĂȚI PERICULOASE ALE MATERIALELOR INDUSTRIALE - Ediția a opta - Van Nostrand Reinold

Fișe tehnice de securitate ale furnizorilor de materii prime.

Aceste informatii se bazeaza pe cunostintele detinute la data mentionata mai sus. Se refera numai la produsul mentionat si nu constitue o garantie a calitatii pentru cazurile particulare

Este de datoria utilizatorului sa se asigure ca aceste informatii sunt adecvate si corespund domeniului specific de utilizare

Aceasta FTS anuleaza si inlocuieste pe cele emise anterior.

Legenda cu abrevierile şi acronimele folosite în fişa cu date de securitate

ACGIH: Conferința Americană a Igieniștilor Industriali Guvernamentali

ADR: Acordul European referitor la Încărcătura Internaţională de Bunuri Periculoase pe Drumuri

ATE: Toxicitate Acută Estimată

ATEmix: Estimarea toxicităţii acute (Amestecuri)

BEI: Index de Expunere Biologică

CAS: Chemical Abstracts Service (departament al Societăţii Americane de Chimie)

CAV: Centrul de Otrăvuri

CE: Comunitatea Europeană

CLP: Clasificare, Etichetare, Ambalare

CMR: Cancerigene, Mutagene și Toxice pentru reproducere

COV: Compus Organic Volatil

CSA: Evaluarea Securității Chimice

CSR: Raportul Securității Chimice

DNEL: Nivel Derivat Fără Efect

EC50: Jumătate din Concentrația Efectivă Maximă

ECHA: Agenția Europeană pentru Produse Chimice

EINECS: Inventarul European al Substanţelor Chimice Existente pe piaţă

ES: Scenariul de Expunere

GefStoffVO: Ordonanţă în legătură cu Substanţele Periculoase, Germania

GHS: Sistemul Mondial Armonizat de Clasificare şi Etichetare a Produselor Chimice

IARC: Agenția Internațională pentru Cercetare în Domeniul Cancerului

IATA: Asociaţia Internaţională de Transport Aerian

IC50: jumătate din concentrația inhibitorie maximă

IMDG: Coduri Maritime Internaţionale pentru Bunurile Periculoase

LC50: Concentraţia letală pentru un procent de 50% din populaţia test

LD50: Doza letală pentru un procent de 50% din populaţia test

LDLo: Doză Letală Scăzută

N.A.: Nu se aplică
N/A: Nu se aplică
N/D: Nedefinit/Nu este disponibil
N.D.: Nu este disponibil
NIOSH: Institutul Național pentru Securitate și Sănătate în Muncă
NOAEL: Nu există un Nivel al Efectelor Adverse Observat
OSHA: Administrația Securității și Sănătății în Muncă.
PBT: Persistente, Bioacumulative și Toxice
PGK: Instrucțiuni de ambalare
PNEC: Concentraţia Fără Efect Prevăzută
PSG: Pasageri
RID: Regulamentul Referitor la Transportul Internaţional de Bunuri Periculoase pe Calea Ferată
STEL: Limita de Expunere pe Termen Scurt
STOT: Toxicitatea pentru Organul Ţintă Specific
TLV: Valoarea Limită a Pragului
TLV-TWA: Valoarea Limită a Pragului pentru Durata Ponderată Medie 8 ore pe zi (Standard ACGIH)
vPvB: Foarte Persistent, Foarte Bioacumulativ.
WGK: Clasa Germană a Periculozităţii Apei

Paragrafe modificate de la ultima revizuire:

- Fișa cu date de securitate
- SECȚIUNEA 1: Identificarea substanței/amestecului și a societății/întreprinderii
- SECȚIUNEA 2: Identificarea pericolelor
- SECȚIUNEA 3: Compoziție/informații privind componenții
- SECȚIUNEA 7: Manipulare și depozitare
- SECȚIUNEA 8: Controale ale expunerii/protecția personală
- SECȚIUNEA 9: Proprietățile fizice și chimice
- SECȚIUNEA 11: Informații toxicologice
- SECȚIUNEA 12: Informații ecologice
- SECȚIUNEA 14: Informații referitoare la transport
- SECȚIUNEA 15: Informații de reglementare
- SECȚIUNEA 16: Alte informații

Ethyl acetate

Substance identification
Chemical Name: Ethyl acetate
CAS number: 141-78-6

ETHYL ACETATE

ES 1: Cosmetics, personal care products (PC39); User for consumers (SU21).
ES 2: Filling of drums and small packages (CS6); INDUSTRIAL USES (SU3).
ES 3: Formulation or repackaging (F); INDUSTRIAL USES (SU3).
ES 4: Use of non-reactive processing aid at industrial site (no inclusion in article) (ERC4); Industrial uses (su3).; Extraction agents (PC40).
ES 5: PROFESSIONAL APPLICATION OF COATINGS AND INKS; INDUSTRIAL USES (SU3).
ES 6: Use as laboratory reagent (PROC15); Industrial uses (su3).; Industrial use.
ES 7: Use in cleaning products (GEST4_I, GEST4_P, GEST4_C); INDUSTRIAL USES (SU3).
ES 8: Use in lubricants (GEST6_I, GEST6_P, GEST6_C); INDUSTRIAL USES (SU3).
ES 9: Professional application of coatings and inks (14); INDUSTRIAL USES (SU3). Covers use in coatings (paints, inks, adhesives, etc.) including exposures during use (receipt of material, storage, preparation and transfer of bulk and semi-bulk products, application by spray, roller or spreader, dipping , flow, fluidized bed on production lines and film formation), the cleaning and maintenance of the equipment and the associated laboratory activities [GES3_I].
ES 10: Use as laboratory reagent (PROC15);; Industrial uses (su3).; Professional (G27).
ES 11: Use in agrochemical products (GEST11_P, GEST11_C); INDUSTRIAL USES (SU3).
ES 12: Use in detergent products (GEST4_I, GEST4_P, GEST4_C).
ES 13: Use in lubricants (GEST6_I, GEST6_P, GEST6_C)
ES 14: Adhesives, Sealants (PC1); Use in coatings (GEST3_I, GEST3_P, GEST3_C).

ES 5: PROFESSIONAL APPLICATION OF COATINGS AND INKS (17); INDUSTRIAL USES (SU3).

5.1. USE AT INDUSTRIAL SITES

Environment
SC 1: Use of non-reactive processing aid at industrial site (no inclusion in article) ERC4

Worker
SC 2: Generalized exposures (closed systems) PROC1
SC 3: Generalized exposures (closed systems); Use in closed systems, with sample taking PROC2
SC 4: Film formation - forced drying (50 -100°C). Stove (>100°C), Curing by UV/EB radiation PROC2
SC 5: Mixing operations, Generalized exposures PROC3
SC 6: Film formation, air drying PROC4
SC 7: Preparation of material for application, Mixing operations (open systems) PROC5
SC 8: Spraying (automatic/robotic) PROC7
SC 9: Manual spraying PROC7
SC 10: Material transfers, Non-Specialized site PROC8a
SC 11: Material transfers, Specialized site PROC8b
SC 12: Roller, diffusion, flow application PROC10
SC 13: Immersion, dipping and pouring PROC13
SC 14: Laboratory activities PROC15
SC 15: Material transfers, Drum/batch transfers, Transfer from/pour from containers PROC9
SC 16: Production or preparation of articles by tabletting, compression, extrusion or pelletisation. PROC14

5.2. CONDITIONS OF USE THAT AFFECT EXPOSURE

5.2.1 Environmental exposure control: Use of non-reactive processing aid at industrial site (no inclusion in article) (ERC4)

Amount used (or contained in articles), frequency and duration of use/exposure
Daily amount per site: ≤ 1 t/day
Annual amount per site: ≤ 300 t/year

Organizational and technical measures and conditions
A wastewater treatment plant is expected.
Assumed domestic sewage treatment plant flow: ≥ 2E3 m³/day

Conditions and measures for waste treatment (including the article of waste)
Waste treatment: Dispose of waste products or used containers according to local regulations.

Other conditions affecting environmental exposure
Water flow on the receiving surface: 18,000 m³/g

5.2.2. Worker Exposure Control: Chemical production or refinement in closed processes without likelihood of exposure or in processes with equivalent containment conditions (PROC1)

Product features (article)
Covers concentrations up to 100%.

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Provide a basic level of general ventilation (1 to 3 air changes per hour).
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

5.2.3. Worker Exposure Control: Chemical production or refinery in closed process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Product features (article)
Covers concentrations up to 100%.

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Provide a basic level of general ventilation (1 to 3 air changes per hour).
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

5.2.4. Worker Exposure Control: Chemical production or refinery in closed process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Product features (article)
Covers concentrations up to 100%.

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Provide a basic level of general ventilation (1 to 3 air changes per hour).
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

5.2.5. Worker Exposure Control: Chemical production or formulation in closed batch processes, with occasional controlled exposure or processes with equivalent containment conditions (PROC3)

Product features (article)
Covers concentrations up to 100%.

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Provide a basic level of general ventilation (1 to 3 air changes per hour).
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

5.2.6. Worker Exposure Control: Production of chemicals with the possibility of exposure (PROC4)

Product features (article)
Covers concentrations up to 100%.

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Local exhaust ventilation
Inhalation - minimum yield of 90%
Provide a basic level of general ventilation (1 to 3 air changes per hour).
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

5.2.7. Worker Exposure Control: Mixing or blending in batch processes (PROC5)

Product features (article)
Covers concentrations up to 100%.

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Local exhaust ventilation
Inhalation - minimum yield of 90%
Provide a basic level of general ventilation (1 to 3 air changes per hour).
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

5.2.8. Worker Exposure Control: Industrial spraying (PROC7)

Product features (article)
Covers concentrations up to 100%.

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Local exhaust ventilation
Inhalation - minimum yield of 95%
Provide a basic level of general ventilation (1 to 3 air changes per hour).
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

5.2.9. Worker Exposure Control: Industrial spraying (PROC7)

Product features (article)
Covers concentrations up to 100%.

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Local exhaust ventilation
Inhalation - minimum yield of 95%
Provide a basic level of general ventilation (1 to 3 air changes per hour).
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

5.2.10. Worker Exposure Control: Transfer of a substance or a preparation (filling/emptying) at non-dedicated facilities (PROC8a)

Product features (article)
Covers concentrations up to 100%.

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Local exhaust ventilation
Inhalation - minimum yield of 90%
Provide a basic level of general ventilation (1 to 3 air changes per hour).
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

5.2.11. Worker Exposure Control: Transfer of a substance or a mixture (charging/discharging) at dedicated facilities (PROC8b)

Product features (article)
Covers concentrations up to 100%.

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Local exhaust ventilation
Inhalation - minimum yield of 95%
Provide a basic level of general ventilation (1 to 3 air changes per hour).
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

5.2.12. Worker Exposure Control: Application with rollers or brushes (PROC10)

Product features (article)
Covers concentrations up to 100%.

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Local exhaust ventilation
Inhalation - minimum yield of 90%
Provide a basic level of general ventilation (1 to 3 air changes per hour).
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

5.2.13. Worker Exposure Control: Treatment of articles by dipping and pouring (PROC13)

Product features (article)
Covers concentrations up to 100%.

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Local exhaust ventilation
Inhalation - minimum yield of 90%
Provide a basic level of general ventilation (1 to 3 air changes per hour).
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

5.2.14. Worker Exposure Control: Use as laboratory reagents (PROC15)

Product features (article)
Covers concentrations up to 100%.

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Provide a basic level of general ventilation (1 to 3 air changes per hour).
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

5.2.15. Worker Exposure Control: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

Product features (article)
Covers concentrations up to 100%.

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Local exhaust ventilation
Inhalation - minimum yield of 90%
Provide a basic level of general ventilation (1 to 3 air changes per hour).
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

5.2.16. Worker Exposure Control: Tableting, compression, extrusion, pelletising, granulation (PROC14)

Product features (article)
Covers concentrations up to 100%.

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Local exhaust ventilation
Inhalation - minimum yield of 90%
Provide a basic level of general ventilation (1 to 3 air changes per hour).
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

5.3. EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

5.3.1. Environmental release and exposure: Use of non-reactive processing aid at industrial site (no inclusion in article) (ERC4)

Route release	Release rate	Method for estimating for release
water	20 kg/day	Estimated release factor
air	980 kg/day	Estimated release factor
Soil	0 kg/day	Estimated release factor

Protection target	Estimated exposure	RCR
Fresh water	0.119 mg/l (EUSES v2.1)	0.495
freshwater sediments	0.708 mg/kg dry weight (EUSES v2.1)	0.616
Sea water	0.012 mg/l (EUSES v2.1)	0.495
Marine sediment	0.071 mg/kg dry weight (EUSES v2.1)	0.617
Sewage treatment plant	1.184 mg/l (EUSES v2.1)	< 0.01
Farmland	0.081 mg/kg dry weight (EUSES v2.1)	0.547
Prey for predators (freshwater)	1.469 mg/kg dry weight (EUSES v2.1)	< 0.01
Prey for predators (marine water)	0.148 mg/kg dry weight (EUSES v2.1)	< 0.01
Main predator prey (marine water)	0.031 mg/kg dry weight (EUSES v2.1)	< 0.01
Prey for Predators (Terrestrial)	0.028 mg/kg dry weight (EUSES v2.1)	< 0.01

5.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	0.037 mg/m³ (ECETOC TRA worker v3)	< 0.01
inhalation	systemic	Short term	0.147 mg/m³ (ECETOC TRA worker v3)	< 0.01
inhalation	local	Long-term	0.037 mg/m³ (ECETOC TRA worker v3)	< 0.01
inhalation	local	Short term	0.147 mg/m³ (ECETOC TRA worker v3)	< 0.01
dermal	systemic	Long-term	0.034 mg/kg bw/day (ECETOC TRA worker v3)	< 0.01
combined routes	systemic	Long-term	/	< 0.01

5.3.3. Worker exposure: Chemical production or refinery in closed process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	91.77 mg/m³ (ECETOC TRA worker v3)	0.125
inhalation	systemic	Short term	361.7 mg/m³ (ECETOC TRA worker v3)	0.25
inhalation	local	Long-term	91.77 mg/m³ (ECETOC TRA worker v3)	0.125
inhalation	local	Short term	361.7 mg/m³ (ECETOC TRA worker v3)	0.25
dermal	systemic	Long-term	1.37 mg/kg bw/day (ECETOC TRA worker v3)	0.022
combined routes	systemic	Long-term	/	0.147

5.3.4. Worker exposure: Chemical production or refinery in closed process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	91.77 mg/m³ (ECETOC TRA worker v3)	0.125
inhalation	systemic	Short term	361.7 mg/m³ (ECETOC TRA worker v3)	0.25
inhalation	local	Long-term	91.77 mg/m³ (ECETOC TRA worker v3)	0.125
inhalation	local	Short term	361.7 mg/m³ (ECETOC TRA worker v3)	0.25
dermal	systemic	Long-term	1.37 mg/kg bw/day (ECETOC TRA worker v3)	0.022
combined routes	systemic	Long-term	/	0.147

5.3.5. Worker exposure: Chemical production or formulation in closed batch processes, with occasional controlled exposure or processes with equivalent containment conditions (PROC3)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	183.5 mg/m³ (ECETOC TRA worker v3)	0.25
inhalation	systemic	Short term	734.2 mg/m³ (ECETOC TRA worker v3)	0.5
inhalation	local	Long-term	183.5 mg/m³ (ECETOC TRA worker v3)	0.25
inhalation	local	Short term	734.2 mg/m³ (ECETOC TRA worker v3)	0.5
dermal	systemic	Long-term	0.69 mg/kg bw/day (ECETOC TRA worker v3)	0.011
combined routes	systemic	Long-term	/	0.261

5.3.6. Worker exposure: Production of chemicals with the possibility of exposure (PROC4)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	36.71 mg/m³ (ECETOC TRA worker v3)	0.05
inhalation	systemic	Short term	146.8 mg/m³ (ECETOC TRA worker v3)	0.1
inhalation	local	Long-term	36.71 mg/m³ (ECETOC TRA worker v3)	0.05
inhalation	local	Short term	146.8 mg/m³ (ECETOC TRA worker v3)	0.1
dermal	systemic	Long-term	6.86 mg/kg bw/day (ECETOC TRA worker v3)	0.109
combined routes	systemic	Long-term	/	0.159

5.3.7. Worker exposure: Mixing or blending in batch processes (PROC5)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	91.77 mg/m³ (ECETOC TRA worker v3)	0.125
inhalation	systemic	Short term	367.1 mg/m³ (ECETOC TRA worker v3)	0.25
inhalation	local	Long-term	91.77 mg/m³ (ECETOC TRA worker v3)	0.125
inhalation	local	Short term	367.1 mg/m³ (ECETOC TRA worker v3)	0.25
dermal	systemic	Long-term	13.71 mg/kg bw/day (ECETOC TRA worker v3)	0.218
combined routes	systemic	Long-term	/	0.343

5.3.8. Worker exposure: Industrial spraying (PROC7)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	91.77 mg/m³ (ECETOC TRA worker v3)	0.125
inhalation	systemic	Short term	367.1 mg/m³ (ECETOC TRA worker v3)	0.25
inhalation	local	Long-term	91.77 mg/m³ (ECETOC TRA worker v3)	0.125
inhalation	local	Short term	367.1 mg/m³ (ECETOC TRA worker v3)	0.25
dermal	systemic	Long-term	42.86 mg/kg bw/day (ECETOC TRA worker v3)	0.68
combined routes	systemic	Long-term	/	0.805

5.3.9. Worker exposure: Industrial spraying (PROC7)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	91.77 mg/m³ (ECETOC TRA worker v3)	0.125
inhalation	systemic	Short term	367.1 mg/m³ (ECETOC TRA worker v3)	0.25
inhalation	local	Long-term	91.77 mg/m³ (ECETOC TRA worker v3)	0.125
inhalation	local	Short term	367.1 mg/m³ (ECETOC TRA worker v3)	0.25
dermal	systemic	Long-term	42.86 mg/kg bw/day (ECETOC TRA worker v3)	0.68
combined routes	systemic	Long-term	/	0.805

5.3.10. Worker exposure: Transfer of a substance or a preparation (filling/emptying) at non-dedicated facilities (PROC8a)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	91.77 mg/m³ (ECETOC TRA worker v3)	0.125
inhalation	systemic	Short term	367.1 mg/m³ (ECETOC TRA worker v3)	0.25
inhalation	local	Long-term	91.77 mg/m³ (ECETOC TRA worker v3)	0.125
inhalation	local	Short term	367.1 mg/m³ (ECETOC TRA worker v3)	0.25
dermal	systemic	Long-term	13.71 mg/kg bw/day (ECETOC TRA worker v3)	0.218
combined routes	systemic	Long-term	/	0.343

5.3.11. Worker exposure: Transfer of a substance or a mixture (charging/discharging) at dedicated facilities (PROC8b)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	27.53 mg/m³ (ECETOC TRA worker v3)	0.038
inhalation	systemic	Short term	110.1 mg/m³ (ECETOC TRA worker v3)	0.075
inhalation	local	Long-term	27.53 mg/m³ (ECETOC TRA worker v3)	0.038
inhalation	local	Short term	110.1 mg/m³ (ECETOC TRA worker v3)	0.075
dermal	systemic	Long-term	13.71 mg/kg bw/day (ECETOC TRA worker v3)	0.218
combined routes	systemic	Long-term	/	0.255

5.3.12. Worker exposure: Application with rollers or brushes (PROC10)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	91.77 mg/m³ (ECETOC TRA worker v3)	0.125
inhalation	systemic	Short term	367.1 mg/m³ (ECETOC TRA worker v3)	0.25
inhalation	local	Long-term	91.77 mg/m³ (ECETOC TRA worker v3)	0.125
inhalation	local	Short term	367.1 mg/m³ (ECETOC TRA worker v3)	0.25
dermal	systemic	Long-term	27.43 mg/kg bw/day (ECETOC TRA worker v3)	0.435
combined routes	systemic	Long-term	/	0.56

5.3.13. Worker exposure: Treatment of articles by dipping and pouring (PROC13)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	91.77 mg/m³ (ECETOC TRA worker v3)	0.125
inhalation	systemic	Short term	367.1 mg/m³ (ECETOC TRA worker v3)	0.25
inhalation	local	Long-term	91.77 mg/m³ (ECETOC TRA worker v3)	0.125
inhalation	local	Short term	367.1 mg/m³ (ECETOC TRA worker v3)	0.25
dermal	systemic	Long-term	13.71 mg/kg bw/day (ECETOC TRA worker v3)	0.218
combined routes	systemic	Long-term	/	0.343

5.3.14. Worker exposure: Use as laboratory reagents (PROC15)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	183.5 mg/m³ (ECETOC TRA worker v3)	0.25
inhalation	systemic	Short term	734.2 mg/m³ (ECETOC TRA worker v3)	0.5
inhalation	local	Long-term	183.5 mg/m³ (ECETOC TRA worker v3)	0.25
inhalation	local	Short term	734.2 mg/m³ (ECETOC TRA worker v3)	0.5
dermal	systemic	Long-term	0.34 mg/kg bw/day (ECETOC TRA worker v3)	< 0.01
combined routes	systemic	Long-term	/	0.255

5.3.15. Worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	73.42 mg/m³ (ECETOC TRA worker v3)	0.1
inhalation	systemic	Short term	293.6 mg/m³ (ECETOC TRA worker v3)	0.2
inhalation	local	Long-term	73.42 mg/m³ (ECETOC TRA worker v3)	0.1
inhalation	local	Short term	293.6 mg/m³ (ECETOC TRA worker v3)	0.2
dermal	systemic	Long-term	6.86 mg/kg bw/day (ECETOC TRA worker v3)	0.109
combined routes	systemic	Long-term	/	0.209

5.3.16. Worker exposure: Tableting, compression, extrusion, pelletising, granulation (PROC14)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	91.77 mg/m³ (ECETOC TRA worker v3)	0.125
inhalation	systemic	Short term	367.1 mg/m³ (ECETOC TRA worker v3)	0.25
inhalation	local	Long-term	91.77 mg/m³ (ECETOC TRA worker v3)	0.125
inhalation	local	Short term	367.1 mg/m³ (ECETOC TRA worker v3)	0.25
dermal	systemic	Long-term	3.43 mg/kg bw/day (ECETOC TRA worker v3)	0.054
combined routes	systemic	Long-term	/	0.179

5.4. GUIDANCE FOR DOWNSTREAM USERS TO ASSESS WHETHER THEY COMPLY WITH THE LIMITS SET BY THE EXPOSURE SCENARIO

Guidance to check compliance with the exposure scenario: https://echa.europa.eu/

ES 9: PROFESSIONAL APPLICATION OF COATINGS AND INKS (14); INDUSTRIAL USES (SU3). COVERS USE IN COATINGS (PAINTS, INKS, ADHESIVES, ETC.) INCLUDING EXPOSURES DURING USE (RECEIPT OF MATERIAL, STORAGE, PREPARATION AND TRANSFER OF BULK AND SEMI-BULK PRODUCTS, APPLICATION BY SPRAY, ROLLER OR SPREADER, DIPPING , FLOW, FLUIDIZED BED ON PRODUCTION LINES AND FILM FORMATION), THE CLEANING AND MAINTENANCE OF THE EQUIPMENT AND THE ASSOCIATED LABORATORY ACTIVITIES [GES3_I].

9.1. WIDE DISPERSIVE USE BY PROFESSIONAL WORKERS

Environment
SC 1: Wide dispersive use of non-reactive processing aid (no inclusion into the article, outdoor) ERC8d

Worker
SC 3: Generalized exposures (closed systems) PROC1
SC 4: Filling of equipment from drums and containers PROC2
SC 5: Generalized exposures (closed systems), Use in closed systems PROC2
SC 6: Preparation of material for application, Generalized exposures PROC3
SC 7: Film formation - air drying, Indoor use PROC4
SC 8: Film formation - air drying, Outdoor use PROC4
SC 9: Preparation of material for application, Indoor use PROC5
SC 10: Preparation of material for application, Outdoor use PROC5
SC 11: Material transfers, Drum/batch transfers, Non-Specialized site PROC8a
SC 12: 12 Material Transfers, Drum/batch transfers, specialized site PROC8b
SC 13: Roller, diffusion, flow application, Indoor use PROC10
SC 14: Roller, diffusion, flow application, Outdoor use PROC10
SC 15: Manual spraying, Indoor use PROC11
SC 16: Manual spraying, Outdoor use PROC11
SC 17: Immersion, dipping and pouring, Indoor use PROC13
SC 18: Immersion, dipping and pouring, Outdoor use PROC13
SC 19: Laboratory activities PROC15
SC 20: Hand application - finger paints, crayons, stickers, Indoor use PROC19
SC 21: Hand application - finger paints, crayons, stickers, Outdoor use PROC19

9.2. CONDITIONS OF USE THAT AFFECT EXPOSURE

9.2.1 Environmental exposure control: Wide dispersive use of non-reactive processing aid (no inclusion into the article, outdoor) (ERC8d)

Organizational and technical measures and conditions
A wastewater treatment plant is expected.

Conditions and measures for waste treatment (including the article of waste)
Waste treatment: Dispose of waste products or used containers according to local regulations.

9.2.3. Worker Exposure Control: Chemical production or refinement in closed processes without likelihood of exposure or in processes with equivalent containment conditions (PROC1)

Product features (article)
Covers concentrations up to 100%.

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Provide a basic level of general ventilation (1 to 3 air changes per hour).

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

9.2.4. Worker Exposure Control: Chemical production or refinery in closed process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Product features (article)
Covers concentrations up to 100%.

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Provide a basic level of general ventilation (1 to 3 air changes per hour).

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

9.2.5. Worker Exposure Control: Chemical production or refinery in closed process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Product features (article)
Covers concentrations up to 100%.

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Provide a basic level of general ventilation (1 to 3 air changes per hour).

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

9.2.6. Worker Exposure Control: Chemical production or formulation in closed batch processes, with occasional controlled exposure or processes with equivalent containment conditions (PROC3)

Product features (article)
Covers concentrations up to 100%.

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Provide a basic level of general ventilation (3 to 5 air changes per hour).

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

9.2.7. Worker Exposure Control: Production of chemicals with the possibility of exposure (PROC4)

Product features (article)
Covers concentrations up to 100%.

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Local exhaust ventilation
Inhalation - minimum yield of 80%
Provide a basic level of general ventilation (3 to 5 air changes per hour).

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

9.2.8. Worker Exposure Control: Production of chemicals with the possibility of exposure (PROC4)

Product features (article)
Covers concentrations up to 100%.

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

9.2.9. Worker Exposure Control: Mixing or blending in batch processes (PROC5)

Product features (article)
Covers concentrations up to 100%.

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Local exhaust ventilation
Inhalation - minimum yield of 80%
Provide a basic level of general ventilation (3 to 5 air changes per hour).

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

9.2.10. Worker Exposure Control: Mixing or blending in batch processes (PROC5)

Product features (article)
Covers concentrations up to 100%.

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Conditions and measures for personal protection, hygiene and health assessment
Wear suitable respirator.
For more information, refer to Section 8 of the SDS (safety data sheet).
Inhalation - minimum yield of 90%

Other conditions affecting worker exposure
Indoor and outdoor use: Outdoor use
Temperature: Process temperature up to 40°C is assumed

9.2.11. Worker Exposure Control: Transfer of a substance or a preparation (filling/emptying) at non-dedicated facilities (PROC8a) (PROC8b)

Product features (article)
Covers concentrations up to 100%.

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Local exhaust ventilation
Inhalation - minimum yield of 90%
Provide a basic level of general ventilation (3 to 5 air changes per hour).

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

9.2.12. Worker Exposure Control: Transfer of a substance or a mixture (charging/discharging) at dedicated facilities (PROC8b)

Product features (article)
Covers concentrations up to 100%.

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Local exhaust ventilation
Inhalation - minimum yield of 90%
Provide a basic level of general ventilation (1 to 3 air changes per hour).

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

9.2.13. Worker Exposure Control: Application with rollers or brushes (PROC10)

Product features (article)
Covers concentrations up to 100%.

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Local exhaust ventilation
Inhalation - minimum yield of 80%
Provide a basic level of general ventilation (1 to 3 air changes per hour).

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

9.2.14. Worker Exposure Control: Application with rollers or brushes (PROC10)

Product features (article)
Covers concentrations up to 100%.

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Conditions and measures for personal protection, hygiene and health assessment
Wear suitable respirator.
For more information, refer to Section 8 of the SDS (safety data sheet).
Inhalation - minimum yield of 90%

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

9.2.15. Worker Exposure Control: Non-industrial spray application (PROC11)

Product features (article)
Covers concentrations up to 25 %

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Local exhaust ventilation
Inhalation - minimum yield of 80%
Provide a basic level of general ventilation (3 to 5 air changes per hour).

Conditions and measures for personal protection, hygiene and health assessment
Wear suitable gloves tested to EN374.
If skin contamination is expected to extend to other parts of the body, these parts should also be protected with impermeable clothing equivalent to that described for the hands.
For more information, refer to Section 8 of the SDS (safety data sheet).

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

9.2.16. Worker Exposure Control: Non-industrial spray application (PROC11)

Product features (article)
Covers concentrations up to 25 %

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Conditions and measures for personal protection, hygiene and health assessment
Wear suitable gloves tested to EN374.
If skin contamination is expected to extend to other parts of the body, these parts should also be protected with impermeable clothing equivalent to that described for the hands.
For more information, refer to Section 8 of the SDS (safety data sheet).
Wear suitable respirator.
For more information, refer to Section 8 of the SDS (safety data sheet).
Inhalation - minimum yield of 90%

Other conditions affecting worker exposure
Indoor and outdoor use: Outdoor use
Temperature: Process temperature up to 40°C is assumed

9.2.17. Worker Exposure Control: Treatment of articles by dipping and pouring (PROC13)

Product features (article)
Covers concentrations up to 25 %

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Provide a good standard of general ventilation (from 5 to 10 air changes per hour).

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

9.2.18. Worker Exposure Control: Treatment of articles by dipping and pouring (PROC13)

Product features (article)
Covers concentrations up to 25 %

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Conditions and measures for personal protection, hygiene and health assessment
Wear suitable respirator.
For more information, refer to Section 8 of the SDS (safety data sheet).
Inhalation - minimum yield of 90%

Other conditions affecting worker exposure
Indoor and outdoor use: Outdoor use
Temperature: Process temperature up to 40°C is assumed

9.2.19. Worker Exposure Control: Use as laboratory reagents (PROC15)

Product features (article)
Covers concentrations up to 100%.

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Provide a basic level of general ventilation (1 to 3 air changes per hour).

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

9.2.20. Worker Exposure Control: Hand-mixing with direct contact and only PPE available (PROC19)

Product features (article)
Covers concentrations up to 25 %

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Provide a good standard of general ventilation (from 5 to 10 air changes per hour).

Conditions and measures for personal protection, hygiene and health assessment
Wear suitable gloves tested to EN374.
If skin contamination is expected to extend to other parts of the body, these parts should also be protected with impermeable clothing equivalent to that described for the hands.
For more information, refer to Section 8 of the SDS (safety data sheet).

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

9.2.21. Worker Exposure Control: Hand-mixing with direct contact and only PPE available (PROC19)

Product features (article)
Covers concentrations up to 5 %

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Conditions and measures for personal protection, hygiene and health assessment
Wear suitable gloves tested to EN374.
If skin contamination is expected to extend to other parts of the body, these parts should also be protected with impermeable clothing equivalent to that described for the hands.
For more information, refer to Section 8 of the SDS (safety data sheet).

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

9.3. EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

9.3.1. Environmental release and exposure: Wide dispersive use of non-reactive processing aid (no inclusion into the article, outdoor) (ERC8d)

Route release	Release rate	Method for estimating for release
water	0.014 kg/day	Estimated release factor
air	980 kg/day	Estimated release factor
Soil	0 kg/day	Estimated release factor

Protection target	Estimated exposure	RCR
Fresh water	0.000396 mg/l (EUSES v2.1)	< 0.01
freshwater sediments	0.00236 mg/kg dry weight (EUSES v2.1)	< 0.01
Sea water	0.0000597 mg/l (EUSES v2.1)	< 0.01
Marine sediment	0.000356 mg/kg dry weight (EUSES v2.1)	< 0.01
Sewage treatment plant	0.000805 mg/l (EUSES v2.1)	< 0.01
Farmland	0.000131 mg/kg dry weight (EUSES v2.1)	< 0.01
Prey for predators (freshwater)	0.011 mg/kg wet weight (EUSES v2.1)	< 0.01
Prey for predators (marine water)	0.00167 mg/kg wet weight (EUSES v2.1)	< 0.01
Main predator prey (marine water)	0.00158 mg/kg wet weight (EUSES v2.1)	< 0.01
Prey for Predators (Terrestrial)	0.000114 mg/kg wet weight (EUSES v2.1)	< 0.01

9.3.3. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	0.367 mg/m³ (ECETOC TRA worker v3)	< 0.01
inhalation	systemic	Short term	1.468 mg/m³ (ECETOC TRA worker v3)	< 0.01
inhalation	local	Long-term	0.367 mg/m³ (ECETOC TRA worker v3)	< 0.01
inhalation	local	Short term	1.468 mg/m³ (ECETOC TRA worker v3)	< 0.01
dermal	systemic	Long-term	0.034 mg/kg bw/day (ECETOC TRA worker v3)	< 0.01
combined routes	systemic	Long-term	/	< 0.01

9.3.4. Worker exposure: Chemical production or refinery in closed process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	183.5 mg/m³ (ECETOC TRA worker v3)	0.25
inhalation	systemic	Short term	734.2 mg/m³ (ECETOC TRA worker v3)	0.5
inhalation	local	Long-term	183.5 mg/m³ (ECETOC TRA worker v3)	0.25
inhalation	local	Short term	734.2 mg/m³ (ECETOC TRA worker v3)	0.5
dermal	systemic	Long-term	1.37 mg/kg bw/day (ECETOC TRA worker v3)	0.022
combined routes	systemic	Long-term	/	0.272

9.3.5. Worker exposure: Chemical production or refinery in closed process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	183.5 mg/m³ (ECETOC TRA worker v3)	0.25
inhalation	local	Short term	734.2 mg/m³ (ECETOC TRA worker v3)	0.5
inhalation	local	Long-term	183.5 mg/m³ (ECETOC TRA worker v3)	0.25
inhalation	systemic	Short term	734.2 mg/m³ (ECETOC TRA worker v3)	0.5
dermal	systemic	Long-term	1.37 mg/kg bw/day (ECETOC TRA worker v3)	0.022
combined routes	systemic	Long-term	/	0.272

9.3.6. Worker exposure: Chemical production or formulation in closed batch processes, with occasional controlled exposure or processes with equivalent containment conditions (PROC3)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	256.9 mg/m³ (ECETOC TRA worker v3)	0.35
inhalation	systemic	Short term	1.03 g/m³ (ECETOC TRA worker v3)	0.7
inhalation	local	Long-term	256.9 mg/m³ (ECETOC TRA worker v3)	0.35
inhalation	local	Short term	1.03 g/m³ (ECETOC TRA worker v3)	0.7
dermal	systemic	Long-term	0.69 mg/kg bw/day (ECETOC TRA worker v3)	0.011
combined routes	systemic	Long-term	/	0.361

9.3.7. Worker exposure: Production of chemicals with the possibility of exposure (PROC4)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	128.4 mg/m³ (ECETOC TRA worker v3)	0.175
inhalation	systemic	Short term	513.9 mg/m³ (ECETOC TRA worker v3)	0.35
inhalation	local	Long-term	128.4 mg/m³ (ECETOC TRA worker v3)	0.175
inhalation	local	Short term	513.9 mg/m³ (ECETOC TRA worker v3)	0.35
dermal	systemic	Long-term	6.86 mg/kg bw/day (ECETOC TRA worker v3)	0.109
combined routes	systemic	Long-term	/	0.284

9.3.8. Worker exposure: Production of chemicals with the possibility of exposure (PROC4)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	256.9 mg/m³ (ECETOC TRA worker v3)	0.35
inhalation	systemic	Short term	1.03 g/m³ (ECETOC TRA worker v3)	0.7
inhalation	local	Long-term	256.9 mg/m³ (ECETOC TRA worker v3)	0.35
inhalation	local	Short term	1.03 g/m³ (ECETOC TRA worker v3)	0.7
dermal	systemic	Long-term	6.86 mg/kg bw/day (ECETOC TRA worker v3)	0.109
combined routes	systemic	Long-term	/	0.459

9.3.9. Worker exposure: Mixing or blending in batch processes (PROC5)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	256.9 mg/m³ (ECETOC TRA worker v3)	0.35
inhalation	systemic	Short term	1.03 g/m³ (ECETOC TRA worker v3)	0.7
inhalation	local	Long-term	256.9 mg/m³ (ECETOC TRA worker v3)	0.35
inhalation	local	Short term	1.03 g/m³ (ECETOC TRA worker v3)	0.7
dermal	systemic	Long-term	13.71 mg/kg bw/day (ECETOC TRA worker v3)	0.218
combined routes	systemic	Long-term	/	0.568

9.3.10. Worker exposure: Mixing or blending in batch processes (PROC5)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	128.4 mg/m³ (ECETOC TRA worker v3)	0.175
inhalation	systemic	Short term	513.9 mg/m³ (ECETOC TRA worker v3)	0.35
inhalation	local	Long-term	128.4 mg/m³ (ECETOC TRA worker v3)	0.175
inhalation	local	Short term	513.9 mg/m³ (ECETOC TRA worker v3)	0.35
dermal	systemic	Long-term	13.71 mg/kg bw/day (ECETOC TRA worker v3)	0.218
combined routes	systemic	Long-term	/	0.393

9.3.11. Worker exposure: Transfer of a substance or a preparation (filling/emptying) at non-dedicated facilities (PROC8a)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	256.9 mg/m³ (ECETOC TRA worker v3)	0.35
inhalation	systemic	Short term	1.03 g/m³ (ECETOC TRA worker v3)	0.7
inhalation	local	Long-term	256.9 mg/m³ (ECETOC TRA worker v3)	0.35
inhalation	local	Short term	1.03 g/m³ (ECETOC TRA worker v3)	0.7
dermal	systemic	Long-term	13.71 mg/kg bw/day (ECETOC TRA worker v3)	0.218
combined routes	systemic	Long-term	/	0.568

9.3.12. Worker exposure: Transfer of a substance or a mixture (charging/discharging) at dedicated facilities (PROC8b)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	91.77 mg/m³ (ECETOC TRA worker v3)	0.125
inhalation	systemic	Short term	367.1 mg/m³ (ECETOC TRA worker v3)	0.25
inhalation	local	Long-term	91.77 mg/m³ (ECETOC TRA worker v3)	0.125
inhalation	local	Short term	367.1 mg/m³ (ECETOC TRA worker v3)	0.25
dermal	systemic	Long-term	13.71 mg/kg bw/day (ECETOC TRA worker v3)	0.218
combined routes	systemic	Long-term	/	0.343

9.3.13. Worker exposure: Application with rollers or brushes (PROC10)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	256.9 mg/m³ (ECETOC TRA worker v3)	0.35
inhalation	systemic	Short term	1.03 g/m³ (ECETOC TRA worker v3)	0.7
inhalation	local	Long-term	256.9 mg/m³ (ECETOC TRA worker v3)	0.35
inhalation	local	Short term	1.03 g/m³ (ECETOC TRA worker v3)	0.7
dermal	systemic	Long-term	27.43 mg/kg bw/day (ECETOC TRA worker v3)	0.435
combined routes	systemic	Long-term	/	0.785

9.3.14. Worker exposure: Application with rollers or brushes (PROC10)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	128.4 mg/m³ (ECETOC TRA worker v3)	0.175
inhalation	systemic	Short term	513.9 mg/m³ (ECETOC TRA worker v3)	0.35
inhalation	local	Long-term	128.4 mg/m³ (ECETOC TRA worker v3)	0.175
inhalation	local	Short term	513.9 mg/m³ (ECETOC TRA worker v3)	0.35
dermal	systemic	Long-term	27.43 mg/kg bw/day (ECETOC TRA worker v3)	0.435
combined routes	systemic	Long-term	/	0.61

9.3.15. Worker exposure: Non-industrial spray application (PROC11)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	308.3 mg/m³ (ECETOC TRA worker v3)	0.42
inhalation	systemic	Short term	mg/m³ (ECETOC TRA worker v3)	0.84
inhalation	local	Long-term	308.3 mg/m³ (ECETOC TRA worker v3)	0.42
inhalation	local	Short term	mg/m³ (ECETOC TRA worker v3)	0.84
dermal	systemic	Long-term	12.85 mg/kg bw/day (ECETOC TRA worker v3)	0.204
combined routes	systemic	Long-term	/	0.624

9.3.16. Worker exposure: Non-industrial spray application (PROC11)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	154.1 mg/m³ (ECETOC TRA worker v3)	0.21
inhalation	systemic	Short term	616.7 mg/m³ (ECETOC TRA worker v3)	0.42
inhalation	local	Long-term	154.1 mg/m³ (ECETOC TRA worker v3)	0.21
inhalation	local	Short term	616.7 mg/m³ (ECETOC TRA worker v3)	0.42
dermal	systemic	Long-term	12.85 mg/kg bw/day (ECETOC TRA worker v3)	0.204
combined routes	systemic	Long-term	/	0.414

9.3.17. Worker exposure: Treatment of articles by dipping and pouring (PROC13)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	165.1 mg/m³ (ECETOC TRA worker v3)	0.225
inhalation	systemic	Short term	660.7 mg/m³ (ECETOC TRA worker v3)	0.45
inhalation	local	Long-term	165.1 mg/m³ (ECETOC TRA worker v3)	0.225
inhalation	local	Short term	660.7 mg/m³ (ECETOC TRA worker v3)	0.45
dermal	systemic	Long-term	8.226 mg/kg bw/day (ECETOC TRA worker v3)	0.131
combined routes	systemic	Long-term	/	0.356

9.3.18. Worker exposure: Treatment of articles by dipping and pouring (PROC13)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	38.54 mg/m³ (ECETOC TRA worker v3)	0.053
inhalation	systemic	Short term	154.1 mg/m³ (ECETOC TRA worker v3)	0.105
inhalation	local	Long-term	38.54 mg/m³ (ECETOC TRA worker v3)	0.053
inhalation	local	Short term	154.1 mg/m³ (ECETOC TRA worker v3)	0.105
dermal	systemic	Long-term	8.226 mg/kg bw/day (ECETOC TRA worker v3)	0.131
combined routes	systemic	Long-term	/	0.183

9.3.19. Worker exposure: Use as laboratory reagents (PROC15)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	183.5 mg/m³ (ECETOC TRA worker v3)	0.25
inhalation	systemic	Short term	734.2 mg/m³ (ECETOC TRA worker v3)	0.5
inhalation	local	Long-term	183.5 mg/m³ (ECETOC TRA worker v3)	0.25
inhalation	local	Short term	734.2 mg/m³ (ECETOC TRA worker v3)	0.5
dermal	systemic	Long-term	0.34 mg/kg bw/day (ECETOC TRA worker v3)	< 0.01
combined routes	systemic	Long-term	/	0.255

9.3.20. Worker exposure: Hand-mixing with direct contact and only PPE available (PROC19)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	330.3 mg/m³ (ECETOC TRA worker v3)	0.45
inhalation	systemic	Short term	1.32 g/m³ (ECETOC TRA worker v3)	0.9
inhalation	local	Long-term	330.3 mg/m³ (ECETOC TRA worker v3)	0.45
inhalation	local	Short term	1.32 g/m³ (ECETOC TRA worker v3)	0.9
dermal	systemic	Long-term	16.97 mg/kg bw/day (ECETOC TRA worker v3)	0.269
combined routes	systemic	Long-term	/	0.72

9.3.21. Worker exposure: Hand-mixing with direct contact and only PPE available (PROC19)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	256.9 mg/m³ (ECETOC TRA worker v3)	0.35
inhalation	systemic	Short term	mg/m³ (ECETOC TRA worker v3)	0.7
inhalation	local	Long-term	256.9 mg/m³ (ECETOC TRA worker v3)	0.35
inhalation	local	Short term	mg/m³ (ECETOC TRA worker v3)	0.7
dermal	systemic	Long-term	5.657 mg/kg bw/day (ECETOC TRA worker v3)	0.09
combined routes	systemic	Long-term	/	0.44

9.4. GUIDANCE FOR DOWNSTREAM USERS TO ASSESS WHETHER THEY COMPLY WITH THE LIMITS SET BY THE EXPOSURE SCENARIO

Guidance to check compliance with the exposure scenario: https://echa.europa.eu/

ES 12: USE IN DETERGENT PRODUCTS (GEST4_I, GEST4_P, GEST4_C).

12.1. WIDE DISPERSIVE USE BY PROFESSIONAL WORKERS

Environment
SC 1: Wide dispersive use of non-reactive processing aid (no inclusion into the article, indoors) ERC8a

Worker
SC 2: Filling of equipment from drums and containers, specialised site PROC8b
SC 3: Automated process with (semi) closed systems; Use in closed systems PROC2
SC 4: Automated process with (semi) closed systems Drum/batch transfers, Use in closed systems PROC3
SC 5: Semi-automatic process (e.g: Semi-automatic application of floor care and maintenance products) PROC4
SC 6: Filling of equipment from drums and containers, Outdoor use PROC8a
SC 7: Immersion, dipping and pouring, Manual, Surfaces, Cleaning PROC13
SC 8: Cleaning with low-pressure washers, Roller application or brushing, No spraying PROC10
SC 9: Cleaning with high pressure washers, Spraying, Indoor use PROC11
SC 10: Cleaning with high pressure washers Spraying, Outdoor use PROC11
SC 11: Application of cleaning products in closed systems, Manual, Surfaces, Cleaning PROC10
SC 12: Ad hoc manual application via trigger sprays, partial dipping, etc., Roller application or brushing PROC10
SC 13: Application of cleaning products in closed systems, Outdoor use PROC4
SC 14: Cleaning of medical devices PROC4

12.2. CONDITIONS OF USE THAT AFFECT EXPOSURE

12.2.1 Environmental exposure control: Wide dispersive use of non-reactive processing aid (no inclusion into the article, indoors) (ERC8a)

Organizational and technical measures and conditions
A wastewater treatment plant is expected.

Conditions and measures for waste treatment (including the article of waste)
Waste treatment: Dispose of waste products or used containers according to local regulations.

12.2.2. Worker Exposure Control: Transfer of a substance or a mixture (charging/discharging) at dedicated facilities (PROC8b)

Product features (article)
Covers concentrations up to 25 %

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Provide a good standard of general ventilation (from 5 to 10 air changes per hour).

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

12.2.3. Worker Exposure Control: Chemical production or refinery in closed process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Product features (article)
Covers concentrations up to 25 %

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Provide a basic level of general ventilation (1 to 3 air changes per hour).

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

12.2.4. Worker Exposure Control: Chemical production or formulation in closed batch processes, with occasional controlled exposure or processes with equivalent containment conditions (PROC3)

Product features (article)
Covers concentrations up to 25 %

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Provide a basic level of general ventilation (1 to 3 air changes per hour).

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

12.2.5. Worker Exposure Control: Production of chemicals with the possibility of exposure (PROC4)

Product features (article)
Covers concentrations up to 25 %

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Provide a good standard of general ventilation (from 5 to 10 air changes per hour).

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

12.2.6. Worker Exposure Control: Transfer of a substance or a preparation (filling/emptying) at non-dedicated facilities (PROC8a)

Product features (article)
Covers concentrations up to 25 %

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Conditions and measures for personal protection, hygiene and health assessment
Wear suitable respirator.
For more information, refer to Section 8 of the SDS (safety data sheet).
Inhalation - minimum yield of 90%

Other conditions affecting worker exposure
Indoor and outdoor use: Outdoor use
Temperature: Process temperature up to 40°C is assumed

12.2.7. Worker Exposure Control: Treatment of articles by dipping and pouring (PROC13)

Product features (article)
Covers concentrations up to 25 %

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Provide a good standard of general ventilation (from 5 to 10 air changes per hour).

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

12.2.8. Worker Exposure Control: Application with rollers or brushes (PROC10)

Product features (article)
Covers concentrations up to 25 %

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Provide a good standard of general ventilation (from 5 to 10 air changes per hour).

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

12.2.9. Worker Exposure Control: Non-industrial spray application (PROC11)

Product features (article)
Covers concentrations up to 5 %

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Provide a good standard of general ventilation (from 5 to 10 air changes per hour).

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

12.2.10. Worker Exposure Control: Non-industrial spray application (PROC11)

Product features (article)
Covers concentrations up to 1%

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Conditions and measures for personal protection, hygiene and health assessment
Wear suitable gloves tested to EN374.
If skin contamination is expected to extend to other parts of the body, these parts should also be protected with impermeable clothing equivalent to that described for the hands.
For more information, refer to Section 8 of the SDS (safety data sheet).

Other conditions affecting worker exposure
Indoor and outdoor use: Outdoor use
Temperature: Process temperature up to 40°C is assumed

12.2.11. Worker Exposure Control: Application with rollers or brushes (PROC10)

Product features (article)
Covers concentrations up to 5 %

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

5.2.12. Worker Exposure Control: Application with rollers or brushes (PROC10)

Product features (article)
Covers concentrations up to 25 %

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Local exhaust ventilation
Inhalation - minimum yield of 80%
Provide a basic level of general ventilation (1 to 3 air changes per hour).

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

12.2.13. Worker Exposure Control: Production of chemicals with the possibility of exposure (PROC4)

Product features (article)
Covers concentrations up to 25 %

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Conditions and measures for personal protection, hygiene and health assessment
Wear suitable respirator.
For more information, refer to Section 8 of the SDS (safety data sheet).
Inhalation - minimum yield of 90%

Other conditions affecting worker exposure
Indoor and outdoor use: Outdoor use
Temperature: Process temperature up to 40°C is assumed

12.2.14. Worker Exposure Control: Production of chemicals with the possibility of exposure (PROC4)

Product features (article)
Covers concentrations up to 25 %

Amount used (or contained in articles), frequency and duration of use/exposure
Frequency of use: Covers use up to 8 h/day

Organizational and technical measures and conditions
Local exhaust ventilation
Inhalation - minimum yield of 80%
Provide a basic level of general ventilation (1 to 3 air changes per hour).

Other conditions affecting worker exposure
Indoor and outdoor use: Indoor use
Temperature: Process temperature up to 40°C is assumed

12.3. EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

12.3.1. Environmental release and exposure: Wide dispersive use of non-reactive processing aid (no inclusion into the article, indoors) (ERC8a)

Route release	Release rate	Method for estimating for release
water	0.014 kg/day	Environmental Release Category (ERC)
air	0.014 kg/day	Environmental Release Category (ERC)
Soil	0 kg/day	Environmental Release Category (ERC)

Protection target	Estimated exposure	RCR
Fresh water	0.000397 mg/l (EUSES v2.1)	< 0.01
freshwater sediments	0.00237 mg/kg dry weight (EUSES v2.1)	< 0.01
Sea water	0.0000598 mg/l (EUSES v2.1)	< 0.01
Marine sediment	0.000357 mg/kg dry weight (EUSES v2.1)	< 0.01
Sewage treatment plant	0.000811 mg/l (EUSES v2.1)	< 0.01
Farmland	0.000131 mg/kg dry weight (EUSES v2.1)	< 0.01
Prey for predators (freshwater)	0.011 mg/kg dry weight (EUSES v2.1)	< 0.01
Prey for predators (marine water)	0.00167 mg/kg dry weight (EUSES v2.1)	< 0.01
Main predator prey (marine water)	0.00158 mg/kg dry weight (EUSES v2.1)	< 0.01
Prey for Predators (Terrestrial)	0.000114 mg/kg dry weight (EUSES v2.1)	< 0.01

12.3.2. Worker exposure: Transfer of a substance or a mixture (charging/discharging) at dedicated facilities (PROC8b)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	165.1 mg/m³ (ECETOC TRA worker v3)	0.225
inhalation	systemic	Short term	660.7 mg/m³ (ECETOC TRA worker v3)	0.45
inhalation	local	Long-term	165.1 mg/m³ (ECETOC TRA worker v3)	0.225
inhalation	local	Short term	660.7 mg/m³ (ECETOC TRA worker v3)	0.45
dermal	systemic	Long-term	8.226 mg/kg bw/day (ECETOC TRA worker v3)	0.131
combined routes	systemic	Long-term	/	0.356

12.3.3. Worker exposure: Chemical production or refinery in closed process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	110.1 mg/m³ (ECETOC TRA worker v3)	0.15
inhalation	local	Long-term	110.1 mg/m³ (ECETOC TRA worker v3)	0.15
inhalation	local	Short term	440.5 mg/m³ (ECETOC TRA worker v3)	0.3
inhalation	systemic	Short term	440.5 mg/m³ (ECETOC TRA worker v3)	0.3
dermal	systemic	Long-term	0.822 mg/kg bw/day (ECETOC TRA worker v3)	0.013
combined routes	systemic	Long-term	/	0.163

12.3.4. Worker exposure: Chemical production or formulation in closed batch processes, with occasional controlled exposure or processes with equivalent containment conditions (PROC3)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	220.2 mg/m³ (ECETOC TRA worker v3)	0.3
inhalation	systemic	Short term	881.0 mg/m³ (ECETOC TRA worker v3)	0.6
inhalation	local	Long-term	220.2 mg/m³ (ECETOC TRA worker v3)	0.3
inhalation	local	Short term	881.0 mg/m³ (ECETOC TRA worker v3)	0.6
dermal	systemic	Long-term	0.414 mg/kg bw/day (ECETOC TRA worker v3)	< 0.01
combined routes	systemic	Long-term	/	0.307

12.3.5. Worker exposure: Production of chemicals with the possibility of exposure (PROC4)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	165.1 mg/m³ (ECETOC TRA worker v3)	0.225
inhalation	systemic	Short term	660.7 mg/m³ (ECETOC TRA worker v3)	0.45
inhalation	local	Long-term	165.1 mg/m³ (ECETOC TRA worker v3)	0.225
inhalation	local	Short term	660.7 mg/m³ (ECETOC TRA worker v3)	0.45
dermal	systemic	Long-term	4.116 mg/kg bw/day (ECETOC TRA worker v3)	0.065
combined routes	systemic	Long-term	/	0.29

12.3.6. Worker exposure: Transfer of a substance or a preparation (filling/emptying) at non-dedicated facilities (PROC8a)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	77.09 mg/m³ (ECETOC TRA worker v3)	0.105
inhalation	systemic	Short term	308.3 mg/m³ (ECETOC TRA worker v3)	0.21
inhalation	local	Long-term	77.09 mg/m³ (ECETOC TRA worker v3)	0.105
inhalation	local	Short term	308.3 mg/m³ (ECETOC TRA worker v3)	0.21
dermal	systemic	Long-term	8.226 mg/kg bw/day (ECETOC TRA worker v3)	0.131
combined routes	systemic	Long-term	/	0.236

12.3.7. Worker exposure: Treatment of articles by dipping and pouring (PROC13)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	165.1 mg/m³ (ECETOC TRA worker v3)	0.225
inhalation	systemic	Short term	660.7 mg/m³ (ECETOC TRA worker v3)	0.45
inhalation	local	Long-term	165.1 mg/m³ (ECETOC TRA worker v3)	0.225
inhalation	local	Short term	660.7 mg/m³ (ECETOC TRA worker v3)	0.45
dermal	systemic	Long-term	8.226 mg/kg bw/day (ECETOC TRA worker v3)	0.131
combined routes	systemic	Long-term	/	0.356

12.3.8. Worker exposure: Application with rollers or brushes (PROC10)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	330.3 mg/m³ (ECETOC TRA worker v3)	0.45
inhalation	systemic	Short term	mg/m³ (ECETOC TRA worker v3)	0.9
inhalation	local	Long-term	330.3 mg/m³ (ECETOC TRA worker v3)	0.45
inhalation	local	Short term	mg/m³ (ECETOC TRA worker v3)	0.9
dermal	systemic	Long-term	16.45 mg/kg bw/day (ECETOC TRA worker v3)	0.261
combined routes	systemic	Long-term	/	0.711

12.3.9. Worker exposure: Non-industrial spray application (PROC11)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	220.2 mg/m³ (ECETOC TRA worker v3)	0.3
inhalation	systemic	Short term	881.0 mg/m³ (ECETOC TRA worker v3)	0.6
inhalation	local	Long-term	220.2 mg/m³ (ECETOC TRA worker v3)	0.3
inhalation	local	Short term	881.0 mg/m³ (ECETOC TRA worker v3)	0.6
dermal	systemic	Long-term	21.42 mg/kg bw/day (ECETOC TRA worker v3)	0.34
combined routes	systemic	Long-term	/	0.64

12.3.10. Worker exposure: Non-industrial spray application (PROC11)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	256.9 mg/m³ (ECETOC TRA worker v3)	0.35
inhalation	systemic	Short term	1.03 g/m³ (ECETOC TRA worker v3)	0.7
inhalation	local	Long-term	256.9 mg/m³ (ECETOC TRA worker v3)	0.35
inhalation	local	Short term	1.03 g/m³ (ECETOC TRA worker v3)	0.7
dermal	systemic	Long-term	2.143 mg/kg bw/day (ECETOC TRA worker v3)	0.034
combined routes	systemic	Long-term	/	0.384

12.3.11. Worker exposure: Application with rollers or brushes (PROC10)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	256.9 mg/m³ (ECETOC TRA worker v3)	0.35
inhalation	systemic	Short term	1.03 g/m³ (ECETOC TRA worker v3)	0.7
inhalation	local	Long-term	256.9 mg/m³ (ECETOC TRA worker v3)	0.35
inhalation	local	Short term	1.03 g/m³ (ECETOC TRA worker v3)	0.7
dermal	systemic	Long-term	5.486 mg/kg bw/day (ECETOC TRA worker v3)	0.087
combined routes	systemic	Long-term	/	0.437

12.3.12. Worker exposure: Application with rollers or brushes (PROC10)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	220.2 mg/m³ (ECETOC TRA worker v3)	0.3
inhalation	systemic	Short term	881.0 mg/m³ (ECETOC TRA worker v3)	0.6
inhalation	local	Long-term	220.2 mg/m³ (ECETOC TRA worker v3)	0.3
inhalation	local	Short term	881.0 mg/m³ (ECETOC TRA worker v3)	0.6
dermal	systemic	Long-term	16.45 mg/kg bw/day (ECETOC TRA worker v3)	0.261
combined routes	systemic	Long-term	/	0.561

12.3.13. Worker exposure: Production of chemicals with the possibility of exposure (PROC4)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	38.54 mg/m³ (ECETOC TRA worker v3)	0.053
inhalation	systemic	Short term	154.1 mg/m³ (ECETOC TRA worker v3)	0.105
inhalation	local	Long-term	38.54 mg/m³ (ECETOC TRA worker v3)	0.053
inhalation	local	Short term	154.1 mg/m³ (ECETOC TRA worker v3)	0.105
dermal	systemic	Long-term	4.116 mg/kg bw/day (ECETOC TRA worker v3)	0.065
combined routes	systemic	Long-term	/	0.118

12.3.14. Worker exposure: Production of chemicals with the possibility of exposure (PROC4)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	110.1 mg/m³ (ECETOC TRA worker v3)	0.15
inhalation	systemic	Short term	440.5 mg/m³ (ECETOC TRA worker v3)	0.3
inhalation	local	Long-term	110.1 mg/m³ (ECETOC TRA worker v3)	0.15
inhalation	local	Short term	440.5 mg/m³ (ECETOC TRA worker v3)	0.3
dermal	systemic	Long-term	4.116 mg/kg bw/day (ECETOC TRA worker v3)	0.065
combined routes	systemic	Long-term	/	0.215

12.4. GUIDANCE FOR DOWNSTREAM USERS TO ASSESS WHETHER THEY COMPLY WITH THE LIMITS SET BY THE EXPOSURE SCENARIO

Guidance to check compliance with the exposure scenario: https://echa.europa.eu/

4,4'-methylenediphenyl diisocyanate

Identification of the exposure scenario
Product name: 4,4'-methylenediphenyl diisocyanate
CAS number: 101-68-8
Review date: 27/05/2021 rev. 13.1

PROFESSIONAL USE - USE IN COATINGS

1. TITLE SECTION

Structured short title
Wide dispersive use by professional workers; Use in coatings.

Worker
SC1 Use in coatings [MDI]: PROC4
SC2 Use in coatings [MDI]: PROC5
SC3 Use in coatings [MDI]: PROC8a
SC4 Use in coatings [MDI]: PROC8b
SC5 Use in coatings [MDI]: PROC10
SC6 Use in coatings [MDI]: PROC11
SC7 Use in coatings [MDI]: PROC13

2. CONDITIONS OF USE AFFECTING EXPOSURE

2.1. Control of worker exposure: Use in batch and other processes (synthesis), where exposure opportunities occur (PROC4) [MDI]

Product features (article)
Concentration of substance in mixture/article: ≤ 60%
Molar mass: 250 g/mol
Vapour pressure: 0.001 pa at 20°C
Physical form of the product Low volatile liquid

Amounts used, frequency and duration of use (or useful life)
General exposures: 8 hours/day
Frequency of use: 5 days/week

Organizational and technical measures and conditions
These measures apply to all subsystems for products at temperatures below 40°C for pure MDI and below 45°C for other MDI-based substances or without spray application:
- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- Clean up spills immediately.
- Ensure personnel are informed and trained on the nature of exposure and the basic actions to be taken to minimise exposure.

These measures apply to all subsystems for products at temperatures above 40°C for pure MDI and above 45°C for other MDI-based substances or with spray application and with aprotic polar solvents below 40°C:
- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- Handle substance within a predominantly closed system provided with extract ventilation.
- Handle in a fume hood or under extract ventilation.
- Clean up spills immediately.
- Ensure personnel are informed and trained on the nature of exposure and the basic actions to be taken to minimise exposure.
- Ensure that the control measures can be inspected and undergo maintenance.

With local extract system (LEV):
- Localized aspiration is required.
- Provide a ventilation extract for points where emissions occur.
- Provide extract ventilation at material transfer points and other openings.

Conditions and measures for personal protection, hygiene and health assessment

These measures apply to all subsystems for products at temperatures below 40°C for pure MDI and below 45°C for other MDI-based substances or without spray application:

- Do not inhale vapours/aerosols.
- Make sure that direct skin contact is avoided.
- Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
- Use adequate eye protection.
- Use adequate eye protection.
- Use adequate eye protection.
- Wear appropriate coveralls to avoid skin exposure.
- The use of latex gloves is not tolerated.

These measures apply to all subsystems for products at temperatures above 40°C for pure MDI and above 45°C for other MDI-based substances or with spray application and with aprotic polar solvents below 40°C:

- Do not inhale vapours/aerosols.
- Make sure that direct skin contact is avoided.
- Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
- Wash off any skin contamination immediately.
- Use adequate eye protection.
- Wear appropriate coveralls to avoid skin exposure.
- The use of latex gloves is not tolerated.
- Wear a full face respirator in accordance with EN136.
- Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.

Other conditions affecting worker exposure

Exposed skin area: 480 cm² (palm both hands)
Indoor and outdoor use: Indoor use
Temperature: 50°C

2.2. Control of worker exposure: Mixture or mixture by batch processes (batch process) for the formulation of preparations and articles (contact in different phases and/or important contact) (PROC5) [MDI]

Product features (article)

Concentration of substance in mixture/article: ≤ 60%
Molar mass: 250 g/mol
Vapour pressure: 0.001 pa at 20°C
Physical form of the product Low volatile liquid

Amounts used, frequency and duration of use (or useful life)

General exposures: 1 hour/day
Frequency of use: 5 days/week

Organizational and technical measures and conditions

These measures apply to all subsystems for products at temperatures below 40°C for pure MDI and below 45°C for other MDI-based substances or without spray application:

- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- Clean up spills immediately.
- Ensure personnel are informed and trained on the nature of exposure and the basic actions to be taken to minimise exposure.

These measures apply to all subsystems for products at temperatures above 40°C for pure MDI and above 45°C for other MDI-based substances or with spray application and with aprotic polar solvents below 40°C:

- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- Handle substance within a predominantly closed system provided with extract ventilation.
- Handle in a fume hood or under extract ventilation.
- Clean up spills immediately.
- Ensure personnel are informed and trained on the nature of exposure and the basic actions to be taken to minimise exposure.
- Ensure that the control measures can be inspected and undergo maintenance.

Indoor use with local exhaust system (LEV):
- Ensure that the control measures can be inspected and undergo maintenance.
- Localized aspiration is required.
- Provide a ventilation extract for points where emissions occur.
- Provide extract ventilation at material transfer points and other openings.

Indoor use without local ventilation system or outdoor use:
Ensure that the control measures can be inspected and undergo maintenance.

Conditions and measures for personal protection, hygiene and health assessment

These measures apply to all subsystems for products at temperatures below 40°C for pure MDI and below 45°C for other MDI-based substances or without spray application:
- Do not inhale vapours/aerosols.
- Make sure that direct skin contact is avoided.
- Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
- Wash off any skin contamination immediately.
- Use adequate eye protection.
- Wear appropriate coveralls to avoid skin exposure.
- The use of latex gloves is not tolerated.

These measures apply to all subsystems for products at temperatures above 40°C for pure MDI and above 45°C for other MDI-based substances or with spray application and with aprotic polar solvents below 40°C:
- Do not inhale vapours/aerosols.
- Make sure that direct skin contact is avoided.
- Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
- Wash off any skin contamination immediately.
- Use adequate eye protection.
- Wear appropriate coveralls to avoid skin exposure.
- The use of latex gloves is not tolerated.
- Wear a full face respirator in accordance with EN136.
- Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.
- Indoor use without local ventilation system or outdoor use:
- Wear a respirator in accordance with EN140.

Other conditions affecting worker exposure

Exposed skin area: 480 cm² (palm both hands)
Indoor and outdoor use: Indoor/Outdoor use
Temperature: 23°C

2.3. Control of worker exposure: Transfer of a substance or a preparation (filling/ emptying) from/to vessels/large containers, in non-dedicated facilities (PROC8a) [MDI]

Product features (article)

Concentration of substance in mixture/article: ≤ 60%
Molar mass: 250 g/mol
Vapour pressure: 0.001 pa at 20°C
Physical form of the product Low volatile liquid

Amounts used, frequency and duration of use (or useful life)

General exposures: 1 hour/day
Remarks: Daily or more rarely. Short term
Frequency of use: 5 days/week

Organizational and technical measures and conditions

These measures apply to all subsystems for products at temperatures below 40°C for pure MDI and below 45°C for other MDI-based substances or without spray application:
- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- Clean up spills immediately.
- Ensure personnel are informed and trained on the nature of exposure and the basic actions to be taken to minimise exposure.

These measures apply to all subsystems for products at temperatures above 40°C for pure MDI and above 45°C for other MDI-based substances or with spray application and with aprotic polar solvents below 40°C:
- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- Handle substance within a predominantly closed system provided with extract ventilation.
- Handle in a fume hood or under extract ventilation.
- Clean up spills immediately.
- Ensure personnel are informed and trained on the nature of exposure and the basic actions to be taken to minimise exposure.
- Ensure that the control measures can be inspected and undergo maintenance.

Conditions and measures for personal protection, hygiene and health assessment

These measures apply to all subsystems for products at temperatures below 40°C for pure MDI and below 45°C for other MDI-based substances or without spray application:
- Do not inhale vapours/aerosols.
- Make sure that direct skin contact is avoided.
- Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
- Wash off any skin contamination immediately.
- Use adequate eye protection.
- Wear appropriate coveralls to avoid skin exposure.
- The use of latex gloves is not tolerated.

These measures apply to all subsystems for products at temperatures above 40°C for pure MDI and above 45°C for other MDI-based substances or with spray application and with aprotic polar solvents below 40°C:
- Do not inhale vapours/aerosols.
- Make sure that direct skin contact is avoided.
- Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
- Wash off any skin contamination immediately.
- Use adequate eye protection.
- Wear appropriate coveralls to avoid skin exposure.
- The use of latex gloves is not tolerated.
- Wear a full face respirator in accordance with EN136.
- Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.

Other conditions affecting worker exposure

Exposed skin area: 960 cm² (both hands)
Indoor and outdoor use: Indoor use
Temperature: 23°C

2.4. Control of worker exposure: Transfer of a substance or a preparation (filling/ emptying) from/to vessels/large containers, in non-dedicated facilities (PROC8b) [MDI]

Product features (article)

Concentration of substance in mixture/article: ≤ 60%
Molar mass: 250 g/mol
Vapour pressure: 0.001 pa at 20°C
Physical form of the product Low volatile liquid

Amounts used, frequency and duration of use (or useful life)

General exposures: 1 hour/day
Remarks: Daily or more rarely. Short term
Frequency of use: 5 days/week

Organizational and technical measures and conditions

These measures apply to all subsystems for products at temperatures below 40°C for pure MDI and below 45°C for other MDI-based substances or without spray application:
- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- Clean up spills immediately.
- Ensure personnel are informed and trained on the nature of exposure and the basic actions to be taken to minimise exposure.

These measures apply to all subsystems for products at temperatures above 40°C for pure MDI and above 45°C for other MDI-based substances or with spray application and with aprotic polar solvents below 40°C:
- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- Handle substance within a predominantly closed system provided with extract ventilation.
- Handle in a fume hood or under extract ventilation.
- Clean up spills immediately.
- Ensure personnel are informed and trained on the nature of exposure and the basic actions to be taken to minimise exposure.
- Ensure that the control measures can be inspected and undergo maintenance.
- Handle substance within a closed system.

Conditions and measures for personal protection, hygiene and health assessment

These measures apply to all subsystems for products at temperatures below 40°C for pure MDI and below 45°C for other MDI-based substances or without spray application:
- Do not inhale vapours/aerosols.
- Make sure that direct skin contact is avoided.
- Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
- Wash off any skin contamination immediately.
- Use adequate eye protection.
- Wear appropriate coveralls to avoid skin exposure.
- The use of latex gloves is not tolerated.

These measures apply to all subsystems for products at temperatures above 40°C for pure MDI and above 45°C for other MDI-based substances or with spray application and with aprotic polar solvents below 40°C:
- Do not inhale vapours/aerosols.
- Make sure that direct skin contact is avoided.
- Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
- Wash off any skin contamination immediately.
- Use adequate eye protection.
- Wear appropriate coveralls to avoid skin exposure.
- The use of latex gloves is not tolerated.
- Wear a full face respirator in accordance with EN136.
- Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.

Other conditions affecting worker exposure

Exposed skin area: 960 cm² (both hands)
Indoor and outdoor use: Indoor use
Temperature: 23°C

2.5. Worker Exposure Control: Roller or Brush Application (PROC10) [MDI]

Product features (article)

Concentration of substance in mixture/article: ≤ 60%
Molar mass: 250 g/mol
Vapour pressure: 0.001 pa at 20°C
Physical form of the product Low volatile liquid

Amounts used, frequency and duration of use (or useful life)

General exposures: 8 hours/day
Frequency of use: 5 days/week

Organizational and technical measures and conditions

These measures apply to all subsystems for products at temperatures below 40°C for pure MDI and below 45°C for other MDI-based substances or without spray application:
- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- Clean up spills immediately.
- Ensure personnel are informed and trained on the nature of exposure and the basic actions to be taken to minimise exposure.

These measures apply to all subsystems for products at temperatures above 40°C for pure MDI and above 45°C for other MDI-based substances or with spray application and with aprotic polar solvents below 40°C:
- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- Handle substance within a predominantly closed system provided with extract ventilation.
- Handle in a fume hood or under extract ventilation.
- Clean up spills immediately.
- Ensure personnel are informed and trained on the nature of exposure and the basic actions to be taken to minimise exposure.
- Ensure that the control measures can be inspected and undergo maintenance.

Conditions and measures for personal protection, hygiene and health assessment

These measures apply to all subsystems for products at temperatures below 40°C for pure MDI and below 45°C for other MDI-based substances or without spray application:
- Do not inhale vapours/aerosols.
- Make sure that direct skin contact is avoided.
- Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
- Wash off any skin contamination immediately.
- Use adequate eye protection.
- Wear appropriate coveralls to avoid skin exposure.
- The use of latex gloves is not tolerated.

These measures apply to all subsystems for products at temperatures above 40°C for pure MDI and above 45°C for other MDI-based substances or with spray application and with aprotic polar solvents below 40°C:
- Do not inhale vapours/aerosols.
- Make sure that direct skin contact is avoided.
- Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
- Wash off any skin contamination immediately.
- Use adequate eye protection.
- Wear appropriate coveralls to avoid skin exposure.
- The use of latex gloves is not tolerated.
- Wear a full face respirator in accordance with EN136.
- Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.

Other conditions affecting worker exposure

Exposed skin area: 960 cm² (both hands)
Indoor and outdoor use: Indoor use
Temperature: 23°C

2.6. Control of worker exposure: Non-industrial spraying (PROC11) [MDI]

Product features (article)

Concentration of substance in mixture/article: ≤ 60%
Molar mass: 250 g/mol
Vapour pressure: 0.001 pa at 20°C
Physical form of the product Low volatile liquid

Amounts used, frequency and duration of use (or useful life)

General exposures: 6 hours/day
Remarks: 1,-,5
Frequency of use: 5 days/week

Organizational and technical measures and conditions

These measures apply to all subsystems for products at temperatures below 40°C for pure MDI and below 45°C for other MDI-based substances or without spray application:
- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- Clean up spills immediately.
- Ensure personnel are informed and trained on the nature of exposure and the basic actions to be taken to minimise exposure.

These measures apply to all subsystems for products at temperatures above 40°C for pure MDI and above 45°C for other MDI-based substances or with spray application and with aprotic polar solvents below 40°C:
- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- Handle substance within a predominantly closed system provided with extract ventilation.
- Handle in a fume hood or under extract ventilation.
- Clean up spills immediately.
- Ensure personnel are informed and trained on the nature of exposure and the basic actions to be taken to minimise exposure.
- Ensure that the control measures can be inspected and undergo maintenance.

Indoor use 1:
- Ensure that the control measures can be inspected and undergo maintenance.
- Localized aspiration is required.
- Handle substance within a predominantly closed system provided with extract ventilation.
- Provide a ventilation extract for points where emissions occur.
- Provide extract ventilation at material transfer points and other openings.

Indoor use 2:
- Access to the work area is restricted to authorised personnel only.
- Ensure that the control measures can be inspected and undergo maintenance.
- Localized aspiration is required.
- Make sure a spray booth is used.

Indoor use 3:
- Access to the work area is restricted to authorised personnel only.
- Ensure that the control measures can be inspected and undergo maintenance.
- Open doors and windows.
- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- Ensure good ventilation.

Indoor use 4:
- Access to the work area is restricted to authorised personnel only.
- Ensure that the control measures can be inspected and undergo maintenance.
- Localized aspiration is required.
- Provide a ventilation extract for points where emissions occur.

Outdoor use 5:
- Access to the work area is restricted to authorised personnel only.
- Ensure that the control measures can be inspected and undergo maintenance.
- Make sure the operation is performed outdoors.
- Stay upwind/keep distance from source.

Conditions and measures for personal protection, hygiene and health assessment

These measures apply to all subsystems for products at temperatures below 40°C for pure MDI and below 45°C for other MDI-based substances or without spray application:
- Do not inhale vapours/aerosols.
- Make sure that direct skin contact is avoided.
- Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
- Wash off any skin contamination immediately.
- Use adequate eye protection.
- Wear appropriate coveralls to avoid skin exposure.
- The use of latex gloves is not tolerated.

These measures apply to all subsystems for products at temperatures above 40°C for pure MDI and above 45°C for other MDI-based substances or with spray application and with aprotic polar solvents below 40°C:
- Do not inhale vapours/aerosols.
- Make sure that direct skin contact is avoided.
- Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
- Wash off any skin contamination immediately.
- Use adequate eye protection.
- Wear appropriate coveralls to avoid skin exposure.
- The use of latex gloves is not tolerated.
- Wear a full face respirator in accordance with EN136.
- Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.

General information
- Regardless of the risk reduction measures described here, a respirator is generally recommended for spray applications.
Indoor use 2:
- Wear a full face respirator in accordance with EN136.
Indoor use 3:
- Wear a full face respirator in accordance with EN136.
Indoor use 4:
- Wear a full face respirator in accordance with EN136.
Outdoor use 5:
- Wear a full face respirator in accordance with EN136.

Other conditions affecting worker exposure

Exposed skin area: 1500 cm² (both hands and forearms)
Indoor and outdoor use: Indoor/Outdoor use
Temperature: 35°C
Remarks: 1,-,5

2.7 Controlling Worker Exposure: Treatment of Articles by dipping and pouring (PROC13) [MDI]

Product features (article)

Concentration of substance in mixture/article: ≤ 60%
Molar mass: 250 g/mol
Vapour pressure: 0.001 pa at 20°C
Physical form of the product Low volatile liquid

Amounts used, frequency and duration of use (or useful life)

General exposures: 8 hours/day
Frequency of use: 5 days/week

Organizational and technical measures and conditions

These measures apply to all subsystems for products at temperatures below 40°C for pure MDI and below 45°C for other MDI-based substances or without spray application:
- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- Clean up spills immediately.
- Ensure personnel are informed and trained on the nature of exposure and the basic actions to be taken to minimise exposure.

These measures apply to all subsystems for products at temperatures above 40°C for pure MDI and above 45°C for other MDI-based substances or with spray application and with aprotic polar solvents below 40°C:
- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- Handle substance within a predominantly closed system provided with extract ventilation.
- Handle in a fume hood or under extract ventilation.
- Clean up spills immediately.
- Ensure personnel are informed and trained on the nature of exposure and the basic actions to be taken to minimise exposure.
- Ensure that the control measures can be inspected and undergo maintenance.

Conditions and measures for personal protection, hygiene and health assessment

These measures apply to all subsystems for products at temperatures below 40°C for pure MDI and below 45°C for other MDI-based substances or without spray application:
- Do not inhale vapours/aerosols.
- Make sure that direct skin contact is avoided.
- Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
- Wash off any skin contamination immediately.
- Use adequate eye protection.
- Wear appropriate coveralls to avoid skin exposure.
- The use of latex gloves is not tolerated.

These measures apply to all subsystems for products at temperatures above 40°C for pure MDI and above 45°C for other MDI-based substances or with spray application and with aprotic polar solvents below 40°C:

- Do not inhale vapours/aerosols.
- Make sure that direct skin contact is avoided.
- Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
- Wash off any skin contamination immediately.
- Use adequate eye protection.
- Wear appropriate coveralls to avoid skin exposure.
- The use of latex gloves is not tolerated.
- Wear a full face respirator in accordance with EN136.
- Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.

Other conditions affecting worker exposure

Exposed skin area: 480 cm² (palm both hands)
Indoor and outdoor use: Indoor use
Temperature: 23°C

3. EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

3.1. Worker exposure: Use in batch and other processes (synthesis), where exposure opportunities occur (PROC4) [MDI]

Exposure routes	Exposure level	RCR	Observations	
Local effects, by inhalation, local	0.0006 mg/m³ (EasyTRA, v4.1)	0.012	General ventilation	30%
			Respiratory protection	90% efficiency
			LEV	90% efficiency
Local effects, by inhalation, local	0.0006 mg/m³ (EasyTRA, v4.1)	0,012	General ventilation	30%
			Respiratory protection	90% efficiency Without local ventilation
Dermal exposure	* (Qualitative evaluation)	< 1	Gloves	90% protection

Learn more about exposure estimates

Based on the risk management measures adopted, the risk to humans is sufficiently controlled (RCR ≤ 1).
* Qualitative approach used to establish safe use.

3.2. Worker exposure: Mixture or blending by batch processes (discontinuous process) for the formulation of preparations and articles (contact in different phases and/or important contact) (PROC5)

[MDI]

Exposure routes	Exposure level	RCR	Observations	
Local effects, by inhalation, local	0.00011 mg/m³ (EasyTRA, v4.1)	0.0022	Indoor use	
			General ventilation	30%
			LEV	90% efficiency
			Respiratory protection	90% efficiency
Local effects, by inhalation, local	0.00011 mg/m³ (EasyTRA, v4.1)	0.0022	Outdoor use	
			Outdoor use	30%
			Respiratory protection	90% efficiency
Dermal exposure	* (Qualitative evaluation)	< 1	Gloves	90% protection

Learn more about exposure estimates

Based on the risk management measures adopted, the risk to humans is sufficiently controlled (RCR ≤ 1).
* Qualitative approach used to establish safe use.

3.3. Worker exposure: Transfer of a substance or a preparation (filling/ emptying) from/ to vessels/ large containers, in non-dedicated facilities (PROC8a) [MDI]

Exposure routes	Exposure level	RCR	Observations	
Local effects, by inhalation, local	0.0036 mg/m³ (EasyTRA, v4.1)	0.072	General ventilation	30%
Dermal exposure	* (Qualitative evaluation)	< 1	Gloves	90% protection

Learn more about exposure estimates

Based on the risk management measures adopted, the risk to humans is sufficiently controlled (RCR ≤ 1).
* Qualitative approach used to establish safe use.

3.4. Worker exposure: Transfer of a substance or a preparation (filling/ emptying) from/ to vessels/ large containers, in dedicated facilities (PROC8b) [MDI]

Exposure routes	Exposure level	RCR	Observations	
Local effects, by inhalation, local	0.00364 mg/m³ (EasyTRA, v4.1)	0.0728	General ventilation	30%
			Closed system	99% efficiency
Dermal exposure	* (Qualitative evaluation)	< 1	Gloves	90% protection

Learn more about exposure estimates

Based on the risk management measures adopted, the risk to humans is sufficiently controlled (RCR ≤ 1).
* Qualitative approach used to establish safe use.

3.5. Worker exposure: Roller or brush application (PROC10) [MDI]

Exposure routes	Exposure level	RCR	Observations	
Local effects, by inhalation, local	0.017 mg/m³ (EasyTRA, v4.1)	0.340	General ventilation	30%
Dermal exposure	* (Qualitative evaluation)	< 1	Gloves	90% protection

Learn more about exposure estimates

Based on the risk management measures adopted, the risk to humans is sufficiently controlled (RCR ≤ 1). * Qualitative approach used to establish safe use.

3.6. Worker exposure: Non-industrial misting (PROC11) [MDI]

Exposure routes	Exposure level	RCR	Observations	
Local effects, by inhalation, local	0.012 mg/m³ (EasyTRA, v4.1)	0.240	Indoor use	1
			General ventilation	30%
			LEV	99% efficiency
Local effects, by inhalation, local	0.003 mg/m³ (EasyTRA, v4.1)	0.060	Indoor use	2
			General ventilation	30%
			Paint booth	90% reduction
			Respiratory protection	97.5% efficiency
Local effects, by inhalation, local	0.022 mg/m³ (EasyTRA, v4.1)	0.440	Indoor use	3
			General ventilation	30%
			Respiratory protection	97.5% efficiency
Local effects, by inhalation, local	0.003 mg/m³ (EasyTRA, v4.1)	0.060	Indoor use	4
			General ventilation	30%
			LEV	90% efficiency
			Respiratory protection	97.5% efficiency
Local effects, by inhalation, local	0.0022 mg/m³ (EasyTRA, v4.1)	0.440	Outdoor use	5
			Outdoors:	30% reduction
			Respiratory protection	97.5% efficiency
Dermal exposure	* (Qualitative evaluation)	< 1	Gloves	90% protection

Learn more about exposure estimates

Based on the risk management measures adopted, the risk to humans is sufficiently controlled (RCR ≤ 1).
* Qualitative approach used to establish safe use.

3.7. Worker exposure: Treatment of articles by dipping and pouring (PROC13) [MDI]

Exposure routes	Exposure level	RCR	Observations	
Local effects, by inhalation, local	0.017 mg/m³ (EasyTRA, v4.1)	0.340	General ventilation	30%
Dermal exposure	* (Qualitative evaluation)	< 1	Gloves	90% protection

Learn more about exposure estimates

Based on the risk management measures adopted, the risk to humans is sufficiently controlled (RCR ≤ 1).
* Qualitative approach used to establish safe use.

4. GUIDANCE FOR DOWNSTREAM USERS TO ASSESS WHETHER THEY COMPLY WITH THE LIMITS SET BY THE EXPOSURE SCENARIO MDI

The risk management measures described in this exposure scenario apply to the specified substance in the concentration described by the scenario. The concentration of the substance in the product may differ. Downstream users should therefore check whether a scaling of the risk management measures is appropriate.
Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Further information on the risk management measures and operational conditions for this type of exposure is available at www.ISOPA.org.

PROFESSIONAL USE - ADHESIVES, SEALANTS

1. TITLE SECTION

Structured short title

Wide dispersive use by professional workers; Adhesives, sealants

Worker

SC1 Adhesives, Sealants [MDI]: PROC4
SC2 Adhesives, Sealants [MDI]: PROC5
SC3 Adhesives, Sealants [MDI]: PROC8a
SC4 Adhesives, Sealants [MDI]: PROC8b
SC5 Adhesives, Sealants [MDI]: PROC10
SC6 Adhesives, Sealants [MDI]: PROC11
SC7 Adhesives, Sealants [MDI]: PROC13

2. CONDITIONS OF USE AFFECTING EXPOSURE

2.1. Control of worker exposure: Use in batch and other processes (synthesis), where exposure opportunities occur (PROC4) [MDI]

Product features (article)

Concentration of substance in mixture/article: ≤ 60%
Molar mass: 250 g/mol
Vapour pressure: 0.001 pa at 20°C
Physical form of the product Low volatile liquid

Amounts used, frequency and duration of use (or useful life)

General exposures: 8 hours/day
Frequency of use: 5 days/week

Organizational and technical measures and conditions

These measures apply to all subsystems for products at temperatures below 40°C for pure MDI and below 45°C for other MDI-based substances or without spray application:

- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- Clean up spills immediately.
- Ensure personnel are informed and trained on the nature of exposure and the basic actions to be taken to minimise exposure.

These measures apply to all subsystems for products at temperatures above 40°C for pure MDI and above 45°C for other MDI-based substances or with spray application and with aprotic polar solvents below 40°C:

- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- Handle substance within a predominantly closed system provided with extract ventilation.
- Handle in a fume hood or under extract ventilation.
- Clean up spills immediately.
- Ensure personnel are informed and trained on the nature of exposure and the basic actions to be taken to minimise exposure.
- Ensure that the control measures can be inspected and undergo maintenance.

With local extract system (LEV):

- Localized aspiration is required.
- Provide a ventilation extract for points where emissions occur.
- Provide extract ventilation at material transfer points and other openings.

Conditions and measures for personal protection, hygiene and health assessment

These measures apply to all subsystems for products at temperatures below 40°C for pure MDI and below 45°C for other MDI-based substances or without spray application:

- Do not inhale vapours/aerosols.
- Make sure that direct skin contact is avoided.
- Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
- Wash off any skin contamination immediately.
- Use adequate eye protection.
- Wear appropriate coveralls to avoid skin exposure.
- The use of latex gloves is not tolerated.
- These measures apply to all subsystems for products at temperatures above 40°C for pure MDI and above 45°C for other MDI-based substances or with spray application and with aprotic polar solvents below 40°C:
- Do not inhale vapours/aerosols.
- Make sure that direct skin contact is avoided.
- Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
- Wash off any skin contamination immediately.
- Use adequate eye protection.
- Wear appropriate coveralls to avoid skin exposure.
- The use of latex gloves is not tolerated.
- Wear a full face respirator in accordance with EN136.
- Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.

Other conditions affecting worker exposure

Exposed skin area: 480 cm² (palm both hands)
Indoor and outdoor use: Indoor use
Temperature: 50°C

2.2. Control of worker exposure: Mixture or mixture by batch processes (batch process) for the formulation of preparations and articles (contact in different phases and/or important contact) (PROC5) [MDI]

Product features (article)

Concentration of substance in mixture/article: ≤ 60%
Molar mass: 250 g/mol
Vapour pressure: 0.001 pa at 20°C
Physical form of the product Low volatile liquid

Amounts used, frequency and duration of use (or useful life)

General exposures: 1 hour/day
Frequency of use: 5 days/week

Organizational and technical measures and conditions

These measures apply to all subsystems for products at temperatures below 40°C for pure MDI and below 45°C for other MDI-based substances or without spray application:

- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- Clean up spills immediately.
- Ensure personnel are informed and trained on the nature of exposure and the basic actions to be taken to minimise exposure.

These measures apply to all subsystems for products at temperatures above 40°C for pure MDI and above 45°C for other MDI-based substances or with spray application and with aprotic polar solvents below 40°C:

- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- Handle substance within a predominantly closed system provided with extract ventilation.
- Handle in a fume hood or under extract ventilation.
- Clean up spills immediately.
- Ensure personnel are informed and trained on the nature of exposure and the basic actions to be taken to minimise exposure.
- Ensure that the control measures can be inspected and undergo maintenance.

Indoor use without local ventilation system or outdoor use:
- Ensure that the control measures can be inspected and undergo maintenance.

Indoor use with local exhaust system (LEV):
- Ensure that the control measures can be inspected and undergo maintenance.
- Localized aspiration is required.
- Provide a ventilation extract for points where emissions occur.
- Provide extract ventilation at material transfer points and other openings.

Conditions and measures for personal protection, hygiene and health assessment

These measures apply to all subsystems for products at temperatures below 40°C for pure MDI and below 45°C for other MDI-based substances or without spray application:
- Do not inhale vapours/aerosols.
- Make sure that direct skin contact is avoided.
- Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
- Wash off any skin contamination immediately.
- Use adequate eye protection.
- Wear appropriate coveralls to avoid skin exposure.
- The use of latex gloves is not tolerated.

These measures apply to all subsystems for products at temperatures above 40°C for pure MDI and above 45°C for other MDI-based substances or with spray application and with aprotic polar solvents below 40°C:
- Do not inhale vapours/aerosols.
- Make sure that direct skin contact is avoided.
- Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
- Wash off any skin contamination immediately.
- Use adequate eye protection.
- Wear appropriate coveralls to avoid skin exposure.
- The use of latex gloves is not tolerated.
- Wear a full face respirator in accordance with EN136.
- Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.

Indoor use without local ventilation system or outdoor use:
- Wear a respirator in accordance with EN140.

Other conditions affecting worker exposure

Exposed skin area: 480 cm² (palm both hands)
Indoor and outdoor use: Indoor/Outdoor use
Temperature: 23°C

2.3. Control of worker exposure: Transfer of a substance or a preparation (filling/emptying) from/to vessels/large containers, in non-dedicated facilities (PROC8a) [MDI]

Product features (article)

Concentration of substance in mixture/article: ≤ 60%
Molar mass: 250 g/mol
Vapour pressure: 0.001 pa at 20°C
Physical form of the product Low volatile liquid

Amounts used, frequency and duration of use (or useful life)

General exposures: 1 hour/day
Remarks: Daily or more rarely. Short term
Frequency of use: 5 days/week

Organizational and technical measures and conditions

These measures apply to all subsystems for products at temperatures below 40°C for pure MDI and below 45°C for other MDI-based substances or without spray application:
- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- Clean up spills immediately.
- Ensure personnel are informed and trained on the nature of exposure and the basic actions to be taken to minimise exposure.

These measures apply to all subsystems for products at temperatures above 40°C for pure MDI and above 45°C for other MDI-based substances or with spray application and with aprotic polar solvents below 40°C:
- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- Handle substance within a predominantly closed system provided with extract ventilation.
- Handle in a fume hood or under extract ventilation.
- Clean up spills immediately.
- Ensure personnel are informed and trained on the nature of exposure and the basic actions to be taken to minimise exposure.
- Ensure that the control measures can be inspected and undergo maintenance.

Conditions and measures for personal protection, hygiene and health assessment

These measures apply to all subsystems for products at temperatures below 40°C for pure MDI and below 45°C for other MDI-based substances or without spray application:
- Do not inhale vapours/aerosols.
- Make sure that direct skin contact is avoided.
- Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
- Wash off any skin contamination immediately.
- Use adequate eye protection.
- Wear appropriate coveralls to avoid skin exposure.
- The use of latex gloves is not tolerated.

These measures apply to all subsystems for products at temperatures above 40°C for pure MDI and above 45°C for other MDI-based substances or with spray application and with aprotic polar solvents below 40°C:
- Do not inhale vapours/aerosols.
- Make sure that direct skin contact is avoided.
- Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
- Wash off any skin contamination immediately.
- Use adequate eye protection.
- Wear appropriate coveralls to avoid skin exposure.
- The use of latex gloves is not tolerated.
- Wear a full face respirator in accordance with EN136.
- Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.

Other conditions affecting worker exposure

Exposed skin area: 960 cm² (both hands)
Indoor and outdoor use: Indoor use
Temperature: 23°C

2.4. Control of worker exposure: Transfer of a substance or a preparation (filling/emptying) from/to vessels/large containers, in non-dedicated facilities (PROC8b) [MDI]

Product features (article)

Concentration of substance in mixture/article: ≤ 60%
Molar mass: 250 g/mol
Vapour pressure: 0.001 pa at 20°C
Physical form of the product Low volatile liquid

Amounts used, frequency and duration of use (or useful life)

General exposures: 1 hour/day
Remarks: Daily or more rarely. Short term
Frequency of use: 5 days/week

Organizational and technical measures and conditions

These measures apply to all subsystems for products at temperatures below 40°C for pure MDI and below 45°C for other MDI-based substances or without spray application:
- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- Clean up spills immediately.
- Ensure personnel are informed and trained on the nature of exposure and the basic actions to be taken to minimise exposure.

These measures apply to all subsystems for products at temperatures above 40°C for pure MDI and above 45°C for other MDI-based substances or with spray application and with aprotic polar solvents below 40°C:
- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- Handle substance within a predominantly closed system provided with extract ventilation.
- Handle in a fume hood or under extract ventilation.
- Clean up spills immediately.
- Ensure personnel are informed and trained on the nature of exposure and the basic actions to be taken to minimise exposure.
- Ensure that the control measures can be inspected and undergo maintenance.
- Handle substance within a closed system.

Conditions and measures for personal protection, hygiene and health assessment
These measures apply to all subsystems for products at temperatures below 40°C for pure MDI and below 45°C for other MDI-based substances or without spray application:
- Do not inhale vapours/aerosols.
- Make sure that direct skin contact is avoided.
- Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
- Wash off any skin contamination immediately.
- Use adequate eye protection.
- Wear appropriate coveralls to avoid skin exposure.
- The use of latex gloves is not tolerated.
- These measures apply to all subsystems for products at temperatures above 40°C for pure MDI and above 45°C for other MDI-based substances or with spray application and with aprotic polar solvents below 40°C:
- Do not inhale vapours/aerosols.
- Make sure that direct skin contact is avoided.
- Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
- Wash off any skin contamination immediately.
- Use adequate eye protection.
- Wear appropriate coveralls to avoid skin exposure.
- The use of latex gloves is not tolerated.
- Wear a full face respirator in accordance with EN136.
- Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.

Other conditions affecting worker exposure
Exposed skin area: 960 cm² (both hands)
Indoor and outdoor use: Indoor use
Temperature: 23°C

2.5. Worker Exposure Control: Roller or Brush Application (PROC10) [MDI]

Product features (article)
Concentration of substance in mixture/article: ≤ 60%
Molar mass: 250 g/mol
Vapour pressure: 0.001 pa at 20°C
Physical form of the product Low volatile liquid

Amounts used, frequency and duration of use (or useful life)
General exposures: 8 hours/day
Frequency of use: 5 days/week

Organizational and technical measures and conditions
These measures apply to all subsystems for products at temperatures below 40°C for pure MDI and below 45°C for other MDI-based substances or without spray application:
- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- Clean up spills immediately.
- Ensure personnel are informed and trained on the nature of exposure and the basic actions to be taken to minimise exposure.

These measures apply to all subsystems for products at temperatures above 40°C for pure MDI and above 45°C for other MDI-based substances or with spray application and with aprotic polar solvents below 40°C:
- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- Handle substance within a predominantly closed system provided with extract ventilation.
- Handle in a fume hood or under extract ventilation.
- Clean up spills immediately.
- Ensure personnel are informed and trained on the nature of exposure and the basic actions to be taken to minimise exposure.
- Ensure that the control measures can be inspected and undergo maintenance.

Conditions and measures for personal protection, hygiene and health assessment

These measures apply to all subsystems for products at temperatures below 40°C for pure MDI and below 45°C for other MDI-based substances or without spray application:
- Do not inhale vapours/aerosols.
- Make sure that direct skin contact is avoided.
- Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
- Wash off any skin contamination immediately.
- Use adequate eye protection.
- Wear appropriate coveralls to avoid skin exposure.
- The use of latex gloves is not tolerated.

These measures apply to all subsystems for products at temperatures above 40°C for pure MDI and above 45°C for other MDI-based substances or with spray application and with aprotic polar solvents below 40°C:
- Do not inhale vapours/aerosols.
- Make sure that direct skin contact is avoided.
- Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
- Wash off any skin contamination immediately.
- Use adequate eye protection.
- Wear appropriate coveralls to avoid skin exposure.
- The use of latex gloves is not tolerated.
- Wear a full face respirator in accordance with EN136.
- Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.

Other conditions affecting worker exposure

Exposed skin area: 960 cm² (both hands)
Indoor and outdoor use: Indoor use
Temperature: 23°C

2.6. Control of worker exposure: Non-industrial spraying (PROC11) [MDI]

Product features (article)

Concentration of substance in mixture/article: ≤ 60%
Molar mass: 250 g/mol
Vapour pressure: 0.001 pa at 20°C
Physical form of the product Low volatile liquid

Amounts used, frequency and duration of use (or useful life)

General exposures: 6 hours/day
Remarks: 1,-,5
Frequency of use: 5 days/week

Organizational and technical measures and conditions

These measures apply to all subsystems for products at temperatures below 40°C for pure MDI and below 45°C for other MDI-based substances or without spray application:
- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- Clean up spills immediately.
- Ensure personnel are informed and trained on the nature of exposure and the basic actions to be taken to minimise exposure.

These measures apply to all subsystems for products at temperatures above 40°C for pure MDI and above 45°C for other MDI-based substances or with spray application and with aprotic polar solvents below 40°C:
- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- Handle substance within a predominantly closed system provided with extract ventilation.
- Handle in a fume hood or under extract ventilation.
- Clean up spills immediately.
- Ensure personnel are informed and trained on the nature of exposure and the basic actions to be taken to minimise exposure.
- Ensure that the control measures can be inspected and undergo maintenance.

Indoor use 1:
- Ensure that the control measures can be inspected and undergo maintenance.
- Localized aspiration is required.
- Handle substance within a predominantly closed system provided with extract ventilation.
- Provide a ventilation extract for points where emissions occur.
- Provide extract ventilation at material transfer points and other openings.

Indoor use 2:
- Access to the work area is restricted to authorised personnel only.
- Ensure that the control measures can be inspected and undergo maintenance.
- Localized aspiration is required.
- Make sure a spray booth is used.

Indoor use 3:
- Access to the work area is restricted to authorised personnel only.
- Ensure that the control measures can be inspected and undergo maintenance.
- Open doors and windows.
- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- Ensure good ventilation.

Indoor use 4:
- Access to the work area is restricted to authorised personnel only.
- Ensure that the control measures can be inspected and undergo maintenance.
- Localized aspiration is required.
- Provide a ventilation extract for points where emissions occur.

Outdoor use 5:
- Access to the work area is restricted to authorised personnel only.
- Ensure that the control measures can be inspected and undergo maintenance.
- Make sure the operation is performed outdoors.
- Stay upwind/keep distance from source.

Conditions and measures for personal protection, hygiene and health assessment

These measures apply to all subsystems for products at temperatures below 40°C for pure MDI and below 45°C for other MDI-based substances or without spray application:
- Do not inhale vapours/aerosols.
- Make sure that direct skin contact is avoided.
- Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
- Wash off any skin contamination immediately.
- Use adequate eye protection.
- Wear appropriate coveralls to avoid skin exposure.
- The use of latex gloves is not tolerated.

These measures apply to all subsystems for products at temperatures above 40°C for pure MDI and above 45°C for other MDI-based substances or with spray application and with aprotic polar solvents below 40°C:
- Do not inhale vapours/aerosols.
- Make sure that direct skin contact is avoided.
- Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
- Wash off any skin contamination immediately.
- Use adequate eye protection.
- Wear appropriate coveralls to avoid skin exposure.
- The use of latex gloves is not tolerated.
- Wear a full face respirator in accordance with EN136.
- Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.

General information
- Regardless of the risk reduction measures described here, a respirator is generally recommended for spray applications.
Indoor use 2:
- Wear a full face respirator in accordance with EN136.
Indoor use 3:
- Wear a full face respirator in accordance with EN136.
Indoor use 4:
- Wear a full face respirator in accordance with EN136.
Outdoor use 5:
- Wear a full face respirator in accordance with EN136.

Other conditions affecting worker exposure
Exposed skin area: 1500 cm² (both hands and forearms)
Indoor and outdoor use: Indoor/Outdoor use
Temperature: 35°C
Remarks: 1,-,5

2.7. Controlling Worker Exposure: Treatment of Articles by dipping and pouring (PROC13) [MDI]

Product features (article)
Concentration of substance in mixture/article: ≤ 60%
Molar mass: 250 g/mol
Vapour pressure: 0.001 pa at 20°C
Physical form of the product Low volatile liquid

Amounts used, frequency and duration of use (or useful life)
General exposures: 8 hours/day
Frequency of use: 5 days/week

Organizational and technical measures and conditions
These measures apply to all subsystems for products at temperatures below 40°C for pure MDI and below 45°C for other MDI-based substances or without spray application:
- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- Clean up spills immediately.
- Ensure personnel are informed and trained on the nature of exposure and the basic actions to be taken to minimise exposure.

These measures apply to all subsystems for products at temperatures above 40°C for pure MDI and above 45°C for other MDI-based substances or with spray application and with aprotic polar solvents below 40°C:
- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
- Handle substance within a predominantly closed system provided with extract ventilation.
- Handle in a fume hood or under extract ventilation.
- Clean up spills immediately.
- Ensure personnel are informed and trained on the nature of exposure and the basic actions to be taken to minimise exposure.
- Ensure that the control measures can be inspected and undergo maintenance.

Conditions and measures for personal protection, hygiene and health assessment
These measures apply to all subsystems for products at temperatures below 40°C for pure MDI and below 45°C for other MDI-based substances or without spray application:
- Do not inhale vapours/aerosols.
- Make sure that direct skin contact is avoided.
- Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
- Wash off any skin contamination immediately.
- Use adequate eye protection.
- Wear appropriate coveralls to avoid skin exposure.
- The use of latex gloves is not tolerated.

These measures apply to all subsystems for products at temperatures above 40°C for pure MDI and above 45°C for other MDI-based substances or with spray application and with aprotic polar solvents below 40°C:

- Do not inhale vapours/aerosols.
- Make sure that direct skin contact is avoided.
- Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
- Wash off any skin contamination immediately.
- Use adequate eye protection.
- Wear appropriate coveralls to avoid skin exposure.
- The use of latex gloves is not tolerated.
- Wear a full face respirator in accordance with EN136.
- Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.

Other conditions affecting worker exposure

Exposed skin area: 480 cm² (palm both hands)
Indoor and outdoor use: Indoor use
Temperature: 23°C

3. EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

3.1. Worker exposure: Use in batch and other processes (synthesis), where exposure opportunities occur (PROC4) [MDI]

Exposure routes	Exposure level	RCR	Observations	
Local effects, by inhalation, local	0.0006 mg/m³ (EasyTRA, v4.1)	0.012	General ventilation	30%
			LEV	90% efficiency
			Respiratory protection	90% efficiency
Dermal exposure	* (Qualitative evaluation)	< 1	Gloves	90% protection

Learn more about exposure estimates

Based on the risk management measures adopted, the risk to humans is sufficiently controlled (RCR ≤ 1).
* Qualitative approach used to establish safe use.

3.2. Worker exposure: Mixture or blending by batch processes (discontinuous process) for the formulation of preparations and articles (contact in different phases and/or important contact) (PROC5) [MDI]

Exposure routes	Exposure level	RCR	Observations	
Local effects, by inhalation, local	0.00011 mg/m³ (EasyTRA, v4.1)	0.0022	Indoor use	
			General ventilation	30%
			LEV	90% efficiency
			Respiratory protection	90% efficiency
Local effects, by inhalation, local	0.00011 mg/m³ (EasyTRA, v4.1)	0.0022	Outdoor use	
			Outdoor use	30%
			Respiratory protection	90% efficiency
Dermal exposure	* (Qualitative evaluation)	< 1	Gloves	90% protection

Learn more about exposure estimates

Based on the risk management measures adopted, the risk to humans is sufficiently controlled (RCR ≤ 1).
* Qualitative approach used to establish safe use.

3.3. Worker exposure: Transfer of a substance or a preparation (filling/ emptying) from/ to vessels/ large containers, in non-dedicated facilities (PROC8a) [MDI]

Exposure routes	Exposure level	RCR	Observations	
Local effects, by inhalation, local	0.0036 mg/m³ (EasyTRA, v4.1)	0.072	General ventilation	30%
Dermal exposure	* (Qualitative evaluation)	< 1	Gloves	90% protection

Learn more about exposure estimates

Based on the risk management measures adopted, the risk to humans is sufficiently controlled (RCR ≤ 1).
* Qualitative approach used to establish safe use.

3.4. Worker exposure: Transfer of a substance or a preparation (filling/ emptying) from/ to vessels/ large containers, in dedicated facilities (PROC8b) [MDI]

Exposure routes	Exposure level	RCR	Observations	
Local effects, by inhalation, local	0.00364 mg/m³ (EasyTRA, v4.1)	0.0728	General ventilation	30%
			Closed system	99% efficiency
Dermal exposure	* (Qualitative evaluation)	< 1	Gloves	90% protection

Learn more about exposure estimates

Based on the risk management measures adopted, the risk to humans is sufficiently controlled (RCR ≤ 1).
* Qualitative approach used to establish safe use.

3.5. Worker exposure: Roller or brush application (PROC10) [MDI]

Exposure routes	Exposure level	RCR	Observations	
Local effects, by inhalation, local	0.017 mg/m³ (EasyTRA, v4.1)	0.340	General ventilation	30%
Dermal exposure	* (Qualitative evaluation)	< 1	Gloves	90% protection

Learn more about exposure estimates

Based on the risk management measures adopted, the risk to humans is sufficiently controlled (RCR ≤ 1).
* Qualitative approach used to establish safe use.

3.6. Worker exposure: Non-industrial misting (PROC11) [MDI]

Exposure routes	Exposure level	RCR	Observations	
Local effects, by inhalation, local	0.012 mg/m³ (EasyTRA, v4.1)	0.240	Indoor use	1
			General ventilation	30%
			LEV	99% efficiency
Local effects, by inhalation, local	0.003 mg/m³ (EasyTRA, v4.1)	0.060	Indoor use	2
			General ventilation	30%
			Respiratory protection	97.5% efficiency
Local effects, by inhalation, local	0.022 mg/m³ (EasyTRA, v4.1)	0.440	Indoor use	3
			General ventilation	30%
			Respiratory protection	97.5% efficiency
Local effects, by inhalation, local	0.003 mg/m³ (EasyTRA, v4.1)	0.060	Indoor use	4
			General ventilation	30%
			LEV	90% efficiency
			Respiratory protection	97.5% efficiency
Local effects, by inhalation, local	0.022 mg/m³ (EasyTRA, v4.1)	0.440	Outdoor use	5
			Outdoors:	30% reduction
			Respiratory protection	97.5% efficiency
Dermal exposure	* (Qualitative evaluation)	< 1	Gloves	90% protection

Learn more about exposure estimates

Based on the risk management measures adopted, the risk to humans is sufficiently controlled (RCR ≤ 1).
* Qualitative approach used to establish safe use.

3.7. Worker exposure: Treatment of articles by dipping and pouring (PROC13) [MDI]

Exposure routes	Exposure level	RCR	Observations	
Local effects, by inhalation, local	0.017 mg/m³ (EasyTRA, v4.1)	0.340	General ventilation	30%
Dermal exposure	* (Qualitative evaluation)	< 1	Gloves	90% protection

Learn more about exposure estimates

Based on the risk management measures adopted, the risk to humans is sufficiently controlled (RCR ≤ 1).
* Qualitative approach used to establish safe use.

4. GUIDANCE FOR DOWNSTREAM USERS TO ASSESS WHETHER THEY COMPLY WITH THE LIMITS SET BY THE EXPOSURE SCENARIO MDI

The risk management measures described in this exposure scenario apply to the specified substance in the concentration described by the scenario. The concentration of the substance in the product may differ. Downstream users should therefore check whether a scaling of the risk management measures is appropriate.
Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Further information on the risk management measures and operational conditions for this type of exposure is available at www.ISOPA.org.