SECÇÃO 1: Identificação da substância/mistura e da sociedade/empresa

1.1. Identificador do produto

Identificação do preparado:

Nome comercial: BETUME PARA MADEIRA

Código comercial: 18115

UFI: 0FYE-JYEH-6F9V-Q7W4

1.2. Utilizações identificadas relevantes da substância ou mistura e utilizações desaconselhadas

Uso recomendado: Betume para madeira e metais

1.3. Identificação do fornecedor da ficha de dados de segurança

Denominação social: CIN - Corporação Industrial do Norte, S.A.
Endereço: Av de Dom Mendo, nº 831, 4474-009 Maia - Portugal
Telefone: + (351) 22 940 5000 - customerservice@cin.com
Endereço electrónico da pessoa responsável pela ficha de dados de segurança: msds@cin.com

1.4. Número de telefone de emergência: Centro de Informação Antivenenos (CIAV): + (351) 800 250 250

Outros números de emergência: Empresa: + (351) 22 940 5000
Resposta de Emergência (24 horas): + (351) 21 352 47 65

SECÇÃO 2: Identificação dos perigos

2.1. Classificação da substância ou mistura

Regulamento (CE) n. 1272/2008 (CLP)

Flam. Liq. 3	Líquido e vapor inflamáveis.
Skin Irrit. 2	Provoca irritação cutânea.
Eye Irrit. 2	Provoca irritação ocular grave.
Aquatic Chronic 3	Nocivo para os organismos aquáticos com efeitos duradouros.

Efeitos físico-químicos nocivos à saúde humana e ao ambiente:

Nenhum outro risco

2.2. Elementos do rótulo

Regulamento (CE) n. 1272/2008 (CLP)

Pictogramas de perigo e palavra-sinal

Atenção

Advertências de perigo

H226	Líquido e vapor inflamáveis.
H315	Provoca irritação cutânea.
H319	Provoca irritação ocular grave.
H412	Nocivo para os organismos aquáticos com efeitos duradouros.

Recomendações de prudência

P101	Se for necessário consultar um médico, mostre-lhe a embalagem ou o rótulo.
P102	Manter fora do alcance das crianças.
P210	Manter afastado do calor, superfícies quentes, faísca, chama aberta e outras fontes de ignição. Não fumar.
P280	Use luvas de proteção e proteja os olhos/o rosto.
P302+P352	SE ENTRAR EM CONTACTO COM A PELE: lavar abundantemente com água e sabonete.
P305+P351+P338	SE ENTRAR EM CONTACTO COM OS OLHOS: Enxaguar cuidadosamente com água durante vários minutos. Se usar lentes de contacto, retire-as, se tal lhe for possível. Continue a enxaguar.
P403+P235	Armazenar em local bem ventilado. Conservar em ambiente fresco.
P501	Eliminar o conteúdo/recipiente em conformidade com a regulamentação nacional.

Disposições especiais:

EUH211 Atenção! Podem formar-se gotículas inaláveis perigosas ao pulverizar. Não respirar a pulverização ou névoas.

Disposições especiais de acordo com o Anexo XVII do REACH e sucessivas alterações:

Nenhum

2.3. Outros perigos

Nenhuma substância PBT, mPmB ou desreguladora do sistema endócrino presente numa concentração ≥ 0,1%.

Nenhum outro risco

SECÇÃO 3: Composição/informação sobre os componentes

3.1. Substâncias

N.A.

3.2. Misturas

Identificação do preparado: BETUME PARA MADERA BLANCO

Componentes perigosos, em conformidade com o Regulamento CLP e relativa classificação:

Quantidade	Nome	Num. de Ident.	Classificação	Número de registo:
≥7 - <10 %	xileno	CAS:1330-20-7 EC:215-535-7 Index:601-022-00-9	Flam. Liq. 3, H226 Acute Tox. 4, H312 Acute Tox. 4, H332 Asp. Tox. 1, H304 Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335 STOT RE 2, H373 Aquatic Chronic 3, H412 Estimativa de Toxicidade Aguda: ATE - Cutânea: 1100mg/kg pc ATE - Inalação (Vapor): 11mg/l	01-2119488216-32-xxxx
≥3 - <5 %	2-butoxietanol	CAS:111-76-2 EC:203-905-0 Index:603-014-00-0	Acute Tox. 3, H331 Acute Tox. 4, H302 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Estimativa de Toxicidade Aguda: ATE - Oral: 1200mg/kg pc ATE - Inalação (Vapor): 3mg/l	01-2119475108-36-xxxx
≥1 - <2.5 %	Hydrocarbons, C9, aromatics	EC:918-668-5	Flam. Liq. 3, H226; Asp. Tox. 1, H304; STOT SE 3, H335; STOT SE 3, H336; Aquatic Chronic 2, H411, EUH066	01-2119455851-35-xxxx
≥1 - <2.5 %	dióxido de titânio	CAS:13463-67-7 EC:236-675-5 Index:022-006-00-2	Carc. 2, H351	01-2119489379-17-xxxx
≥0.1 - <0.3 %	acetato de etilo	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
≥0.05 - <0.1 %	Sílica cristalina, quartzo (fração respirável)	CAS:14808-60-7 EC:238-878-4	STOT RE 1, H372	Isento
≥0.0015 - <0.005 %	butanona	CAS:78-93-3 EC:201-159-0 Index:606-002-00-3	Flam. Liq. 2, H225; Eye Irrit. 2, H319; STOT SE 3, H336, EUH066	01-2119457290-43-xxxx

Nota: cada informação presente na coluna EC# que inicia com o número "9" é um EC# designado Provisional List Number (Número de Lista Provisório) fornecido pelo ECHA enquanto se aguarda a publicação do Inventário Europeu oficial para as substâncias. A seguinte substância é identificada pelo número CAS, quer nos países não sujeitos à Regulamentação REACH quer na Regulamentação ainda não atualizada com as novas nomenclaturas dos solventes hidrocarbonetos. Hydrocarbons, C9, aromatics: CAS 64742-95-6.

A mistura contém >= 1% de dióxido de titânio CAS 13463-67-7 [em pó, contendo >= 1 % de partículas com diâmetro aerodinâmico <= 10 µm]. A substância é classificada como cancerígena por inalação da categoria 2 (H351 inalação) - Notas V,W,10. De acordo com o Regulamento (CE) n.º 1272/2008 (CLP), Anexo II, parte 2, secção 2.12, no rótulo das embalagens de misturas líquidas que contenham >= 1 % de partículas de dióxido de titânio com um diâmetro aerodinâmico igual ou inferior a 10 µm deve figurar a seguinte advertência: EUH211: "Atenção! Podem formar-se gotículas inaláveis perigosas ao pulverizar. Não respirar os vapores ou névoas."

SECÇÃO 4: Medidas de primeiros socorros

4.1. Descrição das medidas de emergência

Em caso de contacto com a pele:

Retirar imediatamente os indumentos contaminados e eliminá-los de forma segura.

Lavar imediatamente com abundante água corrente e eventualmente sabão as partes do corpo que tiverem entrado em contacto com o produto, até mesmo se só houver suspeita do contacto.

Em caso de contacto com os olhos:

Em caso de contacto com os olhos, enxaguá-los com água por um intervalo de tempo adequado e mantendo abertas as pálpebras e consultar imediatamente um oftalmologista.

Proteger o olho ileso.

Em caso de ingestão:

Não induzir o vómito, procure cuidados médicos mostrando a FISPQ e a etiqueta de perigo.

Em caso de inalação:

Levar o acidentado ao ar livre e mantê-lo em local aquecido e em repouso.

4.2. Sintomas e efeitos mais importantes, tanto agudos como retardados

Os sintomas e efeitos são os previstos com os perigos indicados na secção 2.

4.3. Indicações sobre cuidados médicos urgentes e tratamentos especiais necessários

Em caso de incidente ou mal-estar, consulte imediatamente um médico (se possível, mostre as instruções de uso ou a ficha de segurança).

SECÇÃO 5: Medidas de combate a incêndios

5.1. Meios de extinção

Meios de extinção idóneos:

CO2, extintores de pó, espuma, água nebulizada.

Meios de extinção que não devem ser utilizados por razões de segurança:

Jatos de água.

5.2. Perigos especiais decorrentes da substância ou mistura

A combustão produz fumo pesado.

Não inalar os gases produzidos pela explosão e/ou combustão (monóxido e dióxido de carbono, óxidos de azoto).

5.3. Recomendações para o pessoal de combate a incêndios

Empregar aparelhagens de respiração adequadas.

Recolher separadamente a água contaminada utilizada para extinguir o incêndio. Não descarregar na rede de esgotos.

Se factível quanto à segurança, remover da área de imediato perigo os recipientes não danificados.

SECÇÃO 6: Medidas em caso de fuga acidental

6.1. Precauções individuais, equipamento de proteção e procedimentos de emergência

Usar os dispositivos de protecção individual.

Remover todas as fontes de acendimento.

Colocar as pessoas em local seguro.

Consultar as medidas de protecção expostas no ponto 7 e 8.

6.2. Precauções a nível ambiental

Impedir a penetração no solo/subsolo. Impedir o defluxo nas águas superficiais ou na rede de esgotos.

Em caso de fuga de gás ou penetração em cursos de água, solo ou sistema de esgoto, informe as autoridades responsáveis.

6.3. Métodos e materiais de confinamento e limpeza

Material adequado para a recolha: material absorvente inerte (p. ex. areia, vermiculite).

Sucessivamente à recolha, lavar com água a zona e os materiais interessados.

Reter a água de lavagem contaminada e eliminá-la.

6.4. Remissão para outras secções

Ver também os parágrafos 8 e 13

SECÇÃO 7: Manuseamento e armazenagem

7.1. Precauções para um manuseamento seguro

Evitar o contacto com a pele e os olhos, a inalação de vapores e névoas.

Não utilizar recipientes vazios antes que tenham sido limpos.

Antes das operações de transferência, assegure-se de que nos recipientes não haja materiais residuais incompatíveis.

Recomendações de ordem geral sobre higiene no local de trabalho:

Os indumentos contaminados devem ser substituídos antes de entrar nas áreas de refeição.

Durante o trabalho não comer bem beber.

Envia-se ao parágrafo 8 para os dispositivos de protecção recomendados.

7.2. Condições de armazenagem segura, incluindo eventuais incompatibilidades

Conservar os recipientes bem fechados em local fresco e arejado, longe de fontes de calor.

Manter longe de chamas vivas, faíscas e fontes de calor. Evitare a exposição directa aos raios do sol.

Manter longe de comidas, bebidas e rações.

Matérias incompatíveis:

Ver o capítulo 10.5

Indicação para os ambientes:

Frescas e adequadamente arejadas.

7.3. Utilização(ões) final(is) específica(s)

Recomendações

Ver o capítulo 1.2

Soluções específicas para o sector industrial

Nenhum uso especial

SECÇÃO 8: Controlo da exposição/Proteção individual

8.1. Parâmetros de controlo

Lista dos componentes com valor OEL

	Tipo OEL	país	Longo prazo mg/m3	Longo Prazo ppm	Curto prazo mg/m3	Curto prazo ppm	Notas
xileno CAS: 1330-20-7	ACGIH			100.000		150.000	A4, BEI - URT and eye irr, CNS impair
	UE		221.000	50.000	442.000	100.000	Skin
	MAK	AUSTRIA	221.000	50	442.000	100	
	VLEP	BELGIUM	221.000	50.000	442.000	100.000	Additional indication "D" means that the absorption of the agent through the skin, mucous membranes or eyes is an important part of the total exposure. It can be the result of both direct contact and its presence in the air.
	VLEP	FRANCE	221.000	50	442.000	100	
	AGW	GERMANY	220.000	50.000	440.000	100.000	Skin
	MAK	GERMANY	220.000	50.000	440.000	100.000	Skin
	ÁK	HUNGARY	221.000		442.000		
	VLEP	ITALY	221.000	50.000	442.000	100.000	Skin
	NDS	POLAND	100.000		200.000		Skin
	VLEP	ROMANIA	221.000	50.000	442.000	100.000	
	VLA	SPAIN	221.000	50.000	442.000	100.000	
	SUVA	SWITZERLAND	435.000	100.000	870.000	200.000	
	MAC	NETHERLANDS	210.000		442.000		
	WEL	U.K.	220.000	50.000	441.000	100.000	
	VLE	PORTUGAL	221.000	50.000	442.000	100.000	Skin
	GVI	CROATIA	221.000	50.000	442.000	100.000	Skin
	MV	SLOVENIA	221.000	50.000	442.000	100.000	Skin
	TLV	CZECHIA	200.000	45.400	400.000	90.800	Skin
	IPRV	LITHUANIA	200.000	50.000	450.000	100.000	Skin
	TLV	BULGARIA	221.000	50.000	442.000	100.000	Skin
2-butoxietanol CAS: 111-76-2	ACGIH			20.000			A3, BEI - Eye and URT irr
	UE		98.000	20.000	246	50	Skin
	MAK	AUSTRIA	98.000	20.000	200.000	40.000	
	VLEP	BELGIUM	98	20	246	50	
	VLEP	FRANCE	49.000	10.000	246.000	50.000	
	AGW	GERMANY	49.000	10.000	98.000	20.000	Skin
	MAK	GERMANY	49.000	10.000	98.000	20.000	Skin

	ÁK	HUNGARY	98.000		246		
	VLEP	ITALY	98	20	246.000	50	Skin
	NDS	POLAND	98.000		200.000		
	VLEP	ROMANIA	98.000	20.000	246.000	50.000	
	VLA	SPAIN	98.000	20.000	245.000	50.000	Skin
	SUVA	SWITZERLAND	49.000	10.000	98.000	20.000	
	MAC	NETHERLANDS	100.000		246.000		
	WEL	U.K.	123.000	25.000	246.000	50.000	
	VLE	PORTUGAL	98.000	20.000	246.000	50.000	Skin
	GVI	CROATIA	98.000	20.000	246.000	50.000	Skin
	MV	SLOVENIA	98.000	20.000	246.000	50.000	Skin
	TLV	CZECHIA	100.000	20.400	200.000	40.800	Skin
Hydrocarbons, C9, aromatics	ACGIH		100	19			
dióxido de titânio CAS: 13463-67-7	ACGIH		10				A4 - LRT irr
	VLEP	BELGIUM	10.000				
	VLEP	FRANCE	10.000				
	MAK	GERMANY	0.300		2.400		Respirable fraction, except ultrafine particles , Multiplied by the material density
	AGW	GERMANY	1.250				Respirable dust particles
	NDS	POLAND	10.000				Inhalable fraction
	VLEP	ROMANIA	10.000		15.000		
	VLA	SPAIN	10.000				Inhalable fraction
	SUVA	SWITZERLAND	3.000				Respirable aerosol
	WEL	U.K.	10.000				Inhalable aerosol
	WEL	U.K.	4.000				Respirable aerosol
	GVI	CROATIA	10.000				Inhalable fraction
	GVI	CROATIA	4.000				Respirable fraction
acetato de etilo CAS: 141-78-6	ACGIH			400			URT and eye irr
	UE		734	200	1468	400	
	MAK	AUSTRIA	734.000	200	1468.000	400	
	VLEP	BELGIUM	734.000	200	1468.000	400	
	VLEP	FRANCE	734.000	200	1468.000	400	
	AGW	GERMANY	730.000	200.000	1460.000	400	
	MAK	GERMANY	750.000	200.000	1500.000	400.000	
	ÁK	HUNGARY	1400		1400		
	VLEP	ITALY	734	200.000	1468	400.000	
	NDS	POLAND	734.000		1468.000		
	VLEP	ROMANIA	400.000	111.000	500.000	139.000	
	VLA	SPAIN	734.000	200.000	1460.000	400.000	
	SUVA	SWITZERLAND	730.000	200.000	1470.000	400.000	
	WEL	U.K.	730.000	200.000	1460.000	400.000	
	VLE	PORTUGAL	734.000	200.000	1468.000	400.000	
	GVI	CROATIA	734.000	200.000	1468.000	400.000	
	MV	SLOVENIA	734.000	200.000	1468.000	400.000	
	TLV	CZECHIA	700.000	191.100	900.000	245.700	
	IPRV	LITHUANIA	500.000	150.000	1100.000	300.000	

	TLV	BULGARIA	734.000	200.000	1468.000	400.000	
Sílica cristalina, quartzo (fração respirável) CAS: 14808-60-7	ACGIH		0.025				(R), A2 - Pulm fibrosis, lung cancer
	UE		0.1				
	MAK	AUSTRIA	0.050				
	VLEP	FRANCE	0.100				Respirable aerosol
	ÁK	HUNGARY	0.150				Respirable aerosol
	NDS	POLAND	0.100				
	VLA	SPAIN	0.050				
	SUVA	SWITZERLAND	0.150				Respirable aerosol
	MAC	NETHERLANDS	0.075				Respirable dust
	GVI	CROATIA	0.100				
	MV	SLOVENIA	0.150				
	IPRV	LITHUANIA	0.100				
butanona CAS: 78-93-3	ACGIH			200		300.000	BEI - URT irr, CNS and PNS impair
	UE		600.000	200.000	900.000	300.000	
	MAK	AUSTRIA	295.000	100.000	590.000	200.000	
	VLEP	BELGIUM	600.000	200	900.000	300	
	VLEP	FRANCE	600	200.000	900.000	300.000	
	AGW	GERMANY	600.000	200.000	600.000	200.000	Skin
	MAK	GERMANY	600.000	200.000	600.000	200.000	Skin
	ÁK	HUNGARY	600.000		900.000		
	VLEP	ITALY	600.000	200.000	900.000	300.000	
	NDS	POLAND	450.000		900.000		
	VLEP	ROMANIA	600.000	200.000	900.000	300.000	
	VLA	SPAIN	600.000	200.000	900.000	300.000	
	SUVA	SWITZERLAND	590.000	200.000	590.000	200.000	
	MAC	NETHERLANDS	590.000		900.000		
	WEL	U.K.	600.000	200.000	899.000	300.000	
	VLE	PORTUGAL	600.000	200.000	900.000	300.000	
	GVI	CROATIA	600.000	200.000	900.000	300.000	
	MV	SLOVENIA	600.000	200.000	900.000	300.000	Skin
	TLV	CZECHIA	600.000	200.400	900.000	300.600	

Valores de concentração previsivelmente sem efeitos (PNEC)

	Limite PNEC	**Via de exposição**	**Frequência de exposição**	**Notas**
xileno CAS: 1330-20-7	0.327 mg/l	Água do mar		
	0.327 mg/l	Água doce		
	6.58 mg/l	Microrganismos nos tratamentos de depuração (STP)		
	12.46 mg/kg	Sedimentos de água do mar		
	12.46 mg/kg	Sedimentos de água doce		

	2.31 mg/kg	Solo (agricultura)
2-butoxietanol CAS: 111-76-2	8.8 mg/l	Água doce
	0.88 mg/l	Água do mar
	463 mg/l	Microrganismos nos tratamentos de depuração (STP)
	34.6 mg/kg	Sedimentos de água doce
	3.46 mg/kg	Sedimentos de água do mar
	2.33 mg/kg	Solo (agricultura)
	20 mg/kg	Cadeia alimentar
acetato de etilo CAS: 141-78-6	0.024 mg/l	Água do mar
	0.24 mg/l	Água doce
	0.115 mg/kg	Sedimentos de água do mar
	1.15 mg/kg	Sedimentos de água doce
	650 mg/l	Microrganismos nos tratamentos de depuração (STP)
	0.148 mg/kg	Solo (agricultura)
butanona CAS: 78-93-3	55.8 mg/l	Água doce
	55.8 mg/l	Água do mar
	284.74 mg/kg	Sedimentos de água doce
	709 mg/l	Microrganismos nos tratamentos de depuração (STP)
	1000 mg/kg	Cadeia alimentar
	22.5 mg/kg	Solo (agricultura)

Nível derivado de exposição sem efeito (DNEL)

	Trabalhador industrial	Trabalhador profissional	Consumidor	Via de exposição	Frequência de exposição	Notas
xileno CAS: 1330-20-7		221 mg/m3	65.3 mg/m3	Por inalação humana	De longo prazo, efeitos sistémicos	
		442 mg/m3	260 mg/m3	Por inalação humana	De curto prazo, efeitos sistémicos	

	442 mg/m3	260 mg/m3	Por inalação humana	De curto prazo, efeitos locais
	221 mg/m3	65.3 mg/m3	Por inalação humana	De longo prazo, efeitos locais
	212 mg/kg	125 mg/kg	Dérmica humana	De longo prazo, efeitos sistémicos
		12.5 mg/kg	Oral humana	De longo prazo, efeitos sistémicos
2-butoxietanol CAS: 111-76-2	98 mg/m3	59 mg/m3	Por inalação humana	De longo prazo, efeitos sistémicos
	1091 mg/m3	426 mg/m3	Por inalação humana	De curto prazo, efeitos sistémicos
	246 mg/m3	147 mg/m3	Por inalação humana	De curto prazo, efeitos locais
		6.3 mg/kg	Oral humana	De longo prazo, efeitos sistémicos
		26.7 mg/kg	Oral humana	De curto prazo, efeitos sistémicos
Hydrocarbons, C9, aromatics	25 mg/kg	11 mg/kg	Dérmica humana	De longo prazo, efeitos sistémicos
	150 mg/m3	32 mg/m3	Por inalação humana	De longo prazo, efeitos sistémicos
		11 mg/kg	Oral humana	De longo prazo, efeitos sistémicos
acetato de etilo CAS: 141-78-6	734 mg/m3	367 mg/m3	Por inalação humana	De longo prazo, efeitos sistémicos
	734 mg/m3	367 mg/m3	Por inalação humana	De longo prazo, efeitos locais
	1468 mg/m3	734 mg/m3	Por inalação humana	De curto prazo, efeitos sistémicos
	1468 mg/m3	734 mg/m3	Por inalação humana	De curto prazo, efeitos locais
	63 mg/kg	37 mg/kg	Dérmica humana	De longo prazo, efeitos sistémicos
		4.5 mg/kg	Oral humana	De longo prazo, efeitos sistémicos
butanona CAS: 78-93-3	600 mg/m3	106 mg/m3	Por inalação humana	De longo prazo, efeitos sistémicos
	1161 mg/kg	412 mg/kg	Dérmica humana	De longo prazo, efeitos sistémicos
		31 mg/kg	Oral humana	De longo prazo, efeitos sistémicos

8.2. Controlo da exposição

Providenciar ventilação adequada. Sempre que possível, isso deve ser feito com o uso de ventilação local e boa extração geral.

Protecção dos olhos:

Óculos com protecção lateral (EN 166).

Protecção da pele:

O pessoal deve usar roupa anti-estática em fibra natural ou em fibra sintética resistente às altas temperaturas.

Protecção das Mãos:

Não há nenhum material ou combinação de materiais para luvas que possa garantir uma resistência ilimitada a qualquer produto químico ou combinação de produtos.

Para o manuseamento prolongado ou repetido, utilizar luvas resistentes a produtos químicos.

Materiais apropriados para luvas de protecção (EN 374/EN 16523); NBR (Borracha de nitrilo): espessura >= 0.4 mm; tempo de permeação >= 480 min.; FKM (Borracha fluorada): espessura >= 0.4 mm; tempo de permeação >= 480 min.

A escolha das luvas de proteção apropriadas não depende apenas do material, mas também de outras características de qualidade, variáveis entre um fabricante e outro, e dos modos e tempos de utilização da mistura.

Protecção respiratória:

Se os trabalhadores estiverem expostos a concentrações acima do limite de exposição devem usar máscaras certificadas apropriadas.

Dispositivo de filtragem combinada (EN 14387): máscara com filtro A-P2.

Controles da exposição ambiental:

Ver o capítulo 6.2

Medidas de higiene e técnicas

Ver o parágrafo 7.

SECÇÃO 9: Propriedades físico-químicas

9.1. Informações sobre propriedades físicas e químicas de base

Aspecto: líquido pastoso

Cor: branco

Odor: de solvente

Limiar de odor: N.D.

Ponto de fusão/congelamento: N.D.

Ponto de ebulição inicial e intervalo de ebulição: N.D.

Inflamabilidade: O produto é classificado Flam. Liq. 3 H226

Limite superior/inferior de inflamabilidade ou explosão: N.D.

Ponto de inflamação: 23°C / 60°C (Avaliação interna)

Temperatura de autoignição: N.D.

Temperatura de decomposição: N.D.

pH: N.A. (Não aplicável devido à natureza do produto)

Viscosidade cinemática: > 20.5 mm²/s (40 °C)

Densidade: 1.95 ± 0.02 kg/l (Método interno)

Densidade dos vapores: N.D.

Pressão de vapor: N.D.

Hidrosolubilidade: insolúvel

Solubilidade em óleo: Nenhum dado disponível

Coeficiente de partição (n-octanol/água): N.A.

Características das partículas:

Dimensão das partículas: N.A.

9.2. Outras informações

Condutividade: N.D.

Propriedades explosivas: N.D.

Propriedades comburentes: N.D.

Taxa de evaporação: N.A.

COV % (2010/75/EU): 15.57

SECÇÃO 10: Estabilidade e reatividade

10.1. Reatividade

Estável em condições normais

10.2. Estabilidade química

Estável em condições normais

10.3. Possibilidade de reações perigosas

Por efeito do calor ou em caso de incêndio podem-se libertar óxidos de carbono e vapores que podem ser nocivos para a saúde.

Manter afastado de agentes oxidantes e materiais fortemente alcalinos e fortemente ácidos para evitar reações exotérmicas.

10.4. Condições a evitar

Evitar a proximidade com fontes de calor.

10.5. Materiais incompatíveis

Evite o contacto com materiais oxidantes. O produto pode incendiar-se.

Ver o capítulo 10.3

10.6. Produtos de decomposição perigosos

Não se verificam produtos de decomposição perigosos no caso de armazenagem e manipulação adequadas.
Ver o capítulo 5.2

SECÇÃO 11: Informação toxicológica

11.1. Informações sobre as classes de perigo, tal como definidas no Regulamento (CE) n.o 1272/2008

Informação toxicológica do produto:

a) Toxicidade aguda	Não classificado
	Com base nos dados disponíveis, os critérios de classificação não são preenchidos.
b) Corrosão/irritação cutânea	O produto é classificado: Skin Irrit. 2(H315)
c) Lesões oculares graves/irritação ocular	O produto é classificado: Eye Irrit. 2(H319)
d) Sensibilização respiratória ou cutânea	Não classificado
	Com base nos dados disponíveis, os critérios de classificação não são preenchidos.
e) Mutagenicidade em células germinativas	Não classificado
	Com base nos dados disponíveis, os critérios de classificação não são preenchidos.
f) Carcinogenicidade	Não classificado
	Com base nos dados disponíveis, os critérios de classificação não são preenchidos.
g) Toxicidade reprodutiva	Não classificado
	Com base nos dados disponíveis, os critérios de classificação não são preenchidos.
h) Toxicidade para órgãos-alvo específicos (STOT) – exposição única	Não classificado
	Com base nos dados disponíveis, os critérios de classificação não são preenchidos.
i) Toxicidade para órgãos-alvo específicos (STOT) – exposição repetida	Não classificado
	Com base nos dados disponíveis, os critérios de classificação não são preenchidos.
j) Perigo de aspiração	Não classificado
	Com base nos dados disponíveis, os critérios de classificação não são preenchidos.

Informação toxicológica das substâncias principais encontrada no produto:

xileno	a) Toxicidade aguda	ATE - Cutânea : 1100 mg/kg pc ATE - Inalação (Vapor) : 11 mg/l LD50 Oral Ratazana 3523 mg/kg
2-butoxietanol	a) Toxicidade aguda	ATE - Oral : 1200 mg/kg pc ATE - Inalação (Vapor) : 3 mg/l LD50 Pele Cobaia > 2000 mg/kg LC50 Vapores de inalação Ratazana > 4.26 mg/l 4h
Hydrocarbons, C9, aromatics	a) Toxicidade aguda	LD50 Oral Ratazana 3492 mg/kg LD50 Pele Coelho > 3160 mg/kg LC50 Vapores de inalação Ratazana > 6193 mg/m3 4h
dióxido de titânio	a) Toxicidade aguda	LD50 Oral Ratazana > 5000 mg/kg LC50 Poeiras de inalação Ratazana > 6.82 mg/l 4h
acetato de etilo	a) Toxicidade aguda	LD50 Oral Ratazana 4934 mg/kg LD50 Pele Coelho > 20000 mg/kg LC50 Vapores de inalação Ratazana > 22.5 mg/l 6h
butanona	a) Toxicidade aguda	LD50 Oral Ratazana > 2193 mg/kg

LD50 Pele Coelho > 5000 mg/kg

11.2. Informações sobre outros perigos

Propriedades desreguladoras do sistema endócrino:

Nenhuma substância desreguladora do sistema endócrino presente numa concentração ≥ 0,1%

SECÇÃO 12: Informação ecológica

Utilizar segundo os bons usos profissionais, evitando de dispersar o produto no ambiente.

12.1. Toxicidade

Informação Ecotoxicológica:

Nocivo para os organismos aquáticos com efeitos duradouros.

Lista das propriedades ecotoxicológicas do produto

O produto é classificado: Aquatic Chronic 3(H412)

Lista de componentes com propriedades ecotoxicológicas

Componente	Num. de Ident.	Inf. Ecotox.
2-butoxietanol	CAS: 111-76-2 - EINECS: 203-905-0 - INDEX: 603-014-00-0	a) Toxicidade aquática aguda : LC50 Peixes 1474 mg/l 96h
		a) Toxicidade aquática aguda : EC50 Daphnia 1550 mg/l 48h
		a) Toxicidade aquática aguda : EC50 Algas 1840 mg/l 72h
		b) Toxicidade aquática crónica : NOEC Peixes > 100 mg/l 21d
		b) Toxicidade aquática crónica : NOEC Daphnia 100 mg/l 21d
Hydrocarbons, C9, aromatics	EINECS: 918-668-5	a) Toxicidade aquática aguda : EL50 Daphnia 3.2 mg/l 48h
		a) Toxicidade aquática aguda : ErL50 Algas 2.9 mg/l 72h
		a) Toxicidade aquática aguda : LC50 Peixes 9.2 mg/l 96h
dióxido de titânio	CAS: 13463-67-7 - EINECS: 236-675-5 - INDEX: 022-006-00-2	a) Toxicidade aquática aguda : LC50 Peixes > 1000 mg/l 96h
		a) Toxicidade aquática aguda : EC50 Daphnia > 1000 mg/l 48h
		a) Toxicidade aquática aguda : EC50 Algas 61 mg/l 72h
acetato de etilo	CAS: 141-78-6 - EINECS: 205-500-4 - INDEX: 607-022-00-5	a) Toxicidade aquática aguda : LC50 Peixes 230 mg/l 96h
		a) Toxicidade aquática aguda : EC50 Daphnia 165 mg/l 48h
butanona	CAS: 78-93-3 - EINECS: 201-159-0 - INDEX: 606-002-00-3	a) Toxicidade aquática aguda : LC50 Peixes 2973 mg/l 96h
		a) Toxicidade aquática aguda : EC50 Daphnia 308 mg/l 48h
		a) Toxicidade aquática aguda : EC50 Algas 1229 mg/l 96h

12.2. Persistência e degradabilidade

Componente	Persistência/degradabilidade:
xileno	Rapidamente degradável
2-butoxietanol	Rapidamente degradável
Hydrocarbons, C9, aromatics	Rapidamente degradável
acetato de etilo	Rapidamente degradável
butanona	Rapidamente degradável

12.3. Potencial de bioacumulação

Componente	Bioacumulação
xileno	Não bioacumulativo

12.4. Mobilidade no solo

Componente	Mobilidade no solo
xileno	Móvel

12.5. Resultados da avaliação PBT e mPmB

Com base nos dados disponíveis, o produto não contém substâncias PBT/mPmB em percentagem ≥ 0.1%.

12.6. Propriedades desreguladoras do sistema endócrino

Nenhuma substância desreguladora do sistema endócrino presente numa concentração ≥ 0,1%

12.7. Outros efeitos adversos

N.A.

SECÇÃO 13: Considerações relativas à eliminação

13.1. Métodos de tratamento de resíduos

Recuperar se for possível. Enviar para instalações de eliminação autorizadas ou para incineradoras em condições controladas. Actuar em conformidade com as vigentes disposições locais e nacionais.

Não permitir a contaminação de esgotos ou cursos de água.

Eliminar os recipientes contaminados pelo produto, de acordo com o local ou nacional disposições legais.

O produto, uma vez expirado, deve ser eliminado de acordo com a regulamentação em vigor.

SECÇÃO 14: Informações relativas ao transporte

14.1. Número ONU ou número de ID

1263

14.2. Designação oficial de transporte da ONU

ADR-Nome expedição: MATERIAS SEMELHANTES ÀS TINTAS

IATA-Nome técnico: PAINT RELATED MATERIAL

IMDG-Nome técnico: PAINT RELATED MATERIAL

14.3. Classe(s) de perigo para efeitos de transporte

ADR-Classe: 3

IATA-Classe: 3

IMDG-Classe: 3

14.4. Grupo de embalagem

ADR-Grupo Embalagem: III

IATA-Grupo Embalagem: III

IMDG-Grupo Embalagem: III

14.5. Perigos para o ambiente

Poluente marinho: Não

Poluente ambiental: Não

IMDG-EMS: F-E, S-E

14.6. Precauções especiais para o utilizador

Estrada e ferrovias (ADR-RID):

isentos de ADR:

ADR-Rótulo: 3

ADR - Número de identificação do perigo: -

ADR-Suprimentos especiais: 163 367 650

ADR-Código de restrição em galeria:

Via aérea (IATA):

IATA-Aeronave Passageiros: 355

IATA-Aeronave de carga: 366

IATA-Rótulo: 3

IATA-Perigo Secundário: -

IATA-Erg: 3L

IATA-Suprimentos especiais: A3 A72 A192

Via marítima (IMDG):

IMDG-Código estivagem: Category A

IMDG-Nota Estivagem: -

IMDG-Perigo Secundário: -

IMDG-Suprimentos especiais: 163 223 367 955

14.7. Transporte marítimo a granel em conformidade com os instrumentos da OMI

N.A.

SECÇÃO 15: Informação sobre regulamentação

15.1. Regulamentação/legislação específica para a substância ou mistura em matéria de saúde, segurança e ambiente

Dir. 98/24/CE (Riscos relativos a agentes químicos no trabalho)
Dir. 2000/39/CE (Valores limites de exposição no trabalho)
Diretiva 2010/75/UE
Regulamento (CE) n. 1907/2006 (REACH)
Regulamento (CE) n. 1272/2008 (CLP)
Regulamento (CE) n. 790/2009 (ATP 1 CLP) e (EU) n. 758/2013
Regulamento (EU) n. 2020/878
Regulamento (EU) n. 286/2011 (ATP 2 CLP)
Regulamento (EU) n. 618/2012 (ATP 3 CLP)
Regulamento (EU) n. 487/2013 (ATP 4 CLP)
Regulamento (EU) n. 944/2013 (ATP 5 CLP)
Regulamento (EU) n. 605/2014 (ATP 6 CLP)
Regulamento (EU) n. 2015/1221 (ATP 7 CLP)
Regulamento (EU) n. 2016/918 (ATP 8 CLP)
Regulamento (EU) n. 2016/1179 (ATP 9 CLP)
Regulamento (EU) n. 2017/776 (ATP 10 CLP)
Regulamento (EU) n. 2018/669 (ATP 11 CLP)
Regulamento (EU) n. 2018/1480 (ATP 13 CLP)
Regulamento (EU) n. 2019/521 (ATP 12 CLP)
Regulamento (EU) n. 2020/217 (ATP 14 CLP)
Regulamento (EU) n. 2020/1182 (ATP 15 CLP)
Regulamento (EU) n. 2021/643 (ATP 16 CLP)
Regulamento (EU) n. 2021/849 (ATP 17 CLP)
Regulamento (EU) n. 2022/692 (ATP 18 CLP)

Limitações respeitantes ao produto ou às substâncias contidas, de acordo com o Anexo XVII do Regulamento (CE) 1907/2006 (REACH) e sucessivas modificações:

Limitações respeitantes ao produto: 3, 40

Limitações respeitantes às substâncias contidas: 75

Provisões relacionadas com a Diretiva da UE 2012/18 (Seveso III):

Categoria Seveso III de acordo com o Anexo 1, parte 1	Limiar de nível inferior (toneladas)	Limiar de nível superior (toneladas)
o produto pertence à categoria: P5c	5000	50000

Regulamento (UE) n. 649/2012 (Regulamento PIC)

Não há substâncias listadas

Classe de perigo aquático - Alemanha

Classe 2: perigoso para a água.

Substâncias SVHC:

Com base nos dados disponíveis, o produto não contém substâncias SVHC em percentagem ≥ 0.1%.

15.2. Avaliação da segurança química

Não foi realizada nenhuma Avaliação da Segurança Química para a mistura

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SECÇÃO 16: Outras informações

Código	Descrição
EUH066	Pode provocar pele seca ou gretada, por exposição repetida.
H225	Líquido e vapor facilmente inflamáveis.
H226	Líquido e vapor inflamáveis.

H302	Nocivo por ingestão.
H304	Pode ser mortal por ingestão e penetração nas vias respiratórias.
H312	Nocivo em contacto com a pele.
H315	Provoca irritação cutânea.
H319	Provoca irritação ocular grave.
H331	Tóxico por inalação.
H332	Nocivo por inalação.
H335	Pode provocar irritação das vias respiratórias.
H336	Pode provocar sonolência ou vertigens.
H351	Suspeito de provocar cancro por inalação.
H372	A exposição prolongada ou repetida causa danos aos órgãos por inalação.
H373	A exposição prolongada ou repetida pode causar danos aos órgãos por inalação e ingestão.
H411	Tóxico para os organismos aquáticos com efeitos duradouros.
H412	Nocivo para os organismos aquáticos com efeitos duradouros.

Código	**Classe de perigo e categoria de perigo**	**Descrição**
2.6/2	Flam. Liq. 2	Líquido inflamável, Categoria 2
2.6/3	Flam. Liq. 3	Líquido inflamável, Categoria 3
3.1/3/Inhal	Acute Tox. 3	Toxicidade aguda (via inalatória), Categoria 3
3.1/4/Dermal	Acute Tox. 4	Toxicidade aguda (via cutânea), Categoria 4
3.1/4/Inhal	Acute Tox. 4	Toxicidade aguda (via inalatória), Categoria 4
3.1/4/Oral	Acute Tox. 4	Toxicidade aguda (via oral), Categoria 4
3.10/1	Asp. Tox. 1	Perigo de aspiração, Categoria 1
3.2/2	Skin Irrit. 2	Irritação cutânea, Categoria 2
3.3/2	Eye Irrit. 2	Irritação ocular, Categoria 2
3.6/2	Carc. 2	Carcinogenicidade, Categoria 2
3.8/3	STOT SE 3	Toxicidade para órgãos-alvo específicos — exposição única, Categoria 3
3.9/1	STOT RE 1	Toxicidade para órgãos-alvo específicos — exposição repetida, Categoria 1
3.9/2	STOT RE 2	Toxicidade para órgãos-alvo específicos — exposição repetida, Categoria 2
4.1/C2	Aquatic Chronic 2	Perigo crónico para o ambiente aquático, Categoria 2
4.1/C3	Aquatic Chronic 3	Perigo crónico para o ambiente aquático, Categoria 3

Classificação e procedimento utilizado para determinar a classificação das misturas em conformidade com o Regulamento (CE) n.º 1272/2008 [CRE]:

Classificação em conformidade com o Regulamento (CE) n.º 1272/2008	**Procedimento de classificação**
2.6/3	Avaliação baseada nas substâncias contidas
3.2/2	Método de cálculo
3.3/2	Método de cálculo
4.1/C3	Método de cálculo

Este documento foi preparado por pessoa com formação apropriada

Principais fontes bibliográficas:

ECDIN - Rede de Informação e Dados de Produtos Químicos Ambientais - Centro de Pesquisa Unido, Comissão das Comunidades Europeias

SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS (PROPRIEDADES PERIGOSAS DE MATERIAIS INDUSTRIAIS da SAX) - Oitava Edição - Van Nostrand Reinold

Fichas de dados de segurança dos fornecedores de matérias-primas.

As informações aqui contidas baseiam-se nos nossos conhecimentos na data acima indicada. Referem-se exclusivamente ao produto indicado e não constituem garantia particular de qualidade.

O utilizador é obrigado a assegurar-se que esta informação é apropriada e completa com respeito ao uso específico a que se destina.

Esta ficha anula e substitui todas as edições precedentes. u prolongada ao produto por inalação, ingestao ou contacto com a pele.

Legenda das abreviações e acrônimos utilizados nesta folha de dados de segurança:

ACGIH: Conferência Americana de Higienistas Industriais Governamentais

ADR: Acordo Europeu sobre Transporte Rodoviário Internacional de Mercadorias Perigosas

ATE: Estimativa de Toxicidade Aguda

ATEmix: Estimativa da toxicidade aguda (Misturas)

BEI: Índice biológico de exposição
CAS: Chemical Abstracts Service (sector da Sociedade Americana de Química).
CAV: Centro Antivenenos
CE: Comunidade Europeia
CLP: Classificação, rotulagem, embalagem.
CMR: Cancerígeno, Mutagénico e Reprotóxico
COV: Composto Orgânico Volátil
CSA: Avaliação de Segurança Química
CSR: Relatório de Segurança Química
DNEL: Nível derivado de exposição sem efeito
EC50: Média Concentração Máxima Efetiva
ECHA: Agência Europeia dos Produtos Químicos
EINECS: Inventário Europeu de Substâncias Químicas Existentes em Comércio
ES: Cenário de Exposição
GefStoffVO: Normativa sobre Substâncias Perigosas, Alemanha
GHS: Sistema globalmente harmonizado de Classificação e Rotulagem de produtos químicos
IARC: Centro Internacional de Investigação do Cancro
IATA: Associação Internacional Transporte Aéreo
IC50: Média Concentração Máxima Inibitória
IMDG: Código marítimo internacional para mercadorias perigosas.
LC50: Concentração letal para 50% da população de teste
LD50: Dose letal para 50% da população de teste.
LDLo: Baixa Dose Letal
N.A.: Não Aplicável
N/A: Não Aplicável
N/D: Indefinido / Não disponível
N.D.: Não disponível
NIOSH: Instituto Nacional para Segurança e Saúde Ocupacional
NOAEL: Nível sem efeitos adversos observados
OSHA: Administração de Segurança e Saúde Ocupacional
PBT: Persistente, bioacumulável e tóxico
PGK: Instruções de embalagem
PNEC: Concentração previsivelmente sem efeitos
PSG: Passageiros
RID: Regulamentação relativa ao Transporte Ferroviário Internacional de Mercadorias Perigosas.
STEL: Limite de exposição a curto prazo
STOT: Toxicidade para órgão alvo específico
TLV: Valor limite de limiar
TLV-TWA: Valor limite de limiar para media ponderada do tempo - 8 horas/dia (Padrão ACGIH)
vPvB: Muito persistente, muito bioacumulável
WGK: Classe de perigo aquático - Alemanha

Parágrafos modificados desde da revisão anterior:

- SECÇÃO 9: Propriedades físico-químicas
- SECÇÃO 13: Considerações relativas à eliminação

2-Butoxyethanol

Substance identification
Chemical Name: 2-Butoxyethanol
CAS number: 111-76-2

EXPOSURE SCENARIO 5: USE IN COATINGS.

Based on the ECHA CSA&IR template, part D of June 2008 combined with the GES narrative file.

SECTION 1

Title: 2-Butoxyethanol Use in coatings.
Life Cycle Stage (LCS): Use at an industrial site.
Environmental release categories: ERC4; ESVOC SpERC 4.3a.v1
Process categories: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13,PROC15.
Processes, tasks and activities including: Covers the use in coatings (paints, inks, adhesives, etc.), including exposures during use (materials receipt, storage, preparation and transfer of bulk and semi-bulk products, application by roller or spreader, dipping, flow, fluidised bed on production lines and film formation), cleaning and maintenance of equipment and associated laboratory activities [GES3_I].
Evaluation method: Health: ECETOC TRA model used [EE1]. Environment: ECETOC TRA model used [EE1]. SPERC ESVOC used.

SECTION 2: OPERATING CONDITIONS AND RISK MANAGEMENT MEASURES.

SECTION 2.1: Environmental exposure control:

Product features: The substance has a unique structure [PrC1]. Non-hydrophobic [PrC4b]. Liquid, vapor pressure <0.5 kPa under standard conditions [OC3]. Miscible in water. Virtually non-toxic to aquatic species. Readily biodegradable [PrC5a]. Low bioaccumulation potential.
Amount used per site (tonnes per year): 2600 (8670 kg/g)
Frequency and duration of use: Continuous process [CS54]. 300 days per year of activity.
Environmental factors not influenced by risk management: Local dilution factor in fresh water [EF1]: 10. Local dilution factor in sea water [EF2]: 100.
Other given operational conditions affecting environmental exposure: No specific measures required. Days of issue (days/year) [FD4]: 300. Continuous release [FD2].
Local technical conditions and measures to reduce and limit discharges and air emissions: Treatment of air emissions is not required for REACH compliance but may be required to comply with other environmental legislation. Soil emission controls are not applicable as there is no direct release to soil [TCR4]. To control aerosol emissions into the air use a scrubber or dry filtration system. On-site wastewater treatment required [TCR13]. Treat on-site waste water (prior to receiving water discharge) to provide the required removal efficiency ≥ (%) [TCR8]: 87. Assumed industrial wastewater treatment plant flow (m^3/d): 2000. If discharging to municipal sewage treatment plant, no on-site wastewater treatment required [TCR9]. Prevent discharge of undissolved substance to or recover from waste water [TCR14].
Organizational measures to prevent/limit release from a site: Construct a containment basin around storage facilities to prevent soil and water pollution in the event of spillage [S5]. Prevent environmental discharge consistent with regulatory requirements [OMS4]. The site shall adopt a spillage plan to ensure that adequate safeguards are in place to minimise the impact of episodic releases [W2]. A leak prevention plan is needed to prevent low level continual releases [W3].
Conditions and measures related to sewage treatment plant: Estimated substance removal from waste water via domestic sewage treatment (%) [STP3]: 87. Assumed domestic sewage treatment plant flow (m3/d) [STP5]: 2000.
Conditions and measures for the disposal of articles at end of their service life: Estimated quantity of waste treated - not exceeding: 5%. Type of treatment suitable for waste: incineration. Removal Effectiveness (%): 99,98. Treat as hazardous waste. External treatment and disposal of waste should comply with applicable local and/ or national regulations [ETW3]. Dispose of waste or used containers in accordance with local regulations [ENVT12].
Conditions and measures for the recovery of articles at the end of their service life: Not applicable.
Other environmental control measures in addition to those described above: none.

SECTION 2.2: Worker exposure control.

Product features:
Physical state of the product: Liquid, vapor pressure <0.5 kPa under standard conditions [OC3].
Concentration of the substance in the product: Covers a percentage substance in the product up to 100% (unless otherwise stated) [G13].
Amounts used: Not applicable.
Frequency and duration of use: Covers a daily exposure up to 8 hours (unless otherwise specified) [G2]. Continuous process [CS54].
Human factors not influenced by risk management: none.
Other given operational conditions affecting workers exposure: Assumes a good basic standard of occupational hygiene has been implemented [G1]. Assumes use of the product at not more than 20°C above ambient temperature, unless otherwise specified [G15].
Technical conditions and process-level (source) measures and technical conditions and measures to control dispersion from the source to the worker: none.

Contributing scenarios:

General measures (skin irritants) [G19]: Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Immediately remove any contamination with skin. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop [E3]. 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. [E4].
General measures (eye irritants) [G44]: Use suitable eye protection [PPE26]. Avoid direct eye contact with product, also via contamination on hands [E73]. Avoid splashing [C&H15].

ES5-CS1: PROC1 General exposures (closed systems) [CS15]. Continuous process [CS54]. without sampling [CS57]: No other specific measures identified [EI20].
ES5-CS2: PROC2 General exposures (closed systems) [CS15]. Continuous process [CS54]. With sampling [CS56]: No other specific measures identified [EI20].
ES5-CS3: PROC2 Film formation - accelerated drying (50-100°C). Drying (>100 °C). UV/EB radiation curing [CS94]: Handle substance within a predominantly closed system provided with extract ventilation [E49].
ES5-CS4: PROC3 Mixing operations (closed systems) [CS29]. General exposures (closed systems) [CS15]. No other specific measures identified [EI20].
ES5-CS5: PROC4 Film formation - air drying [CS95]. No other specific measures identified [EI20].
ES5-CS6: PROC5 Preparation of material for application [CS96]. Mixing operations (open systems) [CS30]. No other specific measures identified [EI20].
ES5-CS7: PROC7 Spray application (automatic/robotic) [CS97]. Carry out in a vented booth or extracted enclosure [E57].
ES5-CS8: PROC7 Spray application [CS10]. Manual [CS34]: Carry out in a vented booth or extracted enclosure [E57]. or, Wear a respirator conforming to EN140 with a type A filter or better [PPE22]. Change the filter cartridge on the respirator daily [PPE25].
ES5-CS9: PROC8a Material transfers [CS3]. (open systems) [CS108]. No other specific measures identified [EI20].
ES5-CS10: PROC8b Material transfers [CS3]. (closed systems) [CS107]. No other specific measures identified [EI20].
ES5-CS11: PROC10 Roller application, spreader, flow [CS98]. Provide a good standard of general ventilation (not less than 3-5 air changes per hour) [E11].
ES5-CS12: PROC13 Dipping and pouring [CS4]. No other specific measures identified [EI20].
ES5-CS13: PROC15 Laboratory activity [CS36]. No other specific measures identified [EI20].
ES5-CS14: PROC9 Drum/batch transfers [CS8]. Material transfers [CS3]. Transfer/pour from containers [CS22]. No other specific measures identified [EI20].

SECTION 3: EXPOSURE ESTIMATION:

Maximum exposure resulting from the contributing scenarios described.

Environment:

ES5-ES1: ERC4
Conditions given in SPERC fact sheet give rise to following releases fractions [OOC29]. (ESVOC SpERC 4.3a.v1).
Fraction released into air from the process (initial release before application of RMM) [OOC4]: 0.98.
Fraction released into waste water from the process (initial release before application of RMM) [OOC5]: 0,02.
Fraction released into soil by the process (initial release before application of RMM) [OOC6]: 0.
PEC of microorganisms in wastewater treatment plant: 8.66E+01mg/l. Risk characterization report: 1.87E-01.
Local PEC in surface water: 1.10E+00mg/l. Risk characterization report: 1.25E-01.
Local PEC in freshwater sediments: 4.69E+00mg/kgdw. Risk characterization report: 1.36E-01.
Local PEC in seawater during the release episode: 1.10E-01mg/l. Risk characterization report: 1.25E-01.
Local PEC in marine sediments: 4.69E-01mg/kgdw. Risk characterization report: 1.36E-01.
Local PEC in soil: 6.14E-01mg/kgdw. Risk characterization report: 2.64E-01. Risk from environmental exposure is driven by soil [TCR1f].

Health:

Exposure resulting from contributing scenario ES5-CS1:
Inhalation (steam). 8 hours on average 0.01ppm. Risk characterization report: <0.001. 15 minutes average 0.04ppm. Risk characterization report: <0.001. Dermal: 0.03 mg/kg/d.

Exposure resulting from contributing scenario ES5-CS2:
Inhalation (steam). 8 hours on average 1ppm. Risk characterization report: 0.05. 15 minutes average 4ppm. Risk characterization report: 0,08. Dermal: 1.4 mg/kg/d.

Exposure resulting from contributing scenario ES5-CS3:
Inhalation (steam). 8 hours on average 0.5ppm. Risk characterization report: 0,025. 15 minutes average 2ppm. Risk characterization report: 0,04. Dermal: 1.4 mg/kg/d.

Exposure resulting from contributing scenario ES5-CS4:
Inhalation (steam). 8 hours on average 3ppm. Risk characterization report: 0.84. !da duplicazione! 15 minutes average 12ppm. Risk characterization report: 0.24. Dermal: 0.69 mg/kg/d.

Exposure resulting from contributing scenario ES5-CS5:
Inhalation (steam). 8 hours on average 5ppm. Risk characterization report: 0.25. 15 minutes average 20ppm. Risk characterization report: 0.4. Dermal: 6.9 mg/kg/d.

Exposure resulting from contributing scenario ES5-CS6:
Inhalation (steam). 8 hours on average 5ppm. Risk characterization report: 0.25. 15 minutes average 20ppm. Risk characterization report: 0.4. Dermal: 14 mg/kg/d.

Exposure resulting from contributing scenario ES5-CS7:
Inhalation (steam). 8 hours on average 5ppm. Risk characterization report: 0.25. 15 minutes average 20ppm. Risk characterization report: 0.4. Dermal: 43 mg/kg/d.

Exposure resulting from contributing scenario ES5-CS8:
Inhalation (steam). 8 hours on average 10ppm. Risk characterization report: 0,5. 15 minutes average 40ppm. Risk characterization report: 0,8. Dermal: 43 mg/kg/d.

Exposure resulting from contributing scenario ES5-CS9:
Inhalation (steam). 8 hours on average 10ppm. Risk characterization report: 0,5. 15 minutes average 40ppm. Risk characterization report: 0,8. Dermal: 14 mg/kg/d.

Exposure resulting from contributing scenario ES5-CS10:
Inhalation (steam). 8 hours on average 5ppm. Risk characterization report: 0.25. 15 minutes average 20ppm. Risk characterization report: 0,4. Dermal: 14 mg/kg/d.

Exposure resulting from contributing scenario ES5-CS11:
Inhalation (steam). 8 hours on average 7ppm. Risk characterization report: 0.35. 15 minutes average 28ppm. Risk characterization report: 0.56. Dermal: 27 mg/kg/d.

Exposure resulting from contributing scenario ES5-CS12:
Inhalation (steam). 8 hours on average 10ppm. Risk characterization report: 0.5. 15 minutes average 40ppm. Risk characterization report: 0.8. Dermal: 14 mg/kg/d.

Exposure resulting from contributing scenario ES5-CS13:
Inhalation (steam). 8 hours on average 5ppm. Risk characterization report: 0.25. 15 minutes average 20ppm. Risk characterization report: 0.4. Dermal: 0.34 mg/kg/d.

Exposure resulting from contributing scenario ES5-CS14:
Inhalation (steam). 8 hours on average 5ppm. Risk characterization report: 0.25. 15 minutes average 20ppm. Risk characterization report: 0.4. Dermal: 6.9 mg/kg/d.

The risk management measures described protect against acute exposure.
Dermal: A DNEL cannot be derived for this endpoint. Risk management measures are based on qualitative risk characterisation [G37].
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects [G32]. Risk management measures are based on qualitative risk characterisation [G37].
Available hazard data do not enable the derivation of a DNEL for eye irritant effects [G45].

SECTION 4: GUIDE FOR VERIFYING COMPLIANCE WITH THE EXPOSURE SCENARIO

Environment:
Msafe: 32900kg/d. 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 [DSU1].

$$\frac{m_{spERC} * (1 - E_{ER,spERC}) * F_{release,spERC}}{DF_{spERC}} \geq \frac{m_{site} * (1 - E_{ER,site}) * F_{release,site}}{DF_{site}}$$

where:
mSPERC: frequency of substance use in the spERC.
EER,SPERC: efficacy of RMM in SPERC.
Frelease,SPERC: initial release fraction in spERC.
DFSPERC: dilution factor in the river of the wastewater treatment plant effluent.
msite: frequency of use of the substance at the site.
EER,site: effectiveness of RMM at the site.
Frelease,,site: Initial release fraction at the site.
DFsite: dilution factor in the river of the wastewater treatment plant effluent.

Health:
Inhalation (steam). No correction required as all exposures are assumed to be 8 hours long (worst case assumption). No correction is required as all exposures are assumed to result from substance concentrations up to 100%.
Dermal: Not applicable.

EXPOSURE SCENARIO 6: USE IN COATINGS.

Based on the ECHA CSA&IR template, part D of June 2008 combined with the GES narrative file.

SECTION 1

Title: 2-butoxyethanol. Use in coatings.
Life Cycle Stage (LCS): Generalized use by professional operators.
Environmental release category: ERC8a, ERC8d.; ESVOC SpERC 8.3b.v1
Process category: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15, PROC19.
Processes, tasks and activities including: Covers the use in coatings (paints, inks, adhesives, etc.), including exposures during use (materials receipt, storage, preparation and transfer of bulk and semi-bulk application by spray, roller, brush or manual spreader or similar methods and film formation), cleaning and maintenance of equipment and associated laboratory activities [GES3_P].
Evaluation method: Health: ECETOC TRA model used [EE1]. Environment: ECETOC TRA model used [EE1]. SPERC ESVOC used.

SECTION 2: OPERATING CONDITIONS AND RISK MANAGEMENT MEASURES.

SECTION 2.1: Environmental exposure control:

Product features: The substance has a unique structure [PrC1]. Non-hydrophobic [PrC4b]. Liquid, vapor pressure <0.5 kPa under standard conditions [OC3]. Miscible in water. Virtually non-toxic to aquatic species. Readily biodegradable [PrC5a]. Low bioaccumulation potential.
Amount used per site (tonnes per year): Not applicable. Dispersive use [FD3].
Frequency and duration of use: Continuous process [CS54]. 365 days per year of activity.
Other given operational conditions affecting environmental exposure: No specific measures required. Dispersive use [FD3].
Local technical conditions and measures to reduce and limit discharges and air emissions: Treatment of air emissions is not required for REACH compliance but may be required to comply with other environmental legislation. To control aerosol emissions into the air use a scrubber or dry filtration system. All wastewater must be discharged to municipal sewage treatment plants or collected and sent for waste disposal. Assumes no on-site wastewater treatment.
Organizational measures to prevent/limit release from a site: Construct a containment basin around storage facilities to prevent soil and water pollution in the event of spillage [S5]. Prevent environmental discharge consistent with regulatory requirements [OMS4].
Conditions and measures for the disposal of articles at end of their service life: Estimated quantity of waste treated - not exceeding: 10%. Type of treatment suitable for waste: incineration. Removal Effectiveness (%): 99,98. Treat as hazardous waste. External treatment and disposal of waste should comply with applicable local and/ or national regulations [ETW3]. Dispose of waste or used containers in accordance with local regulations [ENVT12].
Conditions and measures for the recovery of articles at the end of their service life. Not applicable.
Other environmental control measures in addition to those described above: none.

SECTION 2.2: Worker exposure control.

Product features:
Physical state of the product: Liquid, vapor pressure <0.5 kPa under standard conditions [OC3].
Concentration of the substance in the product: Covers a percentage substance in the product up to 100% (unless otherwise stated) [G13].
Amounts used: Not applicable.
Frequency and duration of use: Covers a daily exposure up to 8 hours (unless otherwise specified) [G2]. Continuous process [CS54].
Human factors not influenced by risk management: none.
Other given operational conditions affecting workers exposure: Assumes a good basic standard of occupational hygiene has been implemented [G1]. Assumes use of the product at not more than 20°C above ambient temperature, unless otherwise specified [G15].
Technical conditions and process-level (source) measures and technical conditions and measures to control dispersion from the source to the worker: none.

Contributing scenarios:

General measures (skin irritants) [G19]: Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Immediately remove any contamination with skin. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop [E3]. 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. [E4].
General measures (eye irritants) [G44]: Use suitable eye protection [PPE26]. Avoid direct eye contact with product, also via contamination on hands [E73]. Avoid splashing [C&H15].
ES6-CS1: PROC1 General exposures (closed systems) [CS15]. No other specific measures identified [EI20].
ES6-CS2: PROC2 Filling of equipment from drums or containers, [CS45]. No other specific measures identified [EI20].
ES6-CS3: PROC2 General exposures (closed systems) [CS15]. Use in systems under containment [CS38]. No other specific measures identified [EI20].
ES6-CS4: PROC3 Preparation of material for application [CS96]. Mixing operations (closed systems) [CS29]. Batch process [CS55]. No other specific measures identified [EI20].
ES6-CS5: PROC4 Film formation - air drying [CS95]. Indoor [OC8]. No other specific measures identified [EI20].
ES6-CS6: PROC4 Film formation - air drying [CS95]. Outdoors [OC9]. Make sure the operation is performed outdoors [E69].
ES6-CS7: PROC5 Preparation of material for application [CS96]. Mixing operations (open systems) [CS30]. Indoor [OC8]. No other specific measures identified [EI20].
ES6-CS8: PROC5 Preparation of material for application [CS96]. Mixing operations (open systems) [CS30]. Outdoors [OC9]. Make sure the operation is performed outdoors [E69].
ES6-CS9: PROC8a Material transfers [CS3]. Pouring from small containers [CS9]. (open systems) [CS108]. Provide extract ventilation at points where emissions occur [E54].
ES6-CS10: PROC8b Material transfers [CS3]. Pouring from small containers [CS9]. (closed systems) [CS107]. No other specific measures identified [EI20].

ES6-CS11: PROC10 Roller application, spreader, flow [CS98]. Indoor [OC8]. Provide extract ventilation at points where emissions occur [E54].
ES6-CS12: PROC10 Roller application, spreader, flow [CS98]. Outdoors [OC9]. Make sure the operation is performed outdoors [E69]. Limit the substance content in the product to 25% [OC18].
ES6-CS13: PROC11 Spray application [CS10]. Manual [CS34]. Indoor [OC8]. Carry out in a vented booth or extracted enclosure [E57]. Limit the substance content in the product to 25% [OC18].
ES6-CS14: PROC11 Spray application [CS10]. Manual [CS34]. Outdoors [OC9]. Make sure the operation is performed outdoors [E69]. Wear a respirator conforming to EN140 with a type A filter or better [PPE22]. Change the filter cartridge on the respirator daily [PPE25].
ES6-CS15: PROC13 Dipping and pouring [CS4]. Provide a good standard of general ventilation (not less than 3-5 air changes per hour) [E11]. or, Make sure the operation is performed outdoors [E69].
ES6-CS16: PROC19 Dipping and pouring [CS4]. Outdoors [OC9]. Provide a good standard of general ventilation (not less than 3-5 air changes per hour) [E11]. or, Make sure the operation is performed outdoors [E69]. Limit the substance content in the product to 25% [OC18].
ES6-CS17: PROC15 Laboratory activity [CS36]. No other specific measures identified [EI20].

SECTION 3: EXPOSURE ESTIMATION:

Maximum exposure resulting from the contributing scenarios described.

Environment:

ES6-ES1: ERC8a, ERC8d
Conditions given in SPERC fact sheet give rise to following releases fractions [OOC29]. (ESVOC SpERC 8.3b.v1).
Fraction released to air from highly dispersive use (regional only) [OOC7]: 0.98.
Fraction released to wastewater from highly dispersive use [OOC8]: 0.01.
Fraction released into soil by highly dispersive use (regional only) [OOC9]: 0.01.
PEC of microorganisms in wastewater treatment plant: 2,74E-03mg/l. Risk characterization report: 5.92E-06.
Local PEC in surface water: 5.98E-03mg/l. Risk characterization report: 6.80E-04.
Local PEC in freshwater sediments: 2.54E-02mg/kgdw. Risk characterization report: 7.34E-04.
Local PEC in seawater during the release episode: 6,50E-04mg/l. Risk characterization report: 7.39E-04.
Local PEC in marine sediments: 2.77E-03mg/kgdw. Risk characterization report: 8.01E-04.
Local PEC in soil: 2.13E-02mg/kgdw. Risk characterization report: 9.14E-03. Risk from environmental exposure is driven by soil [TCR1f].

Health:

Exposure resulting from contributing scenario ES6-CS1:
Inhalation (steam). 8 hours on average 0.01ppm. Risk characterization report: <0.001. 15 minutes average 0.04ppm. Risk characterization report: <0.001. Dermal: 0.03 mg/kg/d.

Exposure resulting from contributing scenario ES6-CS2:
Inhalation (steam). 8 hours on average 5ppm. Risk characterization report: 0.25. 15 minutes average 20ppm. Risk characterization report: 0.4. Dermal: 1.4 mg/kg/d.

Exposure resulting from contributing scenario ES6-CS3:
Inhalation (steam). 8 hours on average 5ppm. Risk characterization report: 0.25. 15 minutes average 20ppm. Risk characterization report: 0.4. Dermal: 1.4 mg/kg/d.

Exposure resulting from contributing scenario ES6-CS4:
Inhalation (steam). 8 hours on average 3ppm. Risk characterization report: 0.84. !da duplicazione! 15 minutes average 12ppm. Risk characterization report: 0,24. Dermal: 0.69 mg/kg/d.

Exposure resulting from contributing scenario ES6-CS5:
Inhalation (steam). 8 hours on average 10ppm. Risk characterization report: 0.5. 15 minutes average 40ppm. Risk characterization report: 0.8. Dermal: 6.9 mg/kg/d.

Exposure resulting from contributing scenario ES6-CS6:
Inhalation (steam). 8 hours on average 7ppm. Risk characterization report: 0.35. 15 minutes average 28ppm. Risk characterization report: 0.56. Dermal: 6.9 mg/kg/d.

Exposure resulting from contributing scenario ES6-CS7:
Inhalation (steam). 8 hours on average 10ppm. Risk characterization report: 0,5. 15 minutes average 40ppm. Risk characterization report: 0,8. Dermal: 14 mg/kg/d.

Exposure resulting from contributing scenario ES6-CS8:
Inhalation (steam). 8 hours on average 7ppm. Risk characterization report: 0.35. 15 minutes average 28ppm. Risk characterization report: 0,56. Dermal: 14 mg/kg/d.

Exposure resulting from contributing scenario ES6-CS9:
Inhalation (steam). 8 hours on average 5ppm. Risk characterization report: 0.25. 15 minutes average 20ppm. Risk characterization report: 0.4. Dermal: 14 mg/kg/d.

Exposure resulting from contributing scenario ES6-CS10:
Inhalation (steam). 8 hours on average 10ppm. Risk characterization report: 0,5. 15 minutes average 40ppm. Risk characterization report: 0.8. Dermal: 14 mg/kg/d.

Exposure resulting from contributing scenario ES6-CS11:
Inhalation (steam). 8 hours on average 5ppm. Risk characterization report: 0.25. 15 minutes average 20ppm. Risk characterization report: 0.4. Dermal: 27 mg/kg/d.

Exposure resulting from contributing scenario ES6-CS12:
Inhalation (steam). 8 hours on average 11ppm. Risk characterization report: 0.525. 15 minutes average 42ppm. Risk characterization report: 0.84. Dermal: 16 mg/kg/d.

Exposure resulting from contributing scenario ES6-CS13:
Inhalation (steam). 8 hours on average 12ppm. Risk characterization report: 0.6. 15 minutes average 48ppm. Risk characterization report: 0.96. Dermal: 64 mg/kg/d.

Exposure resulting from contributing scenario ES6-CS14:
Inhalation (steam). 8 hours on average 7ppm. Risk characterization report: 0.35. 15 minutes average 28ppm. Risk characterization report: 0.56. Dermal: 110 mg/kg/d.

Exposure resulting from contributing scenario ES6-CS15:
Inhalation (steam). 8 hours on average 7ppm. Risk characterization report: 0.35. 15 minutes average 28ppm. Risk characterization report: 0,56. Dermal: 14 mg/kg/d.

Exposure resulting from contributing scenario ES6-CS16:
Inhalation (steam). 8 hours on average 11ppm. Risk characterization report: 0.525. 15 minutes average 42ppm. Risk characterization report: 0.84. Dermal: 85 mg/kg/d.

Exposure resulting from contributing scenario ES6-CS17:
Inhalation (steam). 8 hours on average 5ppm. Risk characterization report: 0.25. 15 minutes average 20ppm. Risk characterization report: 0,4. Dermal: 0.34 mg/kg/d.

The risk management measures described protect against acute exposure.
Dermal: A DNEL cannot be derived for this endpoint. Risk management measures are based on qualitative risk characterisation [G37].
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects [G32]. Risk management measures are based on qualitative risk characterisation [G37].
Available hazard data do not enable the derivation of a DNEL for eye irritant effects [G45].

SECTION 4: GUIDE FOR VERIFYING COMPLIANCE WITH THE EXPOSURE SCENARIO

Environment:
Msafe: 59.9kg/g. Not applicable for highly dispersive uses [DSU5].

Health:
Inhalation (steam). No correction required as all exposures are assumed to be 8 hours long (worst case assumption). To go from a concentration of 5-25% to a concentration of 100%, multiply by 1.7.
Dermal: Not applicable.

EXPOSURE SCENARIO 8: USE IN CLEANING PRODUCTS.

Based on the ECHA CSA&IR template, part D of June 2008 combined with the GES narrative file.

SECTION 1

Title: 2-butoxyethanol. Use in cleaning products.
Life Cycle Stage (LCS): Generalized use by professional operators.
Environmental release category: ERC8a, ERC8d.; ESVOC SpERC 8.4c.v1
Process category: PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC10, PROC11, PROC13.
Processes, tasks and activities including: Covers the use as a component of cleaning products including pouring/unloading from drums or containers; and exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping automated and by hand) [GES4_P].
Evaluation method: Health: ECETOC TRA model used [EE1]. Environment: ECETOC TRA model used [EE1]. SPERC ESVOC used.

SECTION 2: OPERATING CONDITIONS AND RISK MANAGEMENT MEASURES.

SECTION 2.1 Environmental exposure control:

Product features: The substance has a unique structure [PrC1]. Non-hydrophobic [PrC4b]. Liquid, vapor pressure <0.5 kPa under standard conditions [OC3]. Miscible in water. Virtually non-toxic to aquatic species. Readily biodegradable [PrC5a]. Low bioaccumulation potential.
Amount used per site (tonnes per year): Not applicable. Dispersive use [FD3].
Frequency and duration of use: Continuous process [CS54]. 365 days per year of activity.
Other given operational conditions affecting environmental exposure: No specific measures required. Dispersive use [FD3].
Local technical conditions and measures to reduce and limit discharges and air emissions: No air emission control required; required removal efficiency of 0% [TCR5]. No waste water treatment required [TCR6]. Assumes no on-site wastewater treatment.
Organizational measures to prevent/limit release from a site: Construct a containment basin around storage facilities to prevent soil and water pollution in the event of spillage [S5]. Prevent environmental discharge consistent with regulatory requirements [OMS4].
Conditions and measures for the disposal of articles at end of their service life: Estimated quantity of waste treated - not exceeding: 10%. Type of treatment suitable for waste: incineration. Removal Effectiveness (%): 99,98. Treat as hazardous waste. External treatment and disposal of waste should comply with applicable local and/ or national regulations [ETW3]. Dispose of waste or used containers in accordance with local regulations [ENVT12].
Conditions and measures for the recovery of articles at the end of their service life. Not applicable.
Other environmental control measures in addition to those described above: none.

SECTION 2.2: Worker exposure control.

Product features:
Physical state of the product: Liquid, vapor pressure <0.5 kPa under standard conditions [OC3].
Concentration of the substance in the product: Covers a percentage substance in the product up to 100% (unless otherwise stated) [G13].
Amounts used: Not applicable.
Frequency and duration of use: Covers a daily exposure up to 8 hours (unless otherwise specified) [G2]. Continuous process [CS54].
Human factors not influenced by risk management: none.
Other given operational conditions affecting workers exposure: Assumes a good basic standard of occupational hygiene has been implemented [G1]. Assumes use of the product at not more than 20°C above ambient temperature, unless otherwise specified [G15].
Technical conditions and process-level (source) measures and technical conditions and measures to control dispersion from the source to the worker: none.

Contributing scenarios:

General measures (skin irritants) [G19]: Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Immediately remove any contamination with skin. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop [E3]. 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. [E4].
General measures (eye irritants) [G44]: Use suitable eye protection [PPE26]. Avoid direct eye contact with product, also via contamination on hands [E73]. Avoid splashing [C&H15].
ES8-CS1: PROC8b Filling of equipment from drums or containers, [CS45]. No other specific measures identified [EI20].
ES8-CS2: PROC2 Automated process with (semi) closed systems [CS93]. Use in systems under containment [CS38]. No other specific measures identified [EI20].
ES8-CS3: PROC3 Automated process with (semi) closed systems [CS93]. Use in systems under containment [CS38]. Batch process [CS55]. No other specific measures identified [EI20].
ES8-CS4: PROC4 Maintenance (of larger plant items) and machine set up [CS77]. Use in systems under containment [CS38]. No other specific measures identified [EI20].
ES8-CS5: PROC4 Cleaning of medical devices [CS74]. Provide a good standard of general ventilation (not less than 3-5 air changes per hour) [E11]. Limit the substance content in the product to 25% [OC18].
ES8-CS6: PROC13 Surfaces [CS48]. Cleaning [CS47]. Dipping and pouring [CS4]. Manual [CS34]. No other specific measures identified [EI20].
ES8-CS7: PROC10 Cleaning with low-pressure washers [CS42]. No spraying [CS60]. Provide a good standard of general ventilation (not less than 3-5 air changes per hour) [E11]. or, Make sure the operation is performed outdoors [E69]. Limit the substance content in the product to 25% [OC18].
ES8-CS8: PROC11 Cleaning with high pressure washers [CS44]. Indoor [OC8]. Spray application [CS10]. Carry out in a vented booth or extracted enclosure [E57]. Limit the substance content in the product to 25% [OC18].
ES8-CS9: PROC11 Cleaning with high pressure washers [CS44]. Outdoors [OC9]. Spray application [CS10]. Make sure the operation is performed outdoors [E69]. Wear a respirator conforming to EN140 with a type A filter or better [PPE22]. Change the filter cartridge on the respirator daily [PPE25]. Limit the substance content in the product to 25% [OC18].
ES8-CS10: PROC11 Surfaces [CS48]. Cleaning [CS47]. Manual [CS34]. Spray application [CS10]. Provide a good standard of controlled ventilation (10-15 air changes per hour) [E40]. Limit the substance content in the product to 5% [OC17]. or, Wear a respirator conforming to EN140 with a type A filter or better [PPE22].

ES8-CS11: PROC10 Ad hoc manual application via trigger sprays, dipping, etc. [CS27]. Rolling, brushing [CS51]. With local ventilation systems [CS109]. Provide extract ventilation at points where emissions occur [E54].
ES8-CS12: PROC10 Ad hoc manual application via trigger sprays, dipping, etc. [CS27]. Rolling, brushing [CS51]. Without local ventilation systems [CS110]. Provide a good standard of general ventilation (not less than 3-5 air changes per hour) [E11]. Limit the substance content in the product to 25% [OC18]. or, Wear a full face respirator conforming to EN140 with type A filter or better [PPE24].
ES8-CS13: PROC4 Application of cleaning products in closed systems [CS101]. Provide a good standard of general ventilation (not less than 3-5 air changes per hour) [E11].
ES8-CS14: PROC8a Filling of equipment from drums or containers, [CS45]. Provide a good standard of general ventilation (not less than 3-5 air changes per hour) [E11]. or, Make sure the operation is performed outdoors [E69]. Limit the substance content in the product to 25% [OC18].

SECTION 3: EXPOSURE ESTIMATION:

Maximum exposure resulting from the contributing scenarios described.

Environment

ES8-ES1: ERC8a, ERC8d.
Conditions given in SPERC fact sheet give rise to following releases fractions [OOC29]. (ESVOC SpERC 8.4c.v1).
Fraction released to air from highly dispersive use (regional only) [OOC7]: 0.95.
Fraction released to wastewater from highly dispersive use [OOC8]: 0,025.
Fraction released into soil by highly dispersive use (regional only) [OOC9]: 0.025.
PEC of microorganisms in wastewater treatment plant: 5.14E-03mg/l. Risk characterization report: 1.11E-05.
Local PEC in surface water: 6.01E-03mg/l. Risk characterization report: 6.83E-04.
Local PEC in freshwater sediments: 2.56E-02mg/kgdw. Risk characterization report: 7.40E-04.
Local PEC in seawater during the release episode: 6.53E-04mg/l. Risk characterization report: 7.42E-04.
Local PEC in marine sediments: 2.78E-03mg/kgdw. Risk characterization report: 8.03E-04.
Local PEC in soil: 2.13E-02mg/kgdw. Risk characterization report: 9.14E-03. Risk from environmental exposure is driven by soil [TCR1f].

Health:

Exposure resulting from contributing scenario ES8-CS1:
Inhalation (steam). 8 hours on average 10ppm. Risk characterization report: <0.5. 15 minutes average 40ppm. Risk characterization report: 0.8. Dermal: 14mg/kg/d.

Exposure resulting from contributing scenario ES8-CS2:
Inhalation (steam). 8 hours on average 5ppm. Risk characterization report: 0.25. 15 minutes average 20ppm. Risk characterization report: 0.4. Dermal: 1.4 mg/kg/d.

Exposure resulting from contributing scenario ES8-CS3:
Inhalation (steam). 8 hours on average 3ppm. Risk characterization report: 0.84. !da duplicazione! 15 minutes average 12ppm. Risk characterization report: 0,24. Dermal: 0.69mg/kg/d.

Exposure resulting from contributing scenario ES8-CS4:
Inhalation (steam). 8 hours on average 10ppm. Risk characterization report: 0.5. 15 minutes average 40ppm. Risk characterization report: 0.8. Dermal: 6.9 mg/kg/d.

Exposure resulting from contributing scenario ES8-CS5:
Inhalation (steam). 8 hours on average 4.2ppm. Risk characterization report: 0.21. 15 minutes average 16.8ppm. Risk characterization report: 0.34. Dermal: 4.1 mg/kg/d.

Exposure resulting from contributing scenario ES8-CS6:
Inhalation (steam). 8 hours on average 10ppm. Risk characterization report: 0.5. 15 minutes average 40ppm. Risk characterization report: 0.8. Dermal: 14 mg/kg/d.

Exposure resulting from contributing scenario ES8-CS7:
Inhalation (steam). 8 hours on average 11ppm. Risk characterization report: 0.525. 15 minutes average 42ppm. Risk characterization report: 0.84. Dermal: 16 mg/kg/d.

Exposure resulting from contributing scenario ES8-CS8:
Inhalation (steam). 8 hours on average 12ppm. Risk characterization report: 0.6. 15 minutes average 48ppm. Risk characterization report: 0.96. Dermal: 64 mg/kg/d.

Exposure resulting from contributing scenario ES8-CS9:
Inhalation (steam). 8 hours on average 4.2ppm. Risk characterization report: 0.21. 15 minutes average 16.8ppm. Risk characterization report: 0,34. Dermal: 64 mg/kg/d.

Exposure resulting from contributing scenario ES8-CS10:
Inhalation (steam). 8 hours on average 6ppm. Risk characterization report: 0.3. 15 minutes average 24ppm. Risk characterization report: 0.48. Dermal: 21 mg/kg/d.

Exposure resulting from contributing scenario ES8-CS11:
Inhalation (steam). 8 hours on average 5ppm. Risk characterization report: 0.25. 15 minutes average 20ppm. Risk characterization report: 0.4. Dermal: 27 mg/kg/d.

Exposure resulting from contributing scenario ES8-CS12:
Inhalation (steam). 8 hours on average 11ppm. Risk characterization report: 0.525. 15 minutes average 42ppm. Risk characterization report: 0.84. Dermal: 16 mg/kg/d.

Exposure resulting from contributing scenario ES8-CS13:
Inhalation (steam). 8 hours on average 7ppm. Risk characterization report: 0.35. 15 minutes average 28ppm. Risk characterization report: 0.56. Dermal: 6.9 mg/kg/d.

Exposure resulting from contributing scenario ES8-CS14:
Inhalation (steam). 8 hours on average 11ppm. Risk characterization report: 0.525. 15 minutes average 42ppm. Risk characterization report: 0.84. Dermal: 8.2 mg/kg/d.

The risk management measures described protect against acute exposure.
Dermal: A DNEL cannot be derived for this endpoint. Risk management measures are based on qualitative risk characterisation [G37].
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects [G32]. Risk management measures are based on qualitative risk characterisation [G37].
Available hazard data do not enable the derivation of a DNEL for eye irritant effects [G45].

SECTION 4: GUIDE FOR VERIFYING COMPLIANCE WITH THE EXPOSURE SCENARIO

Environment:

Msafe: 59.9kg/g. Not applicable for highly dispersive uses [DSU5].

Health:

Inhalation (steam). No correction required as all exposures are assumed to be 8 hours long (worst case assumption). To go from a concentration of 5-25% to a concentration of 100%, multiply by 1.7. To go from a concentration of 1-5% to a concentration of 5-25%, multiply by 3.

Dermal: Not applicable.

butanone

Substance identification
Chemical Name: butanone
CAS number: 78-93-3
Date - Version: June 25, 2021

USE IN COATINGS - INDUSTRIAL USE

SECTION 1. TITLE OF THE EXPOSURE SCENARIO

Title
Use in coatings - Industrial use

Sector of use
SU3

Process categories
PROC1, PROC10, PROC13, PROC14, PROC15, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9

Environmental Release Categories
ERC4

Specific Environmental Release Categories
ESVOC 4.3a v1

Processes, tasks, activities considered
Considers use in coating (paints, inks, adhesives, etc.) including exposure during use (including receipt of material, storage, preparation and transfer from bulk or semi-bulk, spray, roller, brush application, spraying, dipping, flow, fluid layers in production lines and in film formation) and equipment cleaning, maintenance and associated laboratory activities.

SECTION 2. OPERATING CONDITIONS AND RISK MANAGEMENT MEASURES

SECTION 2.1 WORKER EXPOSURE CONTROL

Product features
Liquid

Duration, frequency and quantity
Covers daily exposure up to 8 hours (unless otherwise defined) [G2].
Covers the substance in the product up to 100% [G13].

Additional operating conditions regarding worker exposure
It is assumed that good basic industrial hygiene practices are applied.
Assumes use at not more than 20°C above ambient temperature [G15].

Contribution to the scenario/specific risk control measures and operating conditions

General measures (flammable liquid)
Risks relating to the physical-chemical hazards of the substances, such as flammability or explosiveness, can be controlled by adopting risk management measures in the workplace. It is recommended to refer to ATEX directive version 2014/34/EU. Based on the implementation of a series of storage risk management measures for the identified uses, the risks can be considered as being controlled to an acceptable level.
Use in closed systems. Avoid sources of ignition - No smoking. Handle in a well-ventilated area to prevent the formation of explosive atmospheres. Use protective equipment and systems approved for flammable substances.
Limit the speed in the lines while pumping to avoid the generation of electrostatic discharges. Ground the container and the receiving device. Use non-sparking tools. Follow relevant EU/national regulations. Refer to the SDS for additional recommendations.

General exposure (closed systems) PROC1
Handle substance within a closed system.

General exposure (closed systems) with sampling Use in closed systems PROC2
Handle substance within a closed system. Ensure material transfers are managed using closed or air exhaust systems.

Film formation - forced drying, drying and other technologies. Operation is carried at at elevated temperatures (>20° C above ambient temperature). PROC2
Handle substance within a closed system. Ensure material transfers are managed using closed or air exhaust systems.

Mixing operations (closed systems) General exposure (closed systems) PROC3
Handle substance within a closed system. Ensure material transfers are managed using closed or air exhaust systems.

Film formation - Air dry PROC4
Provide supplementary ventilation to points where emissions occur.

Preparation of material for use Mixing operations (open systems) PROC5
Provide supplementary ventilation to points where emissions occur.

Spraying (automatic/robotic) PROC7
Perform in a laminar flow ventilated booth.

Manual Spray PROC7
Wear respiratory protection in accordance with EN 140 with filter type A or better. Ensure a sufficient amount of controlled ventilation (10 to 15 air changes per hour).

Material transfers PROC8a
Clear transfer lines prior to de-coupling. Provide supplementary ventilation and other openings.

Material transfers PROC8b
Clear transfer lines prior to de-coupling.

Roller, spray and flow application PROC10
Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.

Immersion and pouring PROC13
Provide supplementary ventilation to points where emissions occur. Avoid manual contact with wet work pieces.

Laboratory activities PROC15
No other specific measure identified.

Material transfers Transfer of drums/quantities Transfer from/pouring from containers PROC9
Provide supplementary ventilation and other openings.

Production of preparations or articles by tabletting, compression, extrusion, pelettisation PROC14
Provide supplementary ventilation to points where emissions occur.

SECTION 2.2 ENVIRONMENTAL EXPOSURE CONTROL

Product features
Not applicable.

Duration, frequency and quantity
Not applicable.

Environmental factors do not influence risk management
Not applicable.

Additional operating conditions relating to environmental exposure
No environmental exposure verification has been submitted

Technical conditions and process-level (source) measures to prevent releases
Not applicable

Local technical conditions and measures to reduce and limit discharges, air emissions and soil releases
Not applicable.

Organisational measures to avoid/limit release from a site
Not applicable.

Conditions and measures for the municipal sewage treatment plant
Not applicable.

Conditions and measures for external treatment of waste
Not applicable.

Conditions and measures for external recovery of waste
Not applicable.

SECTION 3. EXPOSURE ESTIMATES

SECTION 3.1 HEALTH

Predicted exposure is not expected to exceed the applicable exposure limits (given in section 8 of the safety datasheet) when the operational conditions and risk management measures given in section 2 are implemented.
The ECETOC TRA model has been used to assess worker exposure, unless otherwise indicated. [G21]

SECTION 3.2 ENVIRONMENT

Not applicable.

SECTION 4. GUIDE FOR CHECKING COMPLIANCE WITH THE EXPOSURE SCENARIO

SECTION 4.1 HEALTH

The available risk data do not indicate the need to establish a DNEL for other health effects. [G36]
Risk management measures are based on the qualitative determination of the risk.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

SECTION 4.2 ENVIRONMENT

Not applicable.

USE IN COATINGS - PROFESSIONAL USE

SECTION 1. TITLE OF THE EXPOSURE SCENARIO

Title
Use in coatings - Professional use.

Sector of use
SU22

Process categories
PROC1, PROC10, PROC11, PROC13, PROC15, PROC19, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b

Environmental Release Categories
ERC8a, ARC8d

Processes, tasks, activities considered
Considers use in coating (paints, inks, adhesives, etc.) including exposure during use (including receipt of material, storage, preparation and transfer from bulk or semi-bulk, spray, roller, brush application, applied by hand or similar methods and film formation) and equipment cleaning, maintenance and associated laboratory activities.

SECTION 2. OPERATING CONDITIONS AND RISK MANAGEMENT MEASURES

SECTION 2.1 WORKER EXPOSURE CONTROL

Product features
Liquid

Duration, frequency and quantity
Covers daily exposure up to 8 hours (unless otherwise defined) [G2].
Covers the substance in the product up to 100% [G13].

Additional operating conditions regarding worker exposure
It is assumed that good basic industrial hygiene practices are applied.
Assumes use at not more than 20°C above ambient temperature [G15].

Contribution to the scenario/specific risk control measures and operating conditions

General measures (flammable liquid)
Risks relating to the physical-chemical hazards of the substances, such as flammability or explosiveness, can be controlled by adopting risk management measures in the workplace. It is recommended to refer to ATEX directive version 2014/34/EU. Based on the implementation of a series of storage risk management measures for the identified uses, the risks can be considered as being controlled to an acceptable level.
Use in closed systems. Avoid sources of ignition - No smoking. Handle in a well-ventilated area to prevent the formation of explosive atmospheres. Use protective equipment and systems approved for flammable substances.
Limit the speed in the lines while pumping to avoid the generation of electrostatic discharges. Ground the container and the receiving device. Use non-sparking tools. Follow relevant EU/national regulations. Refer to the SDS for additional recommendations.

General exposure (closed systems) PROC1
Handle substance within a closed system.

Filling/preparation of equipment from drums or vessels Use in closed systems PROC2
Handle substance within a closed system.

General exposure (closed systems). Use in closed systems PROC2
Handle substance within a closed system. Ensure material transfers are managed using closed or air exhaust systems.

Preparation of material for use Use in closed batch processes PROC3
Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.

Film formation - Air dry Exterior PROC4
Avoid carrying out operation for more than 4 hours. Or, Wear respiratory protection in accordance with EN 140 with filter type A or better.

Film formation - Air dry Internal PROC4
Provide supplementary ventilation to points where emissions occur.

Preparation of material for use Mixing operations (open systems) PROC5
Ensure a sufficient amount of controlled ventilation (10 to 15 air changes per hour). Or, Wear respiratory protection in accordance with EN 140 with filter type A or better.

Preparation of material for use Outdoor. PROC5
Wear respiratory protection in accordance with EN 140 with filter type A or better.

Material transfers Transfer of drums/quantities Non-dedicated system PROC8a
Ensure a sufficient amount of general ventilation is achieved by natural ventilation through doors, windows, etc. Controlled ventilation means supply and removal of air by an active fan. Avoid carrying out operation for more than 1 hour. Or, Wear respiratory protection in accordance with EN 140 with filter type A or better.

Material transfers Transfer of drums/quantities Dedicated plant PROC8b
Provide supplementary ventilation and other openings.

Roller, spray and flow application Internal PROC10
Ensure a sufficient amount of controlled ventilation (10 to 15 air changes per hour).

Roller, spray and flow application Exterior PROC10
Wear respiratory protection in accordance with EN 140 with filter type A or better.

Manual Spray Internal PROC11
Carry out in a vented booth or extracted enclosure. Wear respiratory protection in accordance with EN 140 with filter type A or better.

Manual Spray Exterior PROC11
Wear respiratory protection in accordance with EN 140 with filter type A or better.

Immersion and pouring Internal PROC13
Provide supplementary ventilation to points where emissions occur. Avoid manual contact with wet work pieces.

Immersion and pouring Exterior PROC13
Ensure operation is undertaken outdoors. Avoid manual contact with wet work pieces.

Laboratory activities PROC15
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Manual application - Finger Paints, Chalks, Stickers: Internal PROC19
Ensure a sufficient amount of general ventilation is achieved by natural ventilation through doors, windows, etc. Controlled ventilation means supply and removal of air by an active fan. Wear respiratory protection in accordance with EN 140 with filter type A or better.

Manual application - Finger Paints, Chalks, Stickers: Exterior PROC19
Ensure operation is undertaken outdoors. Wear respiratory protection in accordance with EN 140 with filter type A or better.

SECTION 2.2 ENVIRONMENTAL EXPOSURE CONTROL

Product features
Not applicable.

Duration, frequency and quantity
Not applicable.

Environmental factors do not influence risk management
Not applicable.

Additional operating conditions relating to environmental exposure
No environmental exposure verification has been submitted

Technical conditions and process-level (source) measures to prevent releases
Not applicable

Local technical conditions and measures to reduce and limit discharges, air emissions and soil releases
Not applicable.

Organisational measures to avoid/limit release from a site
Not applicable.

Conditions and measures for the municipal sewage treatment plant
Not applicable.

Conditions and measures for external treatment of waste
Not applicable.

Conditions and measures for external recovery of waste
Not applicable.

SECTION 3. EXPOSURE ESTIMATES

SECTION 3.1 HEALTH

Predicted exposure is not expected to exceed the applicable exposure limits (given in section 8 of the safety datasheet) when the operational conditions and risk management measures given in section 2 are implemented.
The ECETOC TRA model has been used to assess worker exposure, unless otherwise indicated. [G21]

SECTION 3.2 ENVIRONMENT

Not applicable.

SECTION 4. GUIDE FOR CHECKING COMPLIANCE WITH THE EXPOSURE SCENARIO

SECTION 4.1 HEALTH

The available risk data do not indicate the need to establish a DNEL for other health effects. [G36]
Risk management measures are based on the qualitative determination of the risk.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

SECTION 4.2 ENVIRONMENT

Not applicable.

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 pelettisation. 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/day.

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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./day (ECETOC TRA worker v3)	0.065
combined routes	systemic	Long-term	/	0.29

12.3.6. Worker exposure: Transfer of substance or preparation (charging/discharging) 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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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 p.c./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/

Xylene

Identification of the exposure scenario
Product name: Xylene
Reach registration number: 01-2119488216-32-XXXX
CAS number: 1330-20-7
EC number: 215-535-7
Review date: 14/02/2022 rev. 3.0

USE IN COATINGS - INDUSTRIAL USE

1. Title of the exposure scenario

Process purpose: Includes use in coatings (varnishes, inks, adhesives, etc.), including exposure during application (including material receipt, storage, bulk and semi-bulk preparation and transfer, application by spray, roller, manual spraying, dip, flow, fluid layers in production lines and in film formation) and system cleaning, maintenance and related laboratory activities.
Main sector: SU3 Industrial uses

Environment

Environmental Release Categories [ERC]: ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article).
Specific Environmental Release Category [SPERC]: ESVOC SPERC 4.3a.v1

Worker

Process categories:
PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.
PROC 3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions.
PROC4 Production of chemicals with the possibility of exposure.
PROC5 Mixing or blending in batch processes
PROC7 Industrial spraying.
PROC8a Transfer of a substance or preparation (charging/discharging) at non-dedicated facilities.
PROC8a Transfer of substance or mixture (charging/discharging) at non-dedicated facilities.
PROC10 Application with rollers or brushes.
PROC13 Treatment of articles by dipping and pouring.
PROC15 Use as laboratory reagent.
PROC24 High (mechanical) energy work-up of substances bound in/on materials and/or articles.

2. Other conditions of use affecting exposure (Industrial - Environment 1)

Products features

Form: Liquid, vapor pressure 0.5 - 10 kPa at STP
Easily biodegradable.

Amounts used:

Annual amount per site: 2500 tonnes

Frequency and duration of use

Issue days: 300 days/year

Additional operating conditions relating to environmental exposure

Emission factor - air
Air release rate produced by the process (initial release prior to risk management measures): 0.98
Emission factor - water
Waste water release rate produced by the process (initial release prior to risk management measures): 0.007
Emission factor - soil
Soil release rate produced by the process (initial release prior to risk management measures): 0

Environmental factors that are not influenced by risk management

Dilution

Local fresh water dilution factor: 10
Local seawater dilution factor: 100

Risk management measures

Sewage Treatment Plant Data (STP)

Estimated substance removal from waste water via domestic sewage treatment: 95.8%
Assumed domestic sewage treatment plant flow: 2000 m³/day

Local technical conditions and measures to reduce and limit discharges and air emissions

Air:

Treat air emission to provide a typical removal efficiency of > 90%.

Water:

Avoid releasing the undiluted substance into local waste water or recover it on site. The typical on-site purification technique has a removal efficiency of 95.8%.

Ground:

Soil emission controls are not applicable as there is no direct release to soil.

Conditions and measures for external treatment of waste

Sludge treatment:

Do not spread industrial sludge on natural soils. Sewerage sludge should be burned, stored or regenerated.
Waste treatment:
No waste of the substance is formed during production.

2. Other conditions of use affecting exposure (Workers - Health 1)

Products features

Form:

Liquid, vapor pressure 0.5 - 10 kPa at STP
Concentration information: Includes concentrations up to 100%, unless otherwise indicated.

Quantities used

Not applicable.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other operational conditions affecting worker exposure

Temperature: (unless stated differently) assumes use at not more than 20°C above ambient temperature.
Ventilation Rate: Ensure a sufficient amount of controlled ventilation (10 to 15 air changes per hour). Assumes a good basic standard of occupational hygiene is implemented.

Technical conditions and process-level (source) measures to prevent releases

Technical protective measures:

Handle substance within a closed system. Provide supplementary ventilation to points where emissions occur. Ensure material transfers are managed using closed or air exhaust systems. Drain or remove substance from equipment before opening or servicing PROC7 Industrial spraying: spraying (automatic/robotic) should be carried out in a ventilated booth with laminar air flow.

Risk management measures:

PROC7 Industrial spraying.
Manual spraying.
Wear respiratory protection in accordance with EN 140 with filter type A or better.

3. Verification of exposure (Environment 1)

Environmental exposure:

Predicted exposures are not expected to exceed the specific risks (listed in chapter 8 of the safety datasheet), when the risk management measures/operational conditions outlined in section 2 are implemented.
Maximum allowable site tonnage (Msafe), based on release following total waste water treatment removal: 9874 kg/day

3. Exposure Verification (Health 1)

Exposure
Predicted workplace exposures are not expected to exceed the DNEL when risk identification measures are implemented.

4. Guidance to check compliance with the exposure scenario (Environment 1)

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Required removal efficiency for waste water can be achieved using on-site/off-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

4. Guidance to check compliance with the exposure scenario (Health 1)

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

USE IN COATINGS - PROFESSIONAL USE

1. Title of the exposure scenario

Process purpose: Includes use in coatings (varnishes, inks, adhesives, etc.), including exposure during application (including material receipt, storage, bulk and semi-bulk preparation and transfer, application by spray, roller, brush and manual spraying or similar processes and film formation) and system cleaning, maintenance and related laboratory activities.
Main sector: SU22 Professional uses

Environment

Environmental Release Categories [ERC]:
ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor).
ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor).
ERC8c Widespread use leading to inclusion into/onto article (indoor).
ERC8f Widespread use leading to inclusion into/onto article (outdoor).
Specific Environmental Release Category [SPERC]: ESVOC SPERC 8.3b.v1

Worker

Process categories:
PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.
PROC 3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions.
PROC4 Production of chemicals with the possibility of exposure.
PROC5 Mixing or blending in batch processes
PROC8a Transfer of a substance or preparation (charging/discharging) at non-dedicated facilities.
PROC8a Transfer of substance or mixture (charging/discharging) at non-dedicated facilities.
PROC10 Application with rollers or brushes.
PROC11 Non-industrial spray application.
PROC13 Treatment of articles by dipping and pouring.
PROC15 Use as laboratory reagent.
PROC19 Manual activities with direct contact.
PROC24 High (mechanical) energy work-up of substances bound in/on materials and/or articles.

2. Other conditions of use affecting exposure (Industrial - Environment 1)

Products features

Form: Liquid, vapor pressure 0.5 - 10 kPa at STP Easily biodegradable.

Quantities used

Annual amount per site: 10 tonnes

Frequency and duration of use

Issue days: 365 days/year

Additional operating conditions relating to environmental exposure

Emission factor - air
Air release rate produced by the process (initial release prior to risk management measures): 0.98
Emission factor - water
Waste water release rate produced by the process (initial release prior to risk management measures): 0.01
Emission factor - soil
Soil release rate produced by the process (initial release prior to risk management measures): 0.01

Environmental factors that are not influenced by risk management

Dilution
Local fresh water dilution factor: 10
Local seawater dilution factor: 100

Risk management measures
Sewage Treatment Plant Data (STP)
Estimated substance removal from waste water via domestic sewage treatment 95.8%
Assumed domestic sewage treatment plant flow: 2000 m³/day

Local technical conditions and measures to reduce and limit discharges and air emissions
Air: Treat air emission to provide a typical removal efficiency of 0%.
Water: The typical on-site purification technique has a removal efficiency of 95.8%.

Conditions and measures for external treatment of waste
Waste treatment: External treatment and disposal of waste should comply with applicable local and/or national regulations.

2. Other conditions of use affecting exposure (Workers - Health 1)

Products features
Form:
Liquid, vapor pressure 0.5 - 10 kPa at STP
Concentration information:
Includes concentrations up to 100%, unless otherwise indicated.

Quantities used
Not applicable.

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently).

Other operational conditions affecting worker exposure
Temperature:
(unless stated differently) assumes use at not more than 20°C above ambient temperature.
Ventilation Rate:
Provide a good standard of controlled ventilation (10 to 15 air changes per hour) or ensure operation is undertaken outdoors. Assumes a good basic standard of occupational hygiene is implemented.

Technical conditions and process-level (source) measures to prevent releases
Technical protective measures:
Handle substance within a closed system. Provide supplementary ventilation to points where emissions occur. Ensure material transfers are managed using closed or air exhaust systems. Clean/flush equipment prior to opening or maintenance. Transport on closed roads. PROC11 Non-industrial spray application. Indoor use. Perform in a laminar flow ventilated booth. PROC15 Use as laboratory reagents handle under fume hood or extract air.

Organizational measures to prevent/limit releases, dispersion and exposure
Organizational measures
Avoid activities with an exposure of more than 4 hours.
Hand Application - Finger Paints, Chalks, Stickers:
Limit the amount of substance in the mixture to 5%.

Risk management measures
Wear protective gloves according to EN 374, resistant to solvents.
PROC10 Application with rollers or brushes.
PROC11 Non-industrial spray application. Outdoor use.
PROC13 Treatment of articles by dipping and pouring. Outdoor use.
Wear respiratory protection in accordance with EN 140 with filter type A or better.

3. Verification of exposure (Environment 1)

Environmental exposure
Predicted exposures are not expected to exceed the specific risks (listed in chapter 8 of the safety datasheet), when the risk management measures/operational conditions outlined in section 2 are implemented.
Maximum allowable site tonnage (Msafe), based on release following total waste water treatment removal: 5969 kg/day

3. Exposure Verification (Health 1)

Exposure
Predicted workplace exposures are not expected to exceed the DNEL when risk identification measures are implemented.

4. Guidance to check compliance with the exposure scenario (Environment 1)

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Required removal efficiency for waste water can be achieved using on-site/off-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

4. Guidance to check compliance with the exposure scenario (Health 1)

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Hydrocarbons, C9, aromatics

Substance identification
Chemical Name: Hydrocarbons, C9, aromatics
EC number: 918-668-5
Date - Version: 31/05/2017

USE IN COATINGS. - INDUSTRIAL USE

SECTION 1: TITLE

List of use descriptors

Name of identified use: Use in coatings - Industrial use
Process categories: PROC01, PROC02, PROC03, PROC04, PROC05, PROC07, PROC08a, PROC08b, PROC10, PROC13, PROC15
End use sector: SU03
Subsequent service life relevant to that use: No
Environmental Release Categories: ERC04, ESVOC SpERC 4.3a.v1
Market sector by type of chemical product: Not applicable.
Article category in relation to subsequent service life: Not applicable.

Contributing scenarios - Environment

Use in coatings

Contributing scenarios - Health

Use in coatings

Processes and activities covered by the exposure scenario

It applies to use in coatings (paints, inks, adhesives, etc.) in closed or contained systems, including accidental exposures during use (including receipt, storage, preparation and transfer of materials from containers for bulk and semi-bulk transport, application activities and film formation) and equipment cleaning, maintenance and related laboratory activities

SECTION 2: EXPOSURE CONTROLS

CONTRIBUTING SCENARIO THAT CONTROLS ENVIRONMENTAL EXPOSURE

Product features

The substance is a complex UVCB substance. - Mostly hydrophobic.

Quantity used

Fraction of EU tonnage used in region 0.1
Regional use tonnage 7600
Fraction of regional tonnage used locally 1
Annual site tonnage 7600
Maximum daily site tonnage 25000

Frequency and duration of use

Continuous release - Issue days: 300

Environmental factors not influenced by risk management

Local fresh water dilution factor: 10
Local marine water dilution factor: 100

Other conditions affecting environmental exposure

Fraction of release to air from process (initial release before RMMs): 0.98
Fraction of release to wastewater from process (initial release before RMMs): 0.0007
Fraction of release to soil from process (initial release before RMMs): 0

Process-level conditions and technical measures (source) to prevent release

Common practices vary across sites thus conservative process release estimates are used.

On-site conditions and technical measures to reduce or limit discharges, emissions to air and releases to soil

Risk from environmental exposure is driven by freshwater sediment.
Prevent discharge of undissolved substance to wastewater, or recover it from wastewater on site. If discharging to municipal sewage treatment plant, no on-site wastewater treatment is required.
Treat air emission to provide a typical removal efficiency of 90%.
Treat wastewater on site (prior to receiving water discharge) to provide the required removal efficiency of ≥ 77.7%.
If discharged into a domestic sewage treatment plant, ensure the required wastewater removal efficiency of ≥ 0%

Conditions and measures related to sewage treatment plants

Estimated removal of the substance from wastewater by on-site treatment: 93.6%
Total efficiency of removal from wastewater after on-site and off-site (municipal sewage treatment plant) RMMs: 93.6%
Maximum allowable site tonnage (MSafe) based on release following total removal of wastewater for treatment: 88000
Assumed on-site sewage treatment plant flow: 2000

Conditions and measures related to the external treatment of waste for disposal

External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to the external recovery of waste

External recovery and recycling of waste should comply with applicable local and/or national regulations.

CONTRIBUTING SCENARIO CONTROLLING WORKER EXPOSURE

Concentration of substance in mixture or product

Applies to a percentage of up to 100% of the substance in the product (unless otherwise specified).

Physical state

Liquid, vapour pressure 0.5 - 10 kPa at standard temperature and pressure.

Quantity used

No limit.

Frequency and duration of use

Applies to daily exposures of up to 8 hours.

Other conditions regarding workers' exposure

Assumes use at not more than 20°C above ambient temperature, unless otherwise specified. Assumes a good basic standard of occupational hygiene is implemented.

CONTRIBUTING SCENARIOS - OPERATING CONDITIONS AND RISK MANAGEMENT MEASURES

General exposures (closed systems)

No other specific measures identified.

General exposures (closed systems). With sample collection. Use in contained systems.

No other specific measures identified.

Film formation - Force drying (50-100 °C).) Stoving (>100°C). UV/EB radiation curing. Operation is carried out at elevated temperature (> 20°C above ambient temperature).

Provide extract ventilation in points where emissions occur.

Mixing operations. General exposures (closed systems).

No other specific measures identified.

Film formation - Air drying.

Provide extract ventilation in points where emissions occur.

Preparation of material for application. Mixing operations (open systems).

Provide extract ventilation in points where emissions occur.

Spraying (automatic/robotic).

Carry out in a vented booth provided with laminar airflow.

Manual spraying.

Provide enhanced general ventilation by mechanical means. Wear a respirator conforming to EN140 with type A/P2 filter or better.

Material transfers.
Provide extract ventilation in points where emissions occur.

Roller, spreader, flow application.
Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.

Enamelling, dipping and pouring.
Provide extract ventilation in points where emissions occur.

Laboratory activities.
No other specific measures identified.

Material transfers. Transfers in drums/batch. Transfer/pouring from containers.
Provide material transfer points with extract ventilation.

Material transfers. Transfers in drums/batch. Transfer/pouring from containers.
Wear a respirator conforming to EN140 with type A/P2 filter or better.

Production of preparations or articles by tableting, compression, extrusion or pelletising.
Provide enhanced general ventilation by mechanical means.

SECTION 3: EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE - ENVIRONMENT

Exposure assessment (environment)
Not available.

Exposure estimation and reference to its source
Hydrocarbon Block Method (Petrorisk)

EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE - WORKERS

Exposure assessment (human)
Not available.

Exposure estimation and reference to its source
Unless otherwise specified, the ECETOC TRA tool was used to estimate workplace exposures.

SECTION 4: GUIDANCE FOR THE DOWNSTREAM USER (DU) TO ASSESS WHETHER HE/SHE IS OPERATING WITHIN THE LIMITS ESTABLISHED BY THE EXPOSURE SCENARIO

ENVIRONMENT
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. Required removal efficiency for wastewater can be achieved using on-site/off-site technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SPERC factsheet.

HEALTH
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in Section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional indication of good practices in addition to the chemical safety assessment
Environment: Not available
Health: Not available

USE IN COATINGS. - PROFESSIONAL USE

SECTION 1: TITLE

List of use descriptors

Name of identified use: Use in coatings - Professional use.
Process categories: PROC01, PROC02, PROC03, PROC04, PROC05, PROC05, PROC08a, PROC08b, PROC10, PROC11, PROC13, PROC15, PROC19
End use sector: SU22
Subsequent service life relevant to that use: No
Environmental Release Categories: ERC08a, ERC08d, ESVOC SpERC 8.3b.v1
Market sector by type of chemical product: Not applicable.
Article category in relation to subsequent service life: Not applicable.

Contributing scenarios - Environment

Use in coatings

Contributing scenarios - Health

Use in coatings

Processes and activities covered by the exposure scenario

It applies to use in coatings (paints, inks, adhesives, etc.), including exposures during use (including the receipt, storage, preparation and transfer of materials from containers for bulk and semi-bulk transport, manual application by spraying, roller, brush, spreader or similar methods and film formation) and equipment cleaning, maintenance and related laboratory activities.

SECTION 2: EXPOSURE CONTROLS

CONTRIBUTING SCENARIO THAT CONTROLS ENVIRONMENTAL EXPOSURE

Product features

The substance is a complex UVCB substance. - Mostly hydrophobic.

Quantity used

Fraction of EU tonnage used in region 0.1
Regional use tonnage 2200
Fraction of regional tonnage used locally 1
Annual site tonnage 1.1
Maximum daily site tonnage 3

Frequency and duration of use

Continuous release - Issue days: 365

Environmental factors not influenced by risk management

Local fresh water dilution factor: 10
Local marine water dilution factor: 100

Other conditions affecting environmental exposure

Fraction of release to air from process (initial release before RMMs): 0.98
Fraction of release to wastewater from process (initial release before RMMs): 0.01
Fraction of release to soil from process (initial release before RMMs): 0.01

Process-level conditions and technical measures (source) to prevent release

Common practices vary across sites thus conservative process release estimates are used.

On-site conditions and technical measures to reduce or limit discharges, emissions to air and releases to soil

Risk from environmental exposure is driven by soil.
Wastewater treatment is not required.
Treat emissions to air to ensure a typical removal efficiency: N/A.
Treat wastewater on site (prior to receiving water discharge) to provide the required removal efficiency of ≥ 0%.
If discharged into a domestic sewage treatment plant, ensure the required wastewater removal efficiency of ≥ 0%

Organizational measures to prevent/limit release from a site

Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to sewage treatment plants
Estimated removal of the substance from wastewater by on-site treatment: 93.6%
Total efficiency of removal from wastewater after on-site and off-site (municipal sewage treatment plant) RMMs: 93.6%
Maximum allowable site tonnage (MSafe) based on release following total removal of wastewater for treatment: 3300
Assumed on-site sewage treatment plant flow: 2000

Conditions and measures related to the external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to the external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations.

CONTRIBUTING SCENARIO CONTROLLING WORKER EXPOSURE

Concentration of substance in mixture or product
Applies to a percentage of up to 100% of the substance in the product (unless otherwise specified).

Physical state
Liquid, vapour pressure 0.5 - 10 kPa at standard temperature and pressure.

Quantity used
No limit.

Frequency and duration of use
Applies to daily exposures of up to 8 hours.

Other conditions regarding workers' exposure
Assumes use at not more than 20°C above ambient temperature, unless otherwise specified. Assumes a good basic standard of occupational hygiene is implemented.

CONTRIBUTING SCENARIOS - OPERATING CONDITIONS AND RISK MANAGEMENT MEASURES

General exposures (closed systems)
No other specific measures identified.

General exposures (closed systems).
No other specific measures identified.

Filling/preparation of equipment from drums or containers.
Ensure material transfers are under containment or extract ventilation.

General exposures (closed systems). Use in contained systems.
No other specific measures identified.

Preparation of material for application.
Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.

Film formation - Air drying. Outside.
Ensure operation is undertaken outdoors. Avoid carrying out operation for more than 1 hour.

Film formation - Air drying. Inside.
Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. Avoid carrying out operation for more than 1 hour.

Preparation of material for application. Inside.
Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. Avoid carrying out operation for more than 15 minutes.

Preparation of material for application. Outside.
Ensure operation is undertaken outdoors. Avoid carrying out operation for more than 15 minutes.

Material transfers. Transfers in drums/batch. Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at non-dedicated facilities.
Provide enhanced general ventilation by mechanical means. Avoid carrying out operation for more than 1 hour.

Material transfers. Transfers in drums/batch. Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at dedicated facilities.

Roller, spreader, flow application. Inside.
Provide enhanced general ventilation by mechanical means. Avoid carrying out operation for more than 1 hour.

Roller, spreader, flow application. Outside.
Ensure operation is undertaken outdoors. Avoid carrying out operation for more than 15 minutes.

Manual spraying. Inside.
Carry out in a vented booth or extracted enclosure. Limit the substance content in the product to 25%. Avoid carrying out operation for more than 15 minutes.

Manual spraying. Outside.
Ensure operation is undertaken outdoors. Limit the substance content in the product to 5%. Avoid carrying out operation for more than 15 minutes.

Manual spraying. Outside.
Ensure operation is undertaken outdoors. Limit the substance content in the product to 25%. Avoid carrying out operation for more than 1 hour. Wear a respirator conforming to EN140 with type A/P2 filter or better.

Enamelling, dipping and pouring. Inside.
Provide extract ventilation in points where emissions occur. Avoid carrying out operation for more than 1 hour.

Enamelling, dipping and pouring. Outside.
Ensure operation is undertaken outdoors. Avoid carrying out operation for more than 15 minutes.

Laboratory activities.
Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

Hand application - fingerpaints, pastels, adhesives. Outside.
Ensure doors and windows are opened. Limit the substance content in the product to 25%. Avoid carrying out operation for more than 1 hour.

Hand application - fingerpaints, pastels, adhesives. Inside.
Ensure operation is undertaken outdoors. Limit the substance content in the product to 25%. Avoid carrying out operation for more than 15 minutes.

SECTION 3: EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE - ENVIRONMENT

Exposure assessment (environment)
Not available.

Exposure estimation and reference to its source
Hydrocarbon Block Method (Petrorisk)

EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE - WORKERS

Exposure assessment (human)
Not available.

Exposure estimation and reference to its source
Unless otherwise specified, the ECETOC TRA tool was used to estimate workplace exposures.

SECTION 4: GUIDANCE FOR THE DOWNSTREAM USER (DU) TO ASSESS WHETHER HE/SHE IS OPERATING WITHIN THE LIMITS ESTABLISHED BY THE EXPOSURE SCENARIO

ENVIRONMENT

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. Required removal efficiency for wastewater can be achieved using on-site/off-site technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SPERC factsheet.

HEALTH

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in Section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional indication of good practices in addition to the chemical safety assessment

Environment: Not available
Health: Not available

USE IN ROAD AND CONSTRUCTION PRODUCTS. - PROFESSIONAL USE

SECTION 1: TITLE

List of use descriptors

Name of identified use: Use in road and construction products - Professional use.
Process categories: PROC08a, PROC08b, PROC09, PROC10, PROC11, PROC13
End use sector: SU22
Subsequent service life relevant to that use: No
Environmental Release Categories: ERC08d, ERC08f, ESVOC SpERC 8.15.v1
Market sector by type of chemical product: Not applicable.
Article category in relation to subsequent service life: Not applicable.

Contributing scenarios - Environment

Use in road and construction products

Contributing scenarios - Health

Use in road and construction products

Processes and activities covered by the exposure scenario

Application of surface coatings and binders in road and construction activities, including paving uses, manual mastic and in the application of roofing and water-proofing membranes.

SECTION 2: EXPOSURE CONTROLS

CONTRIBUTING SCENARIO THAT CONTROLS ENVIRONMENTAL EXPOSURE

Product features

The substance is a complex UVCB substance. - Mostly hydrophobic.

Quantity used

Fraction of EU tonnage used in region 0.1
Regional use tonnage 22
Fraction of regional tonnage used locally 0.0005
Annual site tonnage 0.011
Maximum daily site tonnage 0.03

Frequency and duration of use

Continuous release - Issue days: 365

Environmental factors not influenced by risk management

Local fresh water dilution factor: 10
Local marine water dilution factor: 100

Other conditions affecting environmental exposure

Fraction of release to air from process (initial release before RMMs): 0.95
Fraction of release to wastewater from process (initial release before RMMs): 0.01
Fraction of release to soil from process (initial release before RMMs): 0.04

Process-level conditions and technical measures (source) to prevent release

Common practices vary across sites thus conservative process release estimates are used.

On-site conditions and technical measures to reduce or limit discharges, emissions to air and releases to soil

Risk from environmental exposure is driven by soil.
Wastewater treatment is not required.
Treat emissions to air to ensure a typical removal efficiency: N/A.
Treat wastewater on site (prior to receiving water discharge) to provide the required removal efficiency of ≥ 0%.
If discharged into a domestic sewage treatment plant, ensure the required wastewater removal efficiency of ≥ 0%

Organizational measures to prevent/limit release from a site

Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to sewage treatment plants
Estimated removal of the substance from wastewater by on-site treatment: 93.6%
Total efficiency of removal from wastewater after on-site and off-site (municipal sewage treatment plant) RMMs: 93.6%
Maximum allowable site tonnage (MSafe) based on release following total removal of wastewater for treatment: 61
Assumed on-site sewage treatment plant flow: 2000

Conditions and measures related to the external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to the external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations.

CONTRIBUTING SCENARIO CONTROLLING WORKER EXPOSURE

Concentration of substance in mixture or product
Applies to a percentage of up to 100% of the substance in the product (unless otherwise specified).

Physical state
Liquid, vapour pressure 0.5 - 10 kPa at standard temperature and pressure.

Quantity used
No limit.

Frequency and duration of use
Applies to daily exposures of up to 8 hours.

Other conditions regarding workers' exposure
Assumes use at not more than 20°C above ambient temperature, unless otherwise specified. Assumes a good basic standard of occupational hygiene is implemented.

CONTRIBUTING SCENARIOS - OPERATING CONDITIONS AND RISK MANAGEMENT MEASURES

Transfers in drums/batch. Non-dedicated structure
Ensure operation is undertaken outdoors. Avoid carrying out operation for more than 15 minutes.

Transfers in drums/batch. Special dedicated structure
Ensure operation is undertaken outdoors. Avoid carrying out operation for more than 1 hour.

Spraying/fogging by machine application. Operation is carried out at elevated temperature (> 20°C above ambient temperature).
Ensure operation is undertaken outdoors. Limit the substance content in the product to 5%. Wear a respirator conforming to EN140 with type A/P2 filter or better. Automate activity where possible. Ensure operatives are trained to minimise exposures. Stay upwind/keep distance from source.

Manual applications, e.g. brush, roller.
Ensure operation is undertaken outdoors. Limit the substance content in the product to 5%.

Transfers in drums/batch. Special dedicated structure. Operation is carried out at elevated temperature (> 20°C above ambient temperature).
Ensure operation is undertaken outdoors. Avoid carrying out operation for more than 1 hour.

Spraying/fogging by machine application.
Ensure operation is undertaken outdoors. Avoid carrying out operation for more than 4 hours. Wear a respirator conforming to EN140 with type A/P2 filter or better. Wear chemically resistant gloves (tested to EN374) and provide specific employee training.

Enamelling, dipping and pouring.
Ensure operation is undertaken outdoors. Wear a respirator conforming to EN140 with type A/P2 filter or better.

Cleaning and maintenance of equipment
Ensure operation is undertaken outdoors. Store drainage liquids in sealed containers pending disposal or for subsequent recycling. Drain system before equipment downtime or maintenance.

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EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE - WORKERS

Exposure assessment (human)
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ENVIRONMENT
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HEALTH
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Additional indication of good practices in addition to the chemical safety assessment
Environment: Not available
Health: Not available