

FICHA DE DATOS DE SEGURIDAD
SEGÚN LOS REGLAMENTOS CE 1907/2006 (REACH),
1272/2008 (CLP) Y 2015/830

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SECCIÓN 1: IDENTIFICACIÓN DE LA SUSTANCIA/MEZCLA Y DE LA EMPRESA/ENTIDAD

1.1 Identificador del producto

Nombre del producto	Melamina
Nombre químico	2,4,6-triamino-1,3,5-triazina
Fórmula química	$C_3H_6N_6$
Número CAS	108-78-1
Número CE	203-615-4
Número registro REACH	01-2119485947-16-0017

1.2 Usos identificados relevantes de la sustancia o mezcla y usos no recomendados

Uso(s) identificado(s) La melamina ($C_3H_6N_6$) es un producto en forma de polvo blanco utilizado para la producción de una amplia variedad de resinas sintéticas.

- Formulación o reenvasado
- Uso como producto intermedio para resinas (melamina reactiva)
- Uso como aditivo en espumas
- Uso como aditivo en revestimientos intumescentes
- Espumas PU - Trabajadores (industrial)
- Revestimientos intumescentes - Trabajadores (industrial)
- Revestimientos intumescentes - Trabajadores profesionales

Usos no recomendados Adición en alimentos o piensos.

1.3 Detalles del proveedor de la ficha de datos de seguridad

Identificación de la empresa	Qatar Melamine Co
Dirección	P.O. Box 50001, Mesaieed, Qatar.
Teléfono	(+974) 44228888
E-mail	mktg@qafco.com.qa
Único representante de un fabricante no comunitario	
Identificación de la empresa	MUNTAJAT B.V.
Dirección	Prinses Margrietplantsoen 78-A 2595 BR, La Haya Países Bajos
Teléfono	+31(0)70 219 7000
E-mail	REACH@muntajatbv.com
Página web	www.muntajatbv.com

1.4 Número de teléfono de emergencia

Servicio de Información Toxicológica Nacional (Centro de Birmingham)	+44 (0) 111
En caso de derrame, fuga, incendio, exposición o accidente, llame a CHEMTREC de día o de noche	En EE.UU. y Canadá: 1-800-424-9300 Fuera de EE.UU. y Canadá: +1 703-741-5970 y +1-703-527-3887 (se aceptan llamadas a cobro revertido)

SECCIÓN 2: IDENTIFICACIÓN DE PELIGROS

2.1 Clasificación de la sustancia o mezcla

Reglamento (CE) N° 1272/2008 (CLP) Repr. 2 :Se sospecha que perjudica la fertilidad.

2.2 Elementos de la etiqueta

Nombre del producto Según Reglamento (CE) N° 1272/2008 (CLP)
Melamina.

Pictograma(s) de peligro



GHS08

Palabra(s) de señalización Advertencia

Declaración(es) de peligro H361f: Se sospecha que perjudica la fertilidad.

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Declaración(es) preventiva(s) P201: Recibir instrucciones especiales antes del uso.
P202: No manipular hasta haber leído y comprendido todas las precauciones de seguridad.
P280: Usar guantes protectores/ropa protectora/protección ocular/protección facial.
P308+P313: En caso de exposición o inquietud: Consultar a un médico.
P405: Guardar bajo llave.
P501: Eliminar el contenido conforme a la normativa local, regional o nacional.

2.3 Otros peligros

Puede ser peligroso si es ingerido.
El polvo puede tener un efecto irritante sobre la piel, los ojos y las vías respiratorias.

2.4 Información adicional

Ninguna.

SECCIÓN 3: COMPOSICIÓN/INFORMACIÓN SOBRE LOS INGREDIENTES

3.1 Sustancias

INGREDIENTE(S) PELIGROSO(S)	Número CAS	Número CE	% W/W	Declaración(es) de peligro	Pictograma(s) de peligro
Melamina	108-78-1	203-615-4 01-2119485947-16-0017	≥ 99	Repr. 2 H361f	GHS08

3.2 Mezclas

No aplicable.

SECCIÓN 4: MEDIDAS DE PRIMEROS AUXILIOS

4.1 Descripción de las medidas de primeros auxilios

Inhalación En caso de dificultades para respirar, transportar a la víctima al exterior y mantenerla en reposo en una posición confortable para respirar. Si los síntomas persisten, consultar a un médico.

Contacto con la piel En caso de contacto con la piel, lavar inmediatamente con abundante agua y jabón.

Contacto con los ojos Enjuagar los ojos durante varios minutos con abundante agua (retirar las lentes de contacto si es posible y fácil) y consultar a un médico.

Ingestión Si es ingerido, enjuagar la boca con agua (solo si la persona está consciente).

4.2 Síntomas y efectos más importantes, agudos y tardíos

El polvo puede tener un efecto irritante sobre la piel, los ojos y las vías respiratorias.

4.3 Indicación de atención médica inmediata y tratamiento especial

En caso de exposición o inquietud: Consultar a un médico.

SECCIÓN 5: MEDIDAS CONTRAINCENDIOS

5.1 Medios de extinción

Medios de extinción adecuados Extinguir con dióxido de carbono, producto químico seco, espuma o aspersión de agua.

Medios de extinción no adecuados Chorro de agua.

5.2 Peligros especiales derivados de la sustancia o mezcla

Se descompone en el fuego desprendiendo gases tóxicos: monóxido de carbono, dióxido de carbono, óxidos de nitrógeno. La melamina desprende amoníaco si se calienta por encima de los 500 °C.

5.3 Consejo para los bomberos

Los bomberos deben llevar ropa de protección completa, incluido un equipo de respiración autónomo.

SECCIÓN 6: MEDIDAS EN CASO DE VERTIDO ACCIDENTAL

6.1 Precauciones personales, equipo de protección y procedimientos de emergencia

Garantizar una buena ventilación. Garantizar la protección individual adecuada

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(incluida protección respiratoria) durante la eliminación del vertido. Evitar la generación de polvo. Evitar respirar polvo.

6.2 Precauciones medioambientales

Evitar que penetre en los desagües, alcantarillas o cursos de agua.

6.3 Métodos y material para la contención y limpieza

Barrer las sustancias derramadas y depositarlas en contenedores, si conviene humedecidos primero para evitar el polvo. Recoger con cuidado el resto. No lave el vertido con agua ya que la zona quedaría resbaladiza y bloquearía el alcantarillado.

6.4 Referencia a otras secciones

Véase también la sección 8, 13.

SECCIÓN 7: MANIPULACIÓN Y ALMACENAMIENTO

7.1 Precauciones para una manipulación segura

Recibir instrucciones especiales antes del uso. No manipular hasta haber leído y comprendido todas las precauciones de seguridad. Garantizar una buena ventilación. Evitar la generación de polvo. Evitar respirar polvo. Usar guantes protectores/ropa protectora/protección ocular/protección facial. Lavarse bien las manos y la piel expuesta después de manipularlo.

7.2 Condiciones para un almacenamiento seguro, incluidas incompatibilidades

Mantener alejado de la luz directa del sol. Guardar bajo llave. Guardar en un lugar seco. Mantener el contenedor bien cerrado.

Temperatura de almacenamiento

Ambiente.

Periodo de conservación

Estable en condiciones normales.

Materiales incompatibles

Fuertemente ácidos. Agentes oxidantes fuertes.

7.3 Uso(s) final(es) específico(s)

- Formulación o reenvasado
- Uso como producto intermedio para resinas (melamina reactiva)
- Uso como aditivo en espumas
- Uso como aditivo en revestimientos intumescentes
- Espumas PU - Trabajadores (industrial)
- Revestimientos intumescentes - Trabajadores (industrial)
- Revestimientos intumescentes - Trabajadores profesionales

SECCIÓN 8: CONTROLES DE EXPOSICIÓN/PROTECCIÓN INDIVIDUAL

8.1 Parámetros de control

8.1.1 Límites de exposición profesional

SUSTANCIA	Número CAS	LTEL (8 hr TWA ppm)	LTEL (8 hr TWA mg/m³)	STEL (ppm)	STEL (mg/m³)	Nota
Melamina	108-78-1					Ninguno asignado

Fuente: UK Workplace Exposure Limits EH40/2005 (cuarta edición, publicado en 2020), Reino Unido

8.1.2 Valor límite biológico

No establecido.

8.1.3 PNEC y DNEL

DNEL / DMEL	Oral	Inhalación	Cutáneo
Industria - Largo plazo - Efectos locales			
Industria - Largo plazo - Efectos sistémicos		8,3 mg/m³	11,8 mg/kg bw/día
Industria - Corto plazo - Efectos locales			
Industria - Corto plazo - Efectos sistémicos		82,3 mg/m³	117 mg/kg bw/día
Consumidor - Largo plazo - Efectos locales			
Consumidor - Largo plazo - Efectos sistémicos	0,42 mg/kg bw/día	1,5 mg/m³	4,2 mg/kg bw/día
Consumidor - Corto plazo - Efectos locales			
Consumidor - Corto plazo - Efectos sistémicos			

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Medioambiente	PNEC
Compartimento acuático (incluidos sedimentos)	Agua dulce: 0,51 mg/l Emisión intermitente: 2 mg/l Agua marina: 0,051 mg/l Agua dulce (sedimento): 2,524 mg/kg dw Agua marina (sedimento) 0,252 mg/kg dw
Compartimento terrestre	Planta depuradora: 200 mg/l
Compartimento atmosférico	Suelo: 0,206 mg/kg dw

8.2 Controles de exposición

8.2.1. Controles de ingeniería adecuados Garantizar una buena ventilación.

8.2.2. Equipo de protección individual

Protección ocular Usar gafas de protección (gafas protectoras, protector facial o gafas de seguridad).

Protección cutánea Usar guantes protectores.
Tiempo de penetración del material de los guantes: consultar la información facilitada por el fabricante de los guantes.

Protección respiratoria Debe llevarse una máscara antipolvo homologada si se genera polvo durante la manipulación.

Riesgos térmicos No aplicable.

8.2.3. Controles de exposición medioambiental Evitar que penetre en los desagües, alcantarillas o cursos de agua.

SECCIÓN 9: PROPIEDADES FÍSICAS Y QUÍMICAS

9.1 Información sobre las principales propiedades físicas y químicas

Aspecto	Polvo. Color : Blanco.
Olor	Inodoro.
Umbral de olor	No establecido.
pH	7,5-8,5 (solución acuosa), 20 g/l a 20°C
Punto de fusión/punto de congelación	354°C (No se congela, se solidifica)
Punto de ebullición inicial e intervalo de ebullición	>354°C (Sublimación)
Punto de ignición	No aplicable.
Tasa de evaporación	No aplicable.
Inflamabilidad (sólido, gas)	No inflamable.
Límite superior/inferior de inflamabilidad o explosivo	No disponible.
Presión de vapor	4,7 x 1,0E-8 Pa a 20°C
Densidad de vapor	No aplicable.
Densidad (g/ml)	1.570 kg/m³
Densidad relativa	1,57
Solubilidad(es)	Solubilidad (agua): Ligeramente soluble: 3,48 g/l a 20°C Solubilidad (otros): Apenas soluble: Acetona (0,3 g/l), Etanol (0,6 g/l), Dimetilformamida (0,1 g/l), Soluble: Etil Cellosolve (11,2 g/l) a 30°C
Coeficiente de partición: n-octanol/agua	-1,22 a 20°C
Temperatura de autoignición	>500°C
Temperatura de descomposición (°C)	>354°C
Viscosidad	No aplicable.
Propiedades explosivas	No explosivo.
Propiedades oxidantes	No oxidante.

9.2 Otra información

Constante de disociación	6,7 pKa a 20°C
Peso molecular	126,12 g/mol

SECCIÓN 10: ESTABILIDAD Y REACTIVIDAD

10.1 Reactividad

Estable en condiciones normales.

10.2 Estabilidad química

Estable en condiciones normales.

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10.3 Posibilidad de reacciones peligrosas

No hay reacciones peligrosas conocidas si se utiliza para la finalidad prevista.

10.4 Condiciones que hay que evitar

Mantener alejado de la humedad.

10.5 Materiales incompatibles

Fuertemente ácidos. Agentes oxidantes fuertes.

10.6 Productos de descomposición peligrosos

No se conocen productos de descomposición peligrosos.

SECCIÓN 11: INFORMACIÓN TOXICOLÓGICA

11.1 Información sobre los efectos toxicológicos

Toxicidad aguda - Ingestión	Puede ser peligroso si es ingerido. LD50 (rata): 3.161 mg/kg
Toxicidad aguda - Contacto con la piel	Baja toxicidad aguda.
Toxicidad aguda - Inhalación	Baja toxicidad aguda. LC50 (rata): >5.190 mg/m ³
Corrosión/irritación cutánea	No clasificado.
Daño/irritación ocular grave	No clasificado.
Datos de sensibilización cutánea	No es sensibilizante para la piel.
Datos de sensibilización respiratoria	No clasificado.
Mutagenicidad en células germinales	No hay evidencias de potencial mutagénico.
Carcinogenicidad	No clasificable respecto a su carcinogenicidad para humanos. LOAEL (oral): 126 mg/kg bw/día (crónico, rata, vejiga). Se observaron aumentos significativos estadísticamente hablando de la incidencia de carcinoma de células transicionales e incidencias combinadas de carcinoma de células transicionales y papiloma en la vejiga urinaria en ratas macho expuestas a 4.500 ppm de melamina (aprox. 263 mg/kg bw/día), pero no cuando se exponían a 2.250 ppm de melamina. Con una excepción, se observaron cálculos en la vejiga en ratas macho que tenían carcinomas de células transicionales. Las ratas hembra no desarrollaron tumores ni siquiera al exponerlas a 9.000 ppm. No se observaron resultados neoplásicos relacionados con el tratamiento en ratones macho o hembra. No demostrado en humanos.
Toxicidad reproductiva	Se sospecha que perjudica la fertilidad en ratas macho. NOAEL (oral): 89 mg/kg bw/día (subcrónico, 168 horas/semana rata). Se detectaron efectos adversos en el sistema reproductivo masculino en un EOGRTS realizado conforme a OCDE TG 443 en ratas, siguiendo el número de decisión ECHA TPE-D-2114373433-50-01. Se observó degeneración/atrofia tubular en los testículos con restos celulares mínimos en el epidídimo en los machos F0 y F1. También se observó un aumento de las anomalías del esperma (cabezas separadas) en los machos F0 y F1.
Lactancia	Ninguno previsto.
STOT - una sola exposición	No clasificado.
STOT - exposición repetida	No clasificado.
Peligro de aspiración	Ninguno previsto.

11.2 Otra información

El polvo puede tener un efecto irritante sobre la piel, los ojos y las vías respiratorias.

SECCIÓN 12: INFORMACIÓN ECOLÓGICA

12.1 Toxicidad

Aguda	Baja toxicidad para los organismos acuáticos. LC50 (Daphnia magna): 200 mg/l
Crónica	NOEC (Gobio de cabeza gorda (Pimephales promelas)): 5,1 mg/l NOEC (Daphnia magna): 11 mg/l
Algas	EC50 Agua dulce: 325 mg/l NOEC Agua dulce: 98 mg/l

12.2 Persistencia y degradabilidad

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Esta sustancia no es fácilmente biodegradable. No se espera que sea inherentemente biodegradable.

12.3 Potencial bioacumulativo

La sustancia no tiene potencial de bioacumulación.
Factor de bioconcentración (BCF): 3,8 L/kg ww

12.4 Movilidad en el suelo

Se prevé que la sustancia tenga una movilidad moderada en el suelo.

12.5 Resultados de la evaluación PBT y vPvB

No clasificado como PBT o vPvB.

12.6 Otros efectos adversos

No conocidos.

SECCIÓN 13: CONSIDERACIONES SOBRE LA ELIMINACIÓN

13.1 Métodos de tratamiento de los residuos

Eliminar los contenedores vacíos y residuos con seguridad. Recuperar y reciclar a ser posible.

13.2 Información adicional

La eliminación debe realizarse conforme a la normativa local, regional o nacional.

SECCIÓN 14: INFORMACIÓN DE TRANSPORTE

No clasificado como peligroso para el transporte.

14.1 Número ONU

No aplicable

14.2 Denominación adecuada de envío ONU

No aplicable

14.3 Clase(s) de peligros para el transporte

No aplicable

14.4 Grupo de embalaje

No aplicable

14.5 Peligros medioambientales

No clasificado como contaminante marítimo.

14.6 Precauciones especiales para el usuario

No conocidas

14.7 Transporte a granel conforme al Anexo II de Marpol y el Código IBC

No conocido

SECCIÓN 15: INFORMACIÓN REGLAMENTARIA

15.1 Reglamentación y legislación en materia de seguridad, salud y medioambiente para la sustancia o mezcla

Reglamentos europeos - Autorizaciones y/o restricciones de uso

Lista de sustancias extremadamente preocupantes propuestas para su autorización

REACH: ANEXO XIV Lista de sustancias sujetas a autorización

REACH: Anexo XVII Restricciones de fabricación, comercialización y uso de algunas sustancias, mezclas y artículos

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peligrosos

Plan de acción móvil comunitario (CoRAP) No incluido

Reglamento (CE) N° 850/2004 del No incluido

Parlamento Europeo y el Consejo sobre los contaminantes orgánicos persistentes

Reglamento (CE) N° 1005/2009 sobre No incluido

sustancias que agotan la capa de ozono

Reglamento (UE) N° 649/2012 del No incluido

Parlamento Europeo y el Consejo sobre

la importación y exportación de

productos químicos peligrosos

Regulaciones nacionales

Estado del inventario

Incluido en: Australia, Canadá (DSL), China, Japón, Corea, Taiwán, Nueva Zelanda (HSNO) – Aprobación HSNO: HSR002503, Nueva Zelanda (NZIoC), Filipinas.

15.2 Evaluación de la seguridad química

Se ha llevado a cabo una evaluación REACH de la seguridad química.

SECCIÓN 16: OTRA INFORMACIÓN

Las siguientes secciones contienen revisiones o nuevas declaraciones: 1-16

LEYENDA

Pictograma(s) de peligro



GHS08

Clasificación del peligro

Repr. 2: Toxicidad reproductiva, Categoría 2

Declaración(es) de peligro

H361f: Se sospecha que perjudica la fertilidad.

Declaración(es) preventiva(s)

P201: Recibir instrucciones especiales antes del uso.
P202: No manipular hasta haber leído y comprendido todas las precauciones de seguridad.
P280: Usar guantes protectores/ropa protectora/protección ocular/protección facial.
P308+P313: En caso de exposición o inquietud: Consultar a un médico.
P405: Guardar bajo llave.
P501: Eliminar el contenido conforme a la normativa local, regional o nacional.

Acrónimos

CAS: Chemical Abstracts Service
CLP: Reglamento (CE) N° 1272/2008 sobre clasificación, etiquetado y envasado de sustancias y mezclas
DNEL: Nivel sin efecto derivado
CE: Comunidad Europea
LTEL: Límite de exposición a largo plazo
PBT: Persistente, Bioacumulativo y Tóxico
PNEC: Concentración prevista sin efecto
REACH: Registro, Evaluación, Autorización y Restricción de Sustancias Químicas
STEL: Límite de exposición a corto plazo
STOT: Toxicidad específica en determinados órganos
vPvB: muy persistente y muy bioacumulativo

Avisos legales

La información recogida en esta publicación y facilitada a los usuarios se considera exacta y se proporciona de buena fe, pero son los usuarios los que deben cerciorarse de la adecuación del producto para sus fines particulares.
Qatar Melamine Co no garantiza la adecuación del producto para ninguna finalidad particular y se excluye cualquier garantía o condición (legal o de otro tipo) excepto

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cuando la exclusión esté prohibida por ley.

Qatar Melamine Co no se hará responsable de las pérdidas o daños como resultado de confiar en esta información (excepto de los derivados del fallecimiento o lesiones personales provocados por un producto defectuoso, si queda demostrado). No se puede asumir la libertad en el ámbito de las patentes, copyright y diseños.

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(eSDS)
 Melamina

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1. Exposure Scenario 1: Formulation or re-packaging - Formulation or re-packaging

SECTION 1:		Title of exposure scenario
		Formulation or re-packaging
Contributing scenario controlling environmental exposure		
CS1	Formulation or re-packaging	ERC2
Contributing scenario controlling worker exposure		
CS2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions	PROC2
CS3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions	PROC3
CS4	Chemical production where opportunity for exposure arises	PROC4
CS5	Mixing or blending in batch processes	PROC5
CS6	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities	PROC8a
CS7	Transfer of substance or mixture (charging and discharging) at dedicated facilities	PROC8b
CS8	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)	PROC9
CS9	Tabletting, compression, extrusion, pelletisation, granulation	PROC14
CS10	Use as laboratory reagent	PROC15
CS11	Hand-mixing with intimate contact and only PPE available	PROC19
CS12	Manual maintenance (cleaning and repair) of machinery	PROC28
SECTION 2:		Conditions of use
2.1	Contributing scenario controlling environmental exposure: 1.1 Formulation or re-packaging (ERC 2)	
Amount used, frequency and duration of use (or from service life)		
Daily use amount at site: not relevant for the assessment as scenario specific releases are estimated Annual use amount at site: not relevant for the assessment as scenario specific releases are estimated		
Conditions and measures related to biological sewage treatment plant		
Biological STP: Standard [Effectiveness, Water: 0.169%] Discharge rate of STP: >= 2E3 m3/day Application of the STP sludge on agricultural soil: Yes		
Other given operational conditions affecting environmental exposure		
Receiving surface water flow: >= 1.8E4 m3/day		
2.2	Contributing scenario controlling worker exposure: 1.2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC 2)	
Product characteristics		
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)		
Frequency and duration of use		
Duration of activity: <= 8 h/day		
Technical conditions and measures to control dispersion from source towards the worker		
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]		
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]		

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Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.3	Contributing scenario controlling worker exposure: 1.3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC 3)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.4	Contributing scenario controlling worker exposure: 1.4 Chemical production where opportunity for exposure arises (PROC 4)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.5	Contributing scenario controlling worker exposure: 1.5 Mixing or blending in batch processes (PROC 5)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced	

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Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.6	Contributing scenario controlling worker exposure: 1.6 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.7	Contributing scenario controlling worker exposure: 1.7 Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC 8b)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.8	Contributing scenario controlling worker exposure: 1.8 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC 9)
Product characteristics	

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Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.9	Contributing scenario controlling worker exposure: 1.9 Tableting, compression, extrusion, pelletisation, granulation (PROC 14)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]	
Place of use: Indoor Operating temperature: <= 40 °C	
2.10	Contributing scenario controlling worker exposure: 1.10 Use as laboratory reagent (PROC 15)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]	
2.11	Contributing scenario controlling worker exposure: 1.11 Hand-mixing with intimate contact and only PPE available (PROC 19)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 %	

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Physical form of the used product: Solid (medium dusty form)		
Frequency and duration of use		
Duration of activity: <= 8 h/day		
Technical conditions and measures to control dispersion from source towards the worker		
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]		
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374 with specific activity training) and (other) appropriate dermal protection [Effectiveness, Dermal: 95%]		
Other given operational conditions affecting workers exposure		
Place of use: Indoor Operating temperature: <= 40 °C		
2.12	Contributing scenario controlling worker exposure: 1.12 Manual maintenance (cleaning and repair) of machinery (PROC 28)	
Product characteristics		
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)		
Frequency and duration of use		
Duration of activity: <= 8 h/day		
Technical conditions and measures to control dispersion from source towards the worker		
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]		
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]		
Other given operational conditions affecting workers exposure		
Place of use: Indoor Operating temperature: <= 40 °C		
SECTION 3:	1.13 Exposure estimation	
3.1. Environment		
Release	Release estimation method	Explanations
Water	Estimated release rate	Local release rate: 5 kg/day
Air	Estimated release rate	Local release rate: 1 kg/day
Non-Agricultural Soil	Estimated release factor	Release factor after on-site RMM: 0%
Protection target	Exposure concentration	Risk quantification (RCR)
Fresh water	Local PEC: 0.255 mg/l	0.5
Sedimentation (Fresh water)	Local PEC: 1.26 mg/kg dw	0.5
Marine water	Local PEC: 0.0255 mg/l	0.5
Sedimentation (Marine water)	Local PEC: 0.126 mg/kg dw	0.5
Sewage Treatment Plant	Local PEC: 2.496 mg/l	0.01
Agricultural soil	Local PEC: 0.029 mg/kg dw	0.14
Man via Environment - Inhalation (Systemic effects)	Concentration in air: 7.8E-5 mg/m³	< 0.01

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Man via Environment - Oral	Exposure via food consumption: 0.017 mg/kg bw/day	0.04
Man via Environment - Combined routes		0.04
3.2. Worker		
Contributing scenario controlling worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC 2)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.5 mg/m ³	0.06
Inhalation, Systemic effects, Acute	2 mg/m ³	0.024
Dermal, Systemic effects, Long Term	1.37 mg/kg bw/day	0.116
Combined routes, Systemic effects, Long Term		0.176
Contributing scenario controlling worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC 3)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	1 mg/m ³	0.12
Inhalation, Systemic effects, Acute	4 mg/m ³	0.049
Dermal, Systemic effects, Long Term	0.69 mg/kg bw/day	0.058
Combined routes, Systemic effects, Long Term		0.179
Contributing scenario controlling worker exposure: Chemical production where opportunity for exposure arises (PROC 4)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m ³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	1.372 mg/kg bw/day	0.116
Combined routes, Systemic effects, Long Term		0.719
Contributing scenario controlling worker exposure: Mixing or blending in batch processes (PROC 5)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m ³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835
Contributing scenario controlling worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m ³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835
Contributing scenario controlling worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8b)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	1 mg/m ³	0.12
Inhalation, Systemic effects, Acute	4 mg/m ³	0.049
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.353

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Contributing scenario controlling worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC 9)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m³	0.602
Inhalation, Systemic effects, Acute	20 mg/m³	0.243
Dermal, Systemic effects, Long Term	1.372 mg/kg bw/day	0.116
Combined routes, Systemic effects, Long Term		0.719
Contributing scenario controlling worker exposure: Tableting, compression, extrusion, pelletisation, granulation (PROC 14)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	1 mg/m³	0.12
Inhalation, Systemic effects, Acute	4 mg/m³	0.049
Dermal, Systemic effects, Long Term	3.43 mg/kg bw/day	0.291
Combined routes, Systemic effects, Long Term		0.411
Contributing scenario controlling worker exposure: Use as laboratory reagent (PROC 15)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.5 mg/m³	0.06
Inhalation, Systemic effects, Acute	2 mg/m³	0.024
Dermal, Systemic effects, Long Term	0.34 mg/kg bw/day	0.029
Combined routes, Systemic effects, Long Term		0.089
Contributing scenario controlling worker exposure: Hand-mixing with intimate contact and only PPE available (PROC 19)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	3 mg/m³	0.361
Inhalation, Systemic effects, Acute	20 mg/m³	0.243
Dermal, Systemic effects, Long Term	7.072 mg/kg bw/day	0.599
Combined routes, Systemic effects, Long Term		0.961
Contributing scenario controlling worker exposure: Manual maintenance (cleaning and repair) of machinery (PROC 28)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m³	0.602
Inhalation, Systemic effects, Acute	20 mg/m³	0.243
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835
SECTION 4:	1.14 Guidance to DU to evaluate whether he works inside the boundaries set by the ES	
<u>Remarks on exposure data from external estimation tools:</u> ECETOC TRA Workers 3.1: Explanation: The exposure estimates for PROC 8a are used, as TRA Workers cannot predict exposure for PROC 28 and these estimates can be considered suitable for estimating exposures during manual maintenance.		

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2. Exposure Scenario 2: Use at industrial sites - Use as intermediate for resins (reacted melamine)

SECTION 1:		Title of exposure scenario
		Use at industrial sites - Use as intermediate for resins (reacted melamine)
Contributing scenario controlling environmental exposure		
CS1	Use as intermediate for resins (reacted melamine)	ERC6a, ERC6c
Contributing scenario controlling worker exposure		
CS2	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions	PROC1
CS3	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions	PROC2
CS4	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions	PROC3
CS5	Chemical production where opportunity for exposure arises	PROC4
CS6	Mixing or blending in batch processes	PROC5
CS7	Calendering operations	PROC6
CS8	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities	PROC8a
CS9	Transfer of substance or mixture (charging and discharging) at dedicated facilities	PROC8b
CS10	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)	PROC9
CS11	Tabletting, compression, extrusion, pelletisation, granulation	PROC14
CS12	Use as laboratory reagent	PROC15
CS13	Manual maintenance (cleaning and repair) of machinery	PROC28
SECTION 2:		Conditions of use
2.1	Contributing scenario controlling environmental exposure: 2.1 Use as intermediate for resins (reacted melamine) (ERC 6a; ERC 6c)	
Amount used, frequency and duration of use (or from service life)		
Daily use amount at site: not relevant for the assessment as scenario specific releases are estimated Annual use amount at site: not relevant for the assessment as scenario specific releases are estimated		
Conditions and measures related to biological sewage treatment plant		
Biological STP: Standard [Effectiveness, Water: 0.169%] Discharge rate of STP: >= 2E3 m3/day Application of the STP sludge on agricultural soil: Yes		
Other given operational conditions affecting environmental exposure		
Receiving surface water flow: >= 1.8E4 m3/day		
2.2	Contributing scenario controlling worker exposure: 2.2 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC 1)	
Product characteristics		
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)		
Frequency and duration of use		
Duration of activity: <= 8 h/day		
Technical conditions and measures to control dispersion from source towards the worker		
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]		
Conditions and measures related to personal protection, hygiene and health evaluation		

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Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.3	Contributing scenario controlling worker exposure: 2.3 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC 2)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.4	Contributing scenario controlling worker exposure: 2.4 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC 3)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.5	Contributing scenario controlling worker exposure: 2.5 Chemical production where opportunity for exposure arises (PROC 4)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	

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Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.6	Contributing scenario controlling worker exposure: 2.6 Mixing or blending in batch processes (PROC 5)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.7	Contributing scenario controlling worker exposure: 2.7 Calendering operations (PROC 6)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374 with basic employee training) and (other) appropriate dermal protection [Effectiveness, Dermal: 90%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.8	Contributing scenario controlling worker exposure: 2.8 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a)

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Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.9	Contributing scenario controlling worker exposure: 2.9 Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC 8b)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.10	Contributing scenario controlling worker exposure: 2.10 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC 9)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%]	

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Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.11	Contributing scenario controlling worker exposure: 2.11 Tableting, compression, extrusion, pelletisation, granulation (PROC 14)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.12	Contributing scenario controlling worker exposure: 2.12 Use as laboratory reagent (PROC 15)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.13	Contributing scenario controlling worker exposure: 2.13 Manual maintenance (cleaning and repair) of machinery (PROC 28)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]	

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Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]		
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]		
Other given operational conditions affecting workers exposure		
Place of use: Indoor Operating temperature: <= 40 °C		
SECTION 3:	2.14 Exposure estimation	
3.1. Environment		
Release	Release estimation method	Explanations
Water	Estimated release rate	Local release rate: 3 kg/day
Air	Estimated release rate	Local release rate: 0.5 kg/day
Non-Agricultural Soil	Estimated release factor	Release factor after on-site RMM: 0%
Protection target	Exposure concentration	Risk quantification (RCR)
Fresh water	Local PEC: 0.155 mg/l	0.3
Sedimentation (Fresh water)	Local PEC: 1.26 mg/kg dw	0.3
Marine water	Local PEC: 0.0255 mg/l	0.3
Sedimentation (Marine water)	Local PEC: 0.126 mg/kg dw	0.3
Sewage Treatment Plant	Local PEC: 2.496 mg/l	< 0.01
Agricultural soil	Local PEC: 0.029 mg/kg dw	0.08
Man via Environment - Inhalation (Systemic effects)	Concentration in air: 7.8E-5 mg/m³	< 0.01
Man via Environment - Oral	Exposure via food consumption: 0.017 mg/kg bw/day	0.04
Man via Environment - Combined routes		0.02
3.2. Worker		
Contributing scenario controlling worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC 1)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.01 mg/m³	< 0.01
Inhalation, Systemic effects, Acute	0.04 mg/m³	< 0.01
Dermal, Systemic effects, Long Term	0.034 mg/kg bw/day	< 0.01
Combined routes, Systemic effects, Long Term		< 0.01
Contributing scenario controlling worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC 2)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.5 mg/m³	0.06
Inhalation, Systemic effects, Acute	2 mg/m³	0.024
Dermal, Systemic effects, Long Term	1.37 mg/kg bw/day	0.116
Combined routes, Systemic effects, Long Term		0.176
Contributing scenario controlling worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC 3)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	1 mg/m³	0.12

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Inhalation, Systemic effects, Acute	4 mg/m ³	0.049
Dermal, Systemic effects, Long Term	0.69 mg/kg bw/day	0.058
Combined routes, Systemic effects, Long Term		0.179
Contributing scenario controlling worker exposure: Chemical production where opportunity for exposure arises (PROC 4)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m ³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	1.372 mg/kg bw/day	0.116
Combined routes, Systemic effects, Long Term		0.719
Contributing scenario controlling worker exposure: Mixing or blending in batch processes (PROC 5)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m ³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835
Contributing scenario controlling worker exposure: Calendering operations (PROC 6)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m ³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	2.743 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835
Contributing scenario controlling worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m ³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835
Contributing scenario controlling worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8b)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	1 mg/m ³	0.12
Inhalation, Systemic effects, Acute	4 mg/m ³	0.049
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.353
Contributing scenario controlling worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC 9)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m ³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	1.372 mg/kg bw/day	0.116
Combined routes, Systemic effects, Long Term		0.719
Contributing scenario controlling worker exposure: Tabletting, compression, extrusion, pelletisation, granulation		

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(PROC 14)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	1 mg/m³	0.12
Inhalation, Systemic effects, Acute	4 mg/m³	0.049
Dermal, Systemic effects, Long Term	3.43 mg/kg bw/day	0.291
Combined routes, Systemic effects, Long Term		0.411
Contributing scenario controlling worker exposure: Use as laboratory reagent (PROC 15)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.5 mg/m³	0.06
Inhalation, Systemic effects, Acute	2 mg/m³	0.024
Dermal, Systemic effects, Long Term	0.34 mg/kg bw/day	0.029
Combined routes, Systemic effects, Long Term		0.089
Contributing scenario controlling worker exposure: Manual maintenance (cleaning and repair) of machinery (PROC 28)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m³	0.602
Inhalation, Systemic effects, Acute	20 mg/m³	0.243
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835
SECTION 4:	2.15 Guidance to DU to evaluate whether he works inside the boundaries set by the ES	
Remarks on exposure data from external estimation tools: ECETOC TRA Workers 3.1: Explanation: The exposure estimates for PROC 8a are used, as TRA Workers cannot predict exposure for PROC 28 and these estimates can be considered suitable for estimating exposures during manual maintenance.		

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3. Exposure Scenario 3: Use at industrial sites - Use of resins with unreacted residual melamine

SECTION 1:		Title of exposure scenario
		Use at industrial sites - Use of resins with unreacted residual melamine
Contributing scenario controlling environmental exposure		
CS1	Use of resins with unreacted residual melamine	ERC5
Contributing scenario controlling worker exposure		
CS2	Industrial spraying	PROC7
CS3	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities	PROC8a
CS4	Transfer of substance or mixture (charging and discharging) at dedicated facilities	PROC8b
CS5	Roller application or brushing	PROC10
CS6	Hand-mixing with intimate contact and only PPE available	PROC19
CS7	Manual maintenance (cleaning and repair) of machinery	PROC28
SECTION 2:		Conditions of use
2.1		Contributing scenario controlling environmental exposure: 3.1 Use of resins with unreacted residual melamine (ERC 5)
Amount used, frequency and duration of use (or from service life)		
Daily use amount at site: not relevant for the assessment as scenario specific releases are estimated Annual use amount at site: not relevant for the assessment as scenario specific releases are estimated		
Conditions and measures related to biological sewage treatment plant		
Biological STP: Standard [Effectiveness, Water: 0.169%] Discharge rate of STP: >= 2E3 m3/day Application of the STP sludge on agricultural soil: Yes		
Other given operational conditions affecting environmental exposure		
Receiving surface water flow: >= 1.8E4 m3/day		
2.2		Contributing scenario controlling worker exposure: 3.2 Industrial spraying (PROC 7)
Product characteristics		
Percentage (w/w) of substance in mixture/article: <= 5 % Physical form of the used product: Liquid		
Frequency and duration of use		
Duration of activity: <= 8 h/day		
Technical conditions and measures to control dispersion from source towards the worker		
Ventilation working room: General ventilation (mechanical) Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]		
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]		
Other given operational conditions affecting workers exposure		
Place of use: Indoor Operating temperature: <= 40 °C		
2.3		Contributing scenario controlling worker exposure: 3.3 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a)
Product characteristics		
Percentage (w/w) of substance in mixture/article: <= 5 %		

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Physical form of the used product: Liquid	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.4	Contributing scenario controlling worker exposure: 3.4 Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC 8b)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 5 % Physical form of the used product: Liquid	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.5	Contributing scenario controlling worker exposure: 3.5 Roller application or brushing (PROC 10)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 5 % Physical form of the used product: Liquid	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
Ventilation working room: General ventilation (mechanical) Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	

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2.6	Contributing scenario controlling worker exposure: 3.6 Hand-mixing with intimate contact and only PPE available (PROC 19)		
Product characteristics			
Percentage (w/w) of substance in mixture/article: <= 5 % Physical form of the used product: Liquid			
Frequency and duration of use			
Duration of activity: <= 8 h/day			
Technical conditions and measures to control dispersion from source towards the worker			
Ventilation working room: General ventilation (mechanical) Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]			
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]			
Other given operational conditions affecting workers exposure			
Place of use: Indoor Operating temperature: <= 40 °C			
2.7	Contributing scenario controlling worker exposure: 3.7 Manual maintenance (cleaning and repair) of machinery (PROC 28)		
Product characteristics			
Percentage (w/w) of substance in mixture/article: <= 5 % Physical form of the used product: Liquid			
Frequency and duration of use			
Duration of activity: <= 8 h/day			
Technical conditions and measures to control dispersion from source towards the worker			
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]			
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]			
Other given operational conditions affecting workers exposure			
Place of use: Indoor Operating temperature: <= 40 °C			
SECTION 3:		3.8 Exposure estimation	
3.1. Environment			
Release		Release estimation method	Explanations
Water		Estimated release rate	Local release rate: 0.5 kg/day
Air		Estimated release rate	Local release rate: 0 kg/day
Non-Agricultural Soil		Estimated release factor	Release factor after on-site RMM: 0%
Protection target		Exposure concentration	Risk quantification (RCR)
Fresh water		Local PEC: 0.03 mg/l	0.06
Sedimentation (Fresh water)		Local PEC: 0.148 mg/kg dw	0.06
Marine water		Local PEC: 3E-3 mg/l	0.06
Sedimentation (Marine water)		Local PEC: 0.015 mg/kg dw	0.06
Sewage Treatment Plant		Local PEC: 0.25 mg/l	< 0.01

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

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Dermal, Systemic effects, Long Term	2.74 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.245
SECTION 4:	3.9 Guidance to DU to evaluate whether he works inside the boundaries set by the ES	
<u>Remarks on exposure data from external estimation tools:</u> Stoffenmanager 8: Explanation: Inhalation exposure concentration estimated using Stoffenmanager® (version 8) - Activity/type of task: Handling of liquids at high pressure resulting in substantial generation of mist or spray/haze - Distance to task: In the breathing zone of the worker (distance head-product < 1 m) (worst-case assumption) - Local controls: No control measures at the source - Ventilation working room: General ventilation (mechanical) - Volume of the working room: 100-1000 m3 - Regular cleaning of work area (daily): Yes - Regular inspection and maintenance (at least monthly): Yes - Presence of secondary emission sources (worst-case assumptions); Other workers using the same substance simultaneously: Yes A period of evaporation, drying or curing after the activity (with prolonged emission of vapours): Yes The concentration that can be inhaled by the worker during the task due to the activity undertaken is obtained. As the task is performed for 8 hours, the daily average concentration equals the task concentration. In accordance with the ECHA Guidance (Chapter R.14), this estimated concentration is therefore considered to be the short-term as well as the long-term inhalation exposure estimate (90th percentiles). ECETOC TRA Workers 3.1: Explanation: As solid is used as value for CSA, while liquid is used, it is considered appropriate to refine the exposure estimates, using the standalone version of TRA Workers (v3.1). The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-8 Pa (as calculated by Chesar). Stoffenmanager 8: Explanation: Inhalation exposure concentration estimated using Stoffenmanager® (version 8) - Activity/type of task: Handling of liquids on large surfaces or large work pieces - Distance to task: In the breathing zone of the worker (distance head-product < 1 m) (worst-case assumption) - Local controls: No control measures at the source - Ventilation working room: General ventilation (mechanical) - Volume of the working room: 100-1000 m3 - Regular cleaning of work area (daily): Yes - Regular inspection and maintenance (at least monthly): Yes - Presence of secondary emission sources (worst-case assumptions); Other workers using the same substance simultaneously: Yes A period of evaporation, drying or curing after the activity (with prolonged emission of vapours): Yes The concentration that can be inhaled by the worker during the task due to the activity undertaken is obtained. As the task is performed for 8 hours, the daily average concentration equals the task concentration. In accordance with the ECHA Guidance (Chapter R.14), this estimated concentration is therefore considered to be the short-term as well as the long-term inhalation exposure estimate (90th percentiles). Stoffenmanager 8: Explanation: Inhalation exposure concentration estimated using Stoffenmanager® (version 8) - Activity/type of task: Handling of liquids using low pressure, low speed or on medium-sized surfaces - Distance to task: In the breathing zone of the worker (distance head-product < 1 m) (worst-case assumption) - Local controls: No control measures at the source - Ventilation working room: General ventilation (mechanical) - Volume of the working room: 100-1000 m3 - Regular cleaning of work area (daily): Yes - Regular inspection and maintenance (at least monthly): Yes - Presence of secondary emission sources (worst-case assumptions); Other workers using the same substance simultaneously: Yes A period of evaporation, drying or curing after the activity (with prolonged emission of vapours): Yes The concentration that can be inhaled by the worker during the task due to the activity undertaken is obtained. As the task is performed for 8 hours, the daily average concentration equals the task concentration. In accordance with the ECHA Guidance (Chapter R.14), this estimated concentration is therefore considered to be the short-term as well as the long-term inhalation exposure estimate (90th percentiles). ECETOC TRA Workers 3.1:		

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

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

SECTION 1:		Title of exposure scenario
		Use at industrial sites - Use as intermediate for the production of other substances e.g. melamine salt (reacted melamine)
Contributing scenario controlling environmental exposure		
CS1	Use as intermediate for the production of other substances e.g. melamine salt (reacted melamine)	ERC6a
Contributing scenario controlling worker exposure		
CS2	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions	PROC1
CS3	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions	PROC2
CS4	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions	PROC3
CS5	Chemical production where opportunity for exposure arises	PROC4
CS6	Mixing or blending in batch processes	PROC5
CS7	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities	PROC8a
CS8	Transfer of substance or mixture (charging and discharging) at dedicated facilities	PROC8b
CS9	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)	PROC9
CS10	Use as laboratory reagent	PROC15
CS11	Manual maintenance (cleaning and repair) of machinery	PROC28
SECTION 2:		Conditions of use
2.1	Contributing scenario controlling environmental exposure: 4.1 Use as intermediate for the production of other substances e.g. melamine salt (reacted melamine) (ERC 6a)	
Amount used, frequency and duration of use (or from service life)		
Daily use amount at site: not relevant for the assessment as scenario specific releases are estimated Annual use amount at site: not relevant for the assessment as scenario specific releases are estimated		
Conditions and measures related to biological sewage treatment plant		
Biological STP: Standard [Effectiveness, Water: 0.169%] Discharge rate of STP: >= 2E3 m3/day Application of the STP sludge on agricultural soil: Yes		
Other given operational conditions affecting environmental exposure		
Receiving surface water flow: >= 1.8E4 m3/day		
2.2	Contributing scenario controlling worker exposure: 4.2 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC 1)	
Product characteristics		
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)		
Frequency and duration of use		
Duration of activity: <= 8 h/day		
Technical conditions and measures to control dispersion from source towards the worker		
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]		

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Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.3	Contributing scenario controlling worker exposure: 4.3 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC 2)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.4	Contributing scenario controlling worker exposure: 4.4 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC 3)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.5	Contributing scenario controlling worker exposure: 4.5 Chemical production where opportunity for exposure arises (PROC 4)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	

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Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.6	Contributing scenario controlling worker exposure: 4.6 Mixing or blending in batch processes (PROC 5)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.7	Contributing scenario controlling worker exposure: 4.7 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	

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2.8	Contributing scenario controlling worker exposure: 4.8 Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC 8b)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.9	Contributing scenario controlling worker exposure: 4.9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC 9)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.10	Contributing scenario controlling worker exposure: 4.10 Use as laboratory reagent (PROC 15)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	

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Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]		
Other given operational conditions affecting workers exposure		
Place of use: Indoor Operating temperature: <= 40 °C		
2.11	Contributing scenario controlling worker exposure: 4.11 Manual maintenance (cleaning and repair) of machinery (PROC 28)	
Product characteristics		
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)		
Frequency and duration of use		
Duration of activity: <= 8 h/day		
Technical conditions and measures to control dispersion from source towards the worker		
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]		
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]		
Other given operational conditions affecting workers exposure		
Place of use: Indoor Operating temperature: <= 40 °C		
SECTION 3:	4.12 Exposure estimation	
3.1. Environment		
Release	Release estimation method	Explanations
Water	Estimated release rate	Local release rate: 3 kg/day
Air	Estimated release rate	Local release rate: 0.5 kg/day
Non-Agricultural Soil	Estimated release factor	Release factor after on-site RMM: 0%
Protection target	Exposure concentration	Risk quantification (RCR)
Fresh water	Local PEC: 0.155 mg/l	0.3
Sedimentation (Fresh water)	Local PEC: 0.766 mg/kg dw	0.3
Marine water	Local PEC: 0.0155 mg/l	0.3
Sedimentation (Marine water)	Local PEC: 0.077 mg/kg dw	0.3
Sewage Treatment Plant	Local PEC: 1.497 mg/l	< 0.01
Agricultural soil	Local PEC: 0.02917 mg/kg dw	0.08
Man via Environment - Inhalation (Systemic effects)	Concentration in air: 3.97E-5 mg/m³	< 0.01
Man via Environment - Oral	Exposure via food consumption: 9.7E-3 mg/kg bw/day	0.02
Man via Environment – Combined routes		0.02
3.2. Worker		
Contributing scenario controlling worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC 1)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.01 mg/m³	< 0.01

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Inhalation, Systemic effects, Acute	0.04 mg/m ³	< 0.01
Dermal, Systemic effects, Long Term	0.034 mg/kg bw/day	< 0.01
Combined routes, Systemic effects, Long Term		< 0.01
Contributing scenario controlling worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC 2)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.5 mg/m ³	0.06
Inhalation, Systemic effects, Acute	2 mg/m ³	0.024
Dermal, Systemic effects, Long Term	1.37 mg/kg bw/day	0.116
Combined routes, Systemic effects, Long Term		0.176
Contributing scenario controlling worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC 3)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	1 mg/m ³	0.12
Inhalation, Systemic effects, Acute	4 mg/m ³	0.049
Dermal, Systemic effects, Long Term	0.69 mg/kg bw/day	0.058
Combined routes, Systemic effects, Long Term		0.179
Contributing scenario controlling worker exposure: Chemical production where opportunity for exposure arises (PROC 4)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m ³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	1.372 mg/kg bw/day	0.116
Combined routes, Systemic effects, Long Term		0.719
Contributing scenario controlling worker exposure: Mixing or blending in batch processes (PROC 5)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m ³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835
Contributing scenario controlling worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m ³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835
Contributing scenario controlling worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8b)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	1 mg/m ³	0.12
Inhalation, Systemic effects, Acute	4 mg/m ³	0.049
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.353

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Contributing scenario controlling worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC 9)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m³	0.602
Inhalation, Systemic effects, Acute	20 mg/m³	0.243
Dermal, Systemic effects, Long Term	1.372 mg/kg bw/day	0.116
Combined routes, Systemic effects, Long Term		0.719
Contributing scenario controlling worker exposure: Use as laboratory reagent (PROC 15)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.5 mg/m³	0.06
Inhalation, Systemic effects, Acute	2 mg/m³	0.024
Dermal, Systemic effects, Long Term	0.34 mg/kg bw/day	0.029
Combined routes, Systemic effects, Long Term		0.089
Contributing scenario controlling worker exposure: Manual maintenance (cleaning and repair) of machinery (PROC 28)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m³	0.602
Inhalation, Systemic effects, Acute	20 mg/m³	0.243
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835
SECTION 4:	4.13 Guidance to DU to evaluate whether he works inside the boundaries set by the ES	
<u>Remarks on exposure data from external estimation tools:</u> ECETOC TRA Workers 3.1: Explanation: The exposure estimates for PROC 8a are used, as TRA Workers cannot predict exposure for PROC 28 and these estimates can be considered suitable for estimating exposures during manual maintenance.		

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5. Exposure Scenario 5: Use at industrial sites - Use as additive in foams

SECTION 1:		Title of exposure scenario
		Use at industrial sites - Use as additive in foams
Contributing scenario controlling environmental exposure		
CS1	Use as additive in foams	ERC5
Contributing scenario controlling worker exposure		
CS2	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions	PROC1
CS3	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions	PROC2
CS4	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions	PROC3
CS5	Chemical production where opportunity for exposure arises	PROC4
CS6	Mixing or blending in batch processes	PROC5
CS7	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities	PROC8a
CS8	Transfer of substance or mixture (charging and discharging) at dedicated facilities	PROC8b
CS9	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)	PROC9
CS10	Use as laboratory reagent	PROC15
CS11	Hand-mixing with intimate contact and only PPE available	PROC19
CS12	Manual maintenance (cleaning and repair) of machinery	PROC28
Subsequent service life exposure scenario(s):		
ES8	Service life (worker at industrial site) - PU foams - Workers (industrial)	
ES11	Service life (consumers) - PU foams – Consumers	
SECTION 2:		Conditions of use
2.1		Contributing scenario controlling environmental exposure: 5.1 Use as additive in foams (ERC 5)
Amount used, frequency and duration of use (or from service life)		
Daily use amount at site: not relevant for the assessment as scenario specific releases are estimated Annual use amount at site: not relevant for the assessment as scenario specific releases are estimated		
Conditions and measures related to biological sewage treatment plant		
Biological STP: Standard [Effectiveness, Water: 0.169%] Discharge rate of STP: >= 2E3 m3/day Application of the STP sludge on agricultural soil: Yes		
Other given operational conditions affecting environmental exposure		
Receiving surface water flow: >= 1.8E4 m3/day		
2.2		Contributing scenario controlling worker exposure: 5.2 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC 1)
Product characteristics		
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)		
Frequency and duration of use		
Duration of activity: <= 8 h/day		
Technical conditions and measures to control dispersion from source towards the worker		
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]		

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Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.3	Contributing scenario controlling worker exposure: 5.3 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC 2)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.4	Contributing scenario controlling worker exposure: 5.4 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC 3)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.5	Contributing scenario controlling worker exposure: 5.5 Chemical production where opportunity for exposure arises (PROC 4)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 %	

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Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.6	Contributing scenario controlling worker exposure: 5.6 Mixing or blending in batch processes (PROC 5)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.7	Contributing scenario controlling worker exposure: 5.7 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	

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Place of use: Indoor Operating temperature: <= 40 °C	
2.8	Contributing scenario controlling worker exposure: 5.8 Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC 8b)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.9	Contributing scenario controlling worker exposure: 5.9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC 9)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.10	Contributing scenario controlling worker exposure: 5.10 Use as laboratory reagent (PROC 15)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%]	

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Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]		
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]		
Other given operational conditions affecting workers exposure		
Place of use: Indoor Operating temperature: <= 40 °C		
2.11	Contributing scenario controlling worker exposure: 5.11 Hand-mixing with intimate contact and only PPE available (PROC 19)	
Product characteristics		
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)		
Frequency and duration of use		
Duration of activity: <= 4 h/day		
Technical conditions and measures to control dispersion from source towards the worker		
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]		
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374 with specific activity training) and (other) appropriate dermal protection [Effectiveness, Dermal: 95%]		
Other given operational conditions affecting workers exposure		
Place of use: Indoor Operating temperature: <= 40 °C		
2.12	Contributing scenario controlling worker exposure: 5.12 Manual maintenance (cleaning and repair) of machinery (PROC 28)	
Product characteristics		
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)		
Frequency and duration of use		
Duration of activity: <= 8 h/day		
Technical conditions and measures to control dispersion from source towards the worker		
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]		
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]		
Other given operational conditions affecting workers exposure		
Place of use: Indoor Operating temperature: <= 40 °C		
SECTION 3:	5.13 Exposure estimation	
3.1. Environment		
Release	Release estimation method	Explanations
Water	Estimated release rate	Local release rate: 3 kg/day

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Air	Estimated release rate	Local release rate: 0.5 kg/day
Non-Agricultural Soil	Estimated release factor	Release factor after on-site RMM: 0%
Protection target	Exposure concentration	Risk quantification (RCR)
Fresh water	Local PEC: 0.155 mg/l	0.3
Sedimentation (Fresh water)	Local PEC: 0.766 mg/kg dw	0.3
Marine water	Local PEC: 0.0155 mg/l	0.3
Sedimentation (Marine water)	Local PEC: 0.077 mg/kg dw	0.3
Sewage Treatment Plant	Local PEC: 1.497 mg/l	< 0.01
Agricultural soil	Local PEC: 0.017 mg/kg dw	0.08
Man via Environment - Inhalation (Systemic effects)	Concentration in air: 3.971E-5 mg/m ³	< 0.01
Man via Environment - Oral	Exposure via food consumption: 9.7E-3 mg/kg bw/day	0.02
Man via Environment – Combined routes		0.02
3.2. Worker		
Contributing scenario controlling worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC 1)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.01 mg/m ³	< 0.01
Inhalation, Systemic effects, Acute	0.04 mg/m ³	< 0.01
Dermal, Systemic effects, Long Term	0.034 mg/kg bw/day	< 0.01
Combined routes, Systemic effects, Long Term		< 0.01
Contributing scenario controlling worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC 2)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.5 mg/m ³	0.06
Inhalation, Systemic effects, Acute	2 mg/m ³	0.024
Dermal, Systemic effects, Long Term	1.37 mg/kg bw/day	0.116
Combined routes, Systemic effects, Long Term		0.176
Contributing scenario controlling worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC 3)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	1 mg/m ³	0.12
Inhalation, Systemic effects, Acute	4 mg/m ³	0.049
Dermal, Systemic effects, Long Term	0.69 mg/kg bw/day	0.058
Combined routes, Systemic effects, Long Term		0.179
Contributing scenario controlling worker exposure: Chemical production where opportunity for exposure arises (PROC 4)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m ³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	1.372 mg/kg bw/day	0.116
Combined routes, Systemic effects, Long Term		0.719
Contributing scenario controlling worker exposure: Mixing or blending in batch processes (PROC 5)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)

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Inhalation, Systemic effects, Long Term	5 mg/m ³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835
Contributing scenario controlling worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m ³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835
Contributing scenario controlling worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8b)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	1 mg/m ³	0.12
Inhalation, Systemic effects, Acute	4 mg/m ³	0.049
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.353
Contributing scenario controlling worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC 9)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m ³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	1.372 mg/kg bw/day	0.116
Combined routes, Systemic effects, Long Term		0.719
Contributing scenario controlling worker exposure: Use as laboratory reagent (PROC 15)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.5 mg/m ³	0.06
Inhalation, Systemic effects, Acute	2 mg/m ³	0.024
Dermal, Systemic effects, Long Term	0.34 mg/kg bw/day	0.029
Combined routes, Systemic effects, Long Term		0.089
Contributing scenario controlling worker exposure: Hand-mixing with intimate contact and only PPE available (PROC 19)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	3 mg/m ³	0.361
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	7.072 mg/kg bw/day	0.599
Combined routes, Systemic effects, Long Term		0.961
Contributing scenario controlling worker exposure: Manual maintenance (cleaning and repair) of machinery (PROC 28)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m ³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835

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SECTION 4:	5.14 Guidance to DU to evaluate whether he works inside the boundaries set by the ES
<u>Remarks on exposure data from external estimation tools:</u> ECETOC TRA Workers 3.1: Explanation: The exposure estimates for PROC 8a are used, as TRA Workers cannot predict exposure for PROC 28 and these estimates can be considered suitable for estimating exposures during manual maintenance.	

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6. Exposure Scenario 6: Use at industrial sites - Use as additive in intumescent coatings

SECTION 1:		Title of exposure scenario
		Use at industrial sites - Use as additive in intumescent coatings
Contributing scenario controlling environmental exposure		
CS1	Use as additive in intumescent coatings	ERC5
Contributing scenario controlling worker exposure		
CS2	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions	PROC3
CS3	Chemical production where opportunity for exposure arises	PROC4
CS4	Mixing or blending in batch processes	PROC5
CS5	Industrial spraying with Local Exhaust Ventilation (LEV)	PROC7
CS6	Industrial spraying without Local Exhaust Ventilation (LEV)	PROC7
CS7	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities	PROC8a
CS8	Transfer of substance or mixture (charging and discharging) at dedicated facilities	PROC8b
CS9	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)	PROC9
CS10	Roller application or brushing	PROC10
CS11	Treatment of articles by dipping and pouring	PROC13
CS12	Use as laboratory reagent	PROC15
CS13	Hand-mixing with intimate contact and only PPE available	PROC19
CS14	Manual maintenance (cleaning and repair) of machinery	PROC28
Subsequent service life exposure scenario(s):		
ES9	Service life (worker at industrial site) - Intumescent coatings - Workers (industrial)	
ES10	Service life (professional worker) - Intumescent coatings - Professional Workers	
ES12	Service life (consumers) - Intumescent coating – Consumers	
SECTION 2:		Conditions of use
2.1		Contributing scenario controlling environmental exposure: 6.1 Use as additive in intumescent coatings (ERC 5)
Amount used, frequency and duration of use (or from service life)		
Daily use amount at site: not relevant for the assessment as scenario specific releases are estimated Annual use amount at site: not relevant for the assessment as scenario specific releases are estimated		
Conditions and measures related to biological sewage treatment plant		
Biological STP: Standard [Effectiveness, Water: 0.169%] Discharge rate of STP: >= 2E3 m3/day Application of the STP sludge on agricultural soil: Yes		
Other given operational conditions affecting environmental exposure		
Receiving surface water flow: >= 1.8E4 m3/day		
2.2		Contributing scenario controlling worker exposure: 6.2 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC 3)
Product characteristics		
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)		
Frequency and duration of use		
Duration of activity: <= 8 h/day		

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Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.3	Contributing scenario controlling worker exposure: 6.3 Chemical production where opportunity for exposure arises (PROC 4)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.4	Contributing scenario controlling worker exposure: 6.4 Mixing or blending in batch processes (PROC 5)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.5	Contributing scenario controlling worker exposure: 6.5 Industrial spraying with Local Exhaust Ventilation (LEV) (PROC 7)
Product characteristics	

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Percentage (w/w) of substance in mixture/article: <= 30 % Physical form of the used product: Liquid	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
Ventilation working room: General ventilation (mechanical) Occupational Health and Safety Management System: Advanced Local exhaust ventilation: Yes (TRA Effectiveness) [Effectiveness, Inhalation: 95%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.6	Contributing scenario controlling worker exposure: 6.6 Industrial spraying without Local Exhaust Ventilation (LEV) (PROC 7)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 30 % Physical form of the used product: Liquid	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
Ventilation working room: General ventilation (mechanical) Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: Yes (Respirator with APF of 10) [Effectiveness, Inhalation: 90%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.7	Contributing scenario controlling worker exposure: 6.7 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	

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Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.8	Contributing scenario controlling worker exposure: 6.8 Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC 8b)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.9	Contributing scenario controlling worker exposure: 6.9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC 9)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.10	Contributing scenario controlling worker exposure: 6.10 Roller application or brushing (PROC 10)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 30 % Physical form of the used product: Liquid	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	

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Ventilation working room: General ventilation (mechanical) Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.11	Contributing scenario controlling worker exposure: 6.11 Treatment of articles by dipping and pouring (PROC 13)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 30 % Physical form of the used product: Liquid	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.12	Contributing scenario controlling worker exposure: 6.12 Use as laboratory reagent (PROC 15)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.13	Contributing scenario controlling worker exposure: 6.13 Hand-mixing with intimate contact and only PPE available (PROC 19)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 30 %	

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Physical form of the used product: Liquid		
Frequency and duration of use		
Duration of activity: <= 8 h/day		
Technical conditions and measures to control dispersion from source towards the worker		
Ventilation working room: General ventilation (mechanical) Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]		
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374 with specific activity training) and (other) appropriate dermal protection [Effectiveness, Dermal: 95%]		
Other given operational conditions affecting workers exposure		
Place of use: Indoor Operating temperature: <= 40 °C		
2.14	Contributing scenario controlling worker exposure: 6.14 Manual maintenance (cleaning and repair) of machinery (PROC 28)	
Product characteristics		
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)		
Frequency and duration of use		
Duration of activity: <= 8 h/day		
Technical conditions and measures to control dispersion from source towards the worker		
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]		
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]		
Other given operational conditions affecting workers exposure		
Place of use: Indoor Operating temperature: <= 40 °C		
SECTION 3:	6.15 Exposure estimation	
3.1. Environment		
Release	Release estimation method	Explanations
Water	Estimated release rate	Local release rate: 3 kg/day
Air	Estimated release rate	Local release rate: 0.5 kg/day
Non-Agricultural Soil	Estimated release factor	Release factor after on-site RMM: 0%
Protection target	Exposure concentration	Risk quantification (RCR)
Fresh water	Local PEC: 0.155 mg/l	0.3
Sedimentation (Fresh water)	Local PEC: 0.766 mg/kg dw	0.3
Marine water	Local PEC: 0.0155 mg/l	0.3
Sedimentation (Marine water)	Local PEC: 0.077 mg/kg dw	0.3
Sewage Treatment Plant	Local PEC: 1.497 mg/l	< 0.01
Agricultural soil	Local PEC: 0.017 mg/kg dw	0.08
Man via Environment - Inhalation (Systemic effects)	Concentration in air: 3.97E-5 mg/m³	< 0.01

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Man via Environment - Oral	Exposure via food consumption: 9.7E-3 mg/kg bw/day	0.02
Man via Environment – Combined routes		0.02
3.2. Worker		
Contributing scenario controlling worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC 3)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	1 mg/m ³	0.12
Inhalation, Systemic effects, Acute	4 mg/m ³	0.049
Dermal, Systemic effects, Long Term	0.69 mg/kg bw/day	0.058
Combined routes, Systemic effects, Long Term		0.179
Contributing scenario controlling worker exposure: Chemical production where opportunity for exposure arises (PROC 4)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m ³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	1.372 mg/kg bw/day	0.116
Combined routes, Systemic effects, Long Term		0.719
Contributing scenario controlling worker exposure: Mixing or blending in batch processes (PROC 5)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m ³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835
Contributing scenario controlling worker exposure: Industrial spraying with Local Exhaust Ventilation (LEV) (PROC 7)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.4 mg/m ³	0.048
Inhalation, Systemic effects, Acute	0.4 mg/m ³	< 0.01
Dermal, Systemic effects, Long Term	8.572 mg/kg bw/day	0.726
Combined routes, Systemic effects, Long Term		0.775
Contributing scenario controlling worker exposure: Industrial spraying without Local Exhaust Ventilation (LEV) (PROC 7)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.795 mg/m ³	0.096
Inhalation, Systemic effects, Acute	0.795 mg/m ³	< 0.01
Dermal, Systemic effects, Long Term	8.572 mg/kg bw/day	0.726
Combined routes, Systemic effects, Long Term		0.822
Contributing scenario controlling worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m ³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835

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Contributing scenario controlling worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8b)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	1 mg/m ³	0.12
Inhalation, Systemic effects, Acute	4 mg/m ³	0.049
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.353
Contributing scenario controlling worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC 9)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m ³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	1.372 mg/kg bw/day	0.116
Combined routes, Systemic effects, Long Term		0.719
Contributing scenario controlling worker exposure: Roller application or brushing (PROC 10)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	3.59 mg/m ³	0.433
Inhalation, Systemic effects, Acute	3.59 mg/m ³	0.044
Dermal, Systemic effects, Long Term	5.486 mg/kg bw/day	0.465
Combined routes, Systemic effects, Long Term		0.897
Contributing scenario controlling worker exposure: Treatment of articles by dipping and pouring (PROC 13)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.525 mg/m ³	0.063
Inhalation, Systemic effects, Acute	0.525 mg/m ³	< 0.01
Dermal, Systemic effects, Long Term	2.743 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.296
Contributing scenario controlling worker exposure: Use as laboratory reagent (PROC 15)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.5 mg/m ³	0.06
Inhalation, Systemic effects, Acute	2 mg/m ³	0.024
Dermal, Systemic effects, Long Term	0.34 mg/kg bw/day	0.029
Combined routes, Systemic effects, Long Term		0.089
Contributing scenario controlling worker exposure: Hand-mixing with intimate contact and only PPE available (PROC 19)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	1.74 mg/m ³	0.21
Inhalation, Systemic effects, Acute	1.74 mg/m ³	0.021
Dermal, Systemic effects, Long Term	7.072 mg/kg bw/day	0.599
Combined routes, Systemic effects, Long Term		0.809
Contributing scenario controlling worker exposure: Manual maintenance (cleaning and repair) of machinery (PROC 28)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m ³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243

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Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835
SECTION 4:	6.16 Guidance to DU to evaluate whether he works inside the boundaries set by the ES	
<u>Remarks on exposure data from external estimation tools:</u> Stoffenmanager 8: Explanation: Inhalation exposure concentration estimated using Stoffenmanager® (version 8) - Activity/type of task: Handling of liquids at high pressure resulting in substantial generation of mist or spray/haze - Distance to task: In the breathing zone of the worker (distance head-product < 1 m) (worst-case assumption) - Local controls: No control measures at the source (refinement due to LEV done outside Stoffenmanager®, see below) - Ventilation working room: General ventilation (mechanical) - Volume of the working room: 100-1000 m3 - Regular cleaning of work area (daily): Yes - Regular inspection and maintenance (at least monthly): Yes - Presence of secondary emission sources (worst-case assumptions); Other workers using the same substance simultaneously: Yes A period of evaporation, drying or curing after the activity (with prolonged emission of vapours): Yes The concentration during the task due to the activity undertaken is estimated to be 7.95 mg/m3, resulting in an exposure concentration of 0.4 mg/m3 due to the use of LEV with an effectiveness of 95% (TRA effectiveness). As the task is performed for 8 hours, the daily average concentration equals the task concentration. In accordance with the ECHA Guidance (Chapter R.14), this estimated concentration is therefore considered to be the short-term as well as the long-term inhalation exposure estimate (90th percentiles). Stoffenmanager 8: Explanation: Inhalation exposure concentration estimated using Stoffenmanager® (version 8) - Activity/type of task: Handling of liquids at high pressure resulting in substantial generation of mist or spray/haze - Distance to task: In the breathing zone of the worker (distance head-product < 1 m) (worst-case assumption) - Local controls: No control measures at the source - Ventilation working room: General ventilation (mechanical) - Volume of the working room: 100-1000 m3 - Regular cleaning of work area (daily): Yes - Regular inspection and maintenance (at least monthly): Yes - Presence of secondary emission sources (worst-case assumptions); Other workers using the same substance simultaneously: Yes A period of evaporation, drying or curing after the activity (with prolonged emission of vapours): Yes The concentration during the task due to the activity undertaken is estimated to be 7.95 mg/m3, resulting in an exposure concentration of 0.795 mg/m3 due to the use of respiratory protection with an effectiveness of 90%. As the task is performed for 8 hours, the daily average concentration equals the task concentration. In accordance with the ECHA Guidance (Chapter R.14), this estimated concentration is therefore considered to be the short-term as well as the long-term inhalation exposure estimate (90th percentiles). Stoffenmanager 8: Explanation: Inhalation exposure concentration estimated using Stoffenmanager® (version 8) - Activity/type of task: Handling of liquids on large surfaces or large work pieces - Distance to task: In the breathing zone of the worker (distance head-product < 1 m) (worst-case assumption) - Local controls: No control measures at the source - Ventilation working room: General ventilation (mechanical) - Volume of the working room: 100-1000 m3 - Regular cleaning of work area (daily): Yes - Regular inspection and maintenance (at least monthly): Yes - Presence of secondary emission sources (worst-case assumptions); Other workers using the same substance simultaneously: Yes A period of evaporation, drying or curing after the activity (with prolonged emission of vapours): Yes The concentration that can be inhaled by the worker during the task due to the activity undertaken is obtained. As the task is performed for 8 hours, the daily average concentration equals the task concentration. In accordance with the ECHA Guidance (Chapter R.14), this estimated concentration is therefore considered to be the short-term as well as the long-term inhalation exposure estimate (90th percentiles). ECETOC TRA Workers 3.1: Explanation: As solid is used as value for CSA, while liquid is used, it is considered appropriate to refine the exposure estimates, using the standalone version of TRA Workers (v3.1). The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-8 Pa (as calculated by Chesar).		

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Stoffenmanager 8:

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

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

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

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

ECETOC TRA Workers 3.1:

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

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7. Exposure Scenario 7: Widespread use by professional workers - Use as additive in intumescent coatings

SECTION 1:		Title of exposure scenario
		Widespread use by professional workers - Use as additive in intumescent coatings
Contributing scenario controlling environmental exposure		
CS1	Use as additive in intumescent coatings	ERC5
Contributing scenario controlling worker exposure		
CS2	Mixing or blending in batch processes	PROC5
CS3	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities	PROC8a
CS4	Transfer of substance or mixture (charging and discharging) at dedicated facilities	PROC8b
CS5	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)	PROC9
CS6	Roller application or brushing	PROC10
	Non industrial spraying	PROC11
CS7	Treatment of articles by dipping and pouring	PROC13
CS8	Hand-mixing with intimate contact and only PPE available	PROC19
CS9	Manual maintenance (cleaning and repair) of machinery	PROC28
Subsequent service life exposure scenario(s):		
ES10	Service life (professional worker) - Intumescent coatings - Professional Workers	
ES12	Service life (consumers) - Intumescent coating – Consumers	
SECTION 2:		Conditions of use
2.1	Contributing scenario controlling environmental exposure: 7.1 Use as additive in intumescent coatings (ERC 8c, ERC 8f)	
Amount used, frequency and duration of use (or from service life)		
Daily local widespread use amount: not relevant for the assessment as scenario specific releases are estimated		
Conditions and measures related to biological sewage treatment plant		
Biological STP: Standard [Effectiveness, Water: 0.169%] Discharge rate of STP: >= 2E3 m3/day Application of the STP sludge on agricultural soil: Yes		
Other given operational conditions affecting environmental exposure		
Receiving surface water flow: >= 1.8E4 m3/day		
2.2	Contributing scenario controlling worker exposure: 7.2 Mixing or blending in batch processes (PROC 5)	
Product characteristics		
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)		
Frequency and duration of use		
Duration of activity: <= 8 h/day		
Technical conditions and measures to control dispersion from source towards the worker		
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Basic Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]		
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]		
Other given operational conditions affecting workers exposure		

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Place of use: Indoor Operating temperature: <= 40 °C	
2.3	Contributing scenario controlling worker exposure: 7.3 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 30 % Physical form of the used product: Liquid	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Basic Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.4	Contributing scenario controlling worker exposure: 7.4 Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC 8b)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Basic Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.5	Contributing scenario controlling worker exposure: 7.5 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC 9)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	

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General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Basic Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.6	Contributing scenario controlling worker exposure: 7.6 Roller application or brushing (PROC 10)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 30 % Physical form of the used product: Liquid	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
Ventilation working room: General ventilation (mechanical) Occupational Health and Safety Management System: Basic Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.7	Contributing scenario controlling worker exposure: 7.7 Non industrial spraying (PROC 11)
Product characteristics	
Percentage (w/w) of substance in mixture/article: <= 30 % Physical form of the used product: Liquid	
Frequency and duration of use	
Duration of activity: <= 8 h/day	
Technical conditions and measures to control dispersion from source towards the worker	
Ventilation working room: General ventilation (mechanical) Occupational Health and Safety Management System: Basic Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection: Yes (Respirator with APF of 20) [Effectiveness, Inhalation: 95%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374 with basic employee training) and (other) appropriate dermal protection [Effectiveness, Dermal: 90%]	
Other given operational conditions affecting workers exposure	
Place of use: Indoor Operating temperature: <= 40 °C	
2.8	Contributing scenario controlling worker exposure: 7.8 Treatment of articles by dipping and pouring (PROC 13)
Product characteristics	

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Percentage (w/w) of substance in mixture/article: <= 30 % Physical form of the used product: Liquid		
Frequency and duration of use		
Duration of activity: <= 8 h/day		
Technical conditions and measures to control dispersion from source towards the worker		
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Basic Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]		
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]		
Other given operational conditions affecting workers exposure		
Place of use: Indoor Operating temperature: <= 40 °C		
2.9	Contributing scenario controlling worker exposure: 7.9 Manual maintenance (cleaning and repair) of machinery (PROC 28)	
Product characteristics		
Percentage (w/w) of substance in mixture/article: <= 30 % Physical form of the used product: Liquid		
Frequency and duration of use		
Duration of activity: <= 8 h/day		
Technical conditions and measures to control dispersion from source towards the worker		
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Basic Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]		
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness, Dermal: 80%]		
Other given operational conditions affecting workers exposure		
Place of use: Indoor Operating temperature: <= 40 °C		
SECTION 3:		7.10 Exposure estimation
3.1. Environment		
Release	Release estimation method	Explanations
Water	Estimated release rate	Local release rate: 0 kg/day
Air	Estimated release rate	Local release rate: 0 kg/day
Non-Agricultural Soil	Estimated release factor	Release factor after on-site RMM: 0%
Protection target		Exposure concentration
Fresh water		Local PEC: 5.0E-3 mg/l
Sedimentation (Fresh water)		Local PEC: 0.025 mg/kg dw
Marine water		Local PEC: 5.0E-4 mg/l
Sedimentation (Marine water)		Local PEC: 2.4E-3 mg/kg dw
Sewage Treatment Plant		Local PEC: 0 mg/l
Agricultural soil		Local PEC: 2.52E-12 mg/kg dw
Man via Environment - Inhalation (Systemic		Concentration in air:
		< 0.01

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effects)	1.62E-21 mg/m ³	
Man via Environment - Oral	Exposure via food consumption: 1.74E-4 mg/kg bw/day	< 0.01
Man via Environment – Combined routes		< 0.01
3.2. Worker		
Contributing scenario controlling worker exposure: Mixing or blending in batch processes (PROC 5)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m ³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835
Contributing scenario controlling worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.525 mg/m ³	0.063
Inhalation, Systemic effects, Acute	0.525 mg/m ³	< 0.01
Dermal, Systemic effects, Long Term	2.743 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.296
Contributing scenario controlling worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8b)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m ³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	2.742 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.835
Contributing scenario controlling worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC 9)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m ³	0.602
Inhalation, Systemic effects, Acute	20 mg/m ³	0.243
Dermal, Systemic effects, Long Term	1.372 mg/kg bw/day	0.116
Combined routes, Systemic effects, Long Term		0.719
Contributing scenario controlling worker exposure: Roller application or brushing (PROC 10)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	3.61 mg/m ³	0.435
Inhalation, Systemic effects, Acute	3.61 mg/m ³	0.044
Dermal, Systemic effects, Long Term	5.486 mg/kg bw/day	0.465
Combined routes, Systemic effects, Long Term		0.9
Contributing scenario controlling worker exposure: Non industrial spraying (PROC 11)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.398 mg/m ³	0.048
Inhalation, Systemic effects, Acute	0.398 mg/m ³	< 0.01
Dermal, Systemic effects, Long Term	10.71 mg/kg bw/day	0.908
Combined routes, Systemic effects, Long Term		0.956

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Contributing scenario controlling worker exposure: Treatment of articles by dipping and pouring (PROC 13)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.525 mg/m³	0.063
Inhalation, Systemic effects, Acute	0.525 mg/m³	< 0.01
Dermal, Systemic effects, Long Term	2.743 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.296
Contributing scenario controlling worker exposure: Manual maintenance (cleaning and repair) of machinery (PROC 28)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	0.525 mg/m³	0.063
Inhalation, Systemic effects, Acute	0.525 mg/m³	< 0.01
Dermal, Systemic effects, Long Term	2.743 mg/kg bw/day	0.232
Combined routes, Systemic effects, Long Term		0.296
SECTION 4:		7.11 Guidance to DU to evaluate whether he works inside the boundaries set by the ES
<u>Remarks on exposure data from external estimation tools:</u> ECETOC TRA Workers 3.1: Explanation: As solid is used as value for CSA, while liquid is used, it is considered appropriate to refine the exposure estimates, using the standalone version of TRA Workers (v3.1). The vapour pressure at operating temperature (40°C) used for the calculation is 3.71E-8 Pa (as calculated by Chesar).		
Stoffenmanager 8: Explanation: Inhalation exposure concentration estimated using Stoffenmanager® (version 8) - Activity/type of task: Handling of liquids on large surfaces or large work pieces - Distance to task: In the breathing zone of the worker (distance head-product < 1 m) (worst-case assumption) - Local controls: No control measures at the source - Ventilation working room: General ventilation (mechanical) - Volume of the working room: 100-1000 m3 - Regular cleaning of work area (daily): No - Regular inspection and maintenance (at least monthly): No - Presence of secondary emission sources (worst-case assumptions); Other workers using the same substance simultaneously: Yes A period of evaporation, drying or curing after the activity (with prolonged emission of vapours): Yes The concentration that can be inhaled by the worker during the task due to the activity undertaken is obtained. As the task is performed for 8 hours, the daily average concentration equals the task concentration. In accordance with the ECHA Guidance (Chapter R.14), this estimated concentration is therefore considered to be the short-term as well as the long-term inhalation exposure estimate (90th percentiles).		
Stoffenmanager 8: Explanation: Inhalation exposure concentration estimated using Stoffenmanager® (version 8) - Activity/type of task: Handling of liquids at high pressure resulting in substantial generation of mist or spray/haze - Distance to task: In the breathing zone of the worker (distance head-product < 1 m) (worst-case assumption) - Local controls: No control measures at the source - Ventilation working room: General ventilation (mechanical) - Volume of the working room: 100-1000 m3 - Regular cleaning of work area (daily): No - Regular inspection and maintenance (at least monthly): No - Presence of secondary emission sources (worst-case assumptions); Other workers using the same substance simultaneously: Yes A period of evaporation, drying or curing after the activity (with prolonged emission of vapours): Yes The concentration during the task due to the activity undertaken is estimated to be 7.96 mg/m3, resulting in an exposure concentration of 0.398 mg/m3 due to the use of respiratory protection. As the task is performed for 8 hours, the daily average concentration equals the task concentration. In accordance with the ECHA Guidance (Chapter R.14), this estimated concentration is therefore considered to be the short-term as well as the long-term inhalation exposure estimate (90th percentiles).		
ECETOC TRA Workers 3.1:		

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

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8. Exposure Scenario 8: Service life (worker at industrial site) - PU foams - Workers (industrial)

SECTION 1:		Title of exposure scenario	
		Service life (worker at industrial site) - PU foams - Workers (industrial)	
Contributing scenario controlling environmental exposure			
CS1	PU foams - Workers (industrial)		ERC12a
Contributing scenario controlling worker exposure			
CS2	Low energy manipulation of substances bound in materials and/or articles		PROC21
CS3	High (mechanical) energy work-up of substances bound in materials and/or articles		PROC24
Exposure scenario(s) of the uses leading to the inclusion of the substance into the article(s):			
ES5	Use at industrial sites - Use as additive in foams		
SECTION 2:		Conditions of use	
2.1		Contributing scenario controlling environmental exposure: 8.1 PU foams - Workers (industrial) (ERC 12a)	
Amount used, frequency and duration of use (or from service life)			
Daily use amount at site: not relevant for the assessment as scenario specific releases are estimated Annual use amount at site: not relevant for the assessment as scenario specific releases are estimated			
Conditions and measures related to biological sewage treatment plant			
Biological STP: Standard [Effectiveness, Water: 0.169%] Discharge rate of STP: >= 2E3 m3/day Application of the STP sludge on agricultural soil: Yes			
Other given operational conditions affecting environmental exposure			
Receiving surface water flow: >= 1.8E4 m3/day			
2.2		Contributing scenario controlling worker exposure: 8.2 Low energy manipulation of substances bound in materials and/or articles (PROC 21)	
Product characteristics			
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)			
Frequency and duration of use			
Duration of activity: <= 8 h/day			
Technical conditions and measures to control dispersion from source towards the worker			
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]			
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]			
Other given operational conditions affecting workers exposure			
Place of use: Indoor Operating temperature: <= 40 °C			
2.3		Contributing scenario controlling worker exposure: 8.3 High (mechanical) energy work-up of substances bound in materials and/or articles (PROC 24)	
Product characteristics			
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)			
Frequency and duration of use			
Duration of activity: <= 8 h/day			

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Technical conditions and measures to control dispersion from source towards the worker		
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]		
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]		
Other given operational conditions affecting workers exposure		
Place of use: Indoor Operating temperature: <= 40 °C		
SECTION 3:	8.4 Exposure estimation	
3.1. Environment		
Release	Release estimation method	Explanations
Water	Estimated release rate	Local release rate: 0 kg/day
Air	Estimated release rate	Local release rate: 0 kg/day
Non-Agricultural Soil	Estimated release factor	Release factor after on-site RMM: 0%
Protection target	Exposure concentration	Risk quantification (RCR)
Fresh water	Local PEC: 5.0E-3 mg/l	0.01
Sedimentation (Fresh water)	Local PEC: 0.025 mg/kg dw	0.01
Marine water	Local PEC: 5.0E-4 mg/l	0.01
Sedimentation (Marine water)	Local PEC: 2.4E-3 mg/kg dw	0.01
Sewage Treatment Plant	Local PEC: 0 mg/l	< 0.01
Agricultural soil	Local PEC: 2.52E-12 mg/kg dw	< 0.01
Man via Environment - Inhalation (Systemic effects)	Concentration in air: 1.62E-21 mg/m³	< 0.01
Man via Environment - Oral	Exposure via food consumption: 1.74E-4 mg/kg bw/day	< 0.01
Man via Environment – Combined routes		< 0.01
3.2. Worker		
Contributing scenario controlling worker exposure: Mixing or blending in batch processes (PROC 5)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	3 mg/m³	0.361
Inhalation, Systemic effects, Acute	12 mg/m³	0.146
Dermal, Systemic effects, Long Term	2.83 mg/kg bw/day	0.24
Combined routes, Systemic effects, Long Term		0.601
Contributing scenario controlling worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	1 mg/m³	0.12
Inhalation, Systemic effects, Acute	4 mg/m³	0.049
Dermal, Systemic effects, Long Term	2.83 mg/kg bw/day	0.24
Combined routes, Systemic effects, Long Term		0.36
SECTION 4:	8.5 Guidance to DU to evaluate whether he works inside the boundaries set by the ES	
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.		

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

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9. Exposure Scenario 9: Service life (worker at industrial site) - Intumescent coatings - Workers (industrial)

SECTION 1:		Title of exposure scenario
		Service life (worker at industrial site) - Intumescent coatings - Workers (industrial)
Contributing scenario controlling environmental exposure		
CS1	Intumescent coatings - Workers (industrial)	ERC12a
Contributing scenario controlling worker exposure		
CS2	Low energy manipulation of substances bound in materials and/or articles	PROC21
CS3	High (mechanical) energy work-up of substances bound in materials and/or articles	PROC24
Exposure scenario(s) of the uses leading to the inclusion of the substance into the article(s):		
ES6	Use at industrial sites - Use as additive in intumescent coatings	
SECTION 2:		Conditions of use
2.1	Contributing scenario controlling environmental exposure: 9.1 Intumescent coatings - Workers (industrial) (ERC 12a)	
Amount used, frequency and duration of use (or from service life)		
Daily use amount at site: not relevant for the assessment as scenario specific releases are estimated		
Annual use amount at site: not relevant for the assessment as scenario specific releases are estimated		
Conditions and measures related to biological sewage treatment plant		
Biological STP: Standard [Effectiveness, Water: 0.169%] Discharge rate of STP: >= 2E3 m3/day Application of the STP sludge on agricultural soil: Yes		
Other given operational conditions affecting environmental exposure		
Receiving surface water flow: >= 1.8E4 m3/day		
2.2	Contributing scenario controlling worker exposure: 9.2 Low energy manipulation of substances bound in materials and/or articles (PROC 21)	
Product characteristics		
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)		
Frequency and duration of use		
Duration of activity: <= 8 h/day		
Technical conditions and measures to control dispersion from source towards the worker		
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]		
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]		
Other given operational conditions affecting workers exposure		
Place of use: Indoor Operating temperature: <= 40 °C		
2.3	Contributing scenario controlling worker exposure: 9.3 High (mechanical) energy work-up of substances bound in materials and/or articles (PROC 24)	
Product characteristics		
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)		
Frequency and duration of use		
Duration of activity: <= 8 h/day		

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Technical conditions and measures to control dispersion from source towards the worker		
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Advanced Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]		
Conditions and measures related to personal protection, hygiene and health evaluation		
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]		
Other given operational conditions affecting workers exposure		
Place of use: Indoor Operating temperature: <= 40 °C		
SECTION 3:	9.4 Exposure estimation	
3.1. Environment		
Release	Release estimation method	Explanations
Water	Estimated release rate	Local release rate: 0 kg/day
Air	Estimated release rate	Local release rate: 0 kg/day
Non-Agricultural Soil	Estimated release factor	Release factor after on-site RMM: 0%
Protection target	Exposure concentration	Risk quantification (RCR)
Fresh water	Local PEC: 5.0E-3 mg/l	0.01
Sedimentation (Fresh water)	Local PEC: 0.025 mg/kg dw	0.01
Marine water	Local PEC: 5.0E-4 mg/l	0.01
Sedimentation (Marine water)	Local PEC: 2.4E-3 mg/kg dw	0.01
Sewage Treatment Plant	Local PEC: 0 mg/l	< 0.01
Agricultural soil	Local PEC: 2.52E-12 mg/kg dw	< 0.01
Man via Environment - Inhalation (Systemic effects)	Concentration in air: 1.62E-21 mg/m³	< 0.01
Man via Environment - Oral	Exposure via food consumption: 1.74E-4 mg/kg bw/day	< 0.01
Man via Environment – Combined routes		< 0.01
3.2. Worker		
Contributing scenario controlling worker exposure: Low energy manipulation of substances bound in materials and/or articles (PROC 21)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	3 mg/m³	0.361
Inhalation, Systemic effects, Acute	12 mg/m³	0.146
Dermal, Systemic effects, Long Term	2.83 mg/kg bw/day	0.24
Combined routes, Systemic effects, Long Term		0.601
Contributing scenario controlling worker exposure: High (mechanical) energy work-up of substances bound in materials and/or articles (PROC 24)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	1 mg/m³	0.12
Inhalation, Systemic effects, Acute	4 mg/m³	0.049
Dermal, Systemic effects, Long Term	2.83 mg/kg bw/day	0.24
Combined routes, Systemic effects, Long Term		0.36
SECTION 4:	9.5 Guidance to DU to evaluate whether he works inside the boundaries set by the ES	
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are		

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managed to at least equivalent levels.

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

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10. Exposure Scenario 10: Service life (professional worker) - Intumescent coatings - Professional Workers

SECTION 1:		Title of exposure scenario	
		Service life (professional worker) - Intumescent coatings - Professional Workers	
Contributing scenario controlling environmental exposure			
CS1	Intumescent coatings - Professional Workers		ERC10a, ERC11a
Contributing scenario controlling worker exposure			
CS2	Low energy manipulation of substances bound in materials and/or articles		PROC21
Exposure scenario(s) of the uses leading to the inclusion of the substance into the article(s):			
ES6	Use at industrial sites - Use as additive in intumescent coatings		
ES7	Widespread use by professional workers - Use as additive in intumescent coatings		
SECTION 2:		Conditions of use	
2.1		Contributing scenario controlling environmental exposure: 10.1 Intumescent coatings - Professional Workers (ERC 10a, ERC 11a)	
Amount used, frequency and duration of use (or from service life)			
Daily local widespread use amount: not relevant for the assessment as scenario specific releases are estimated			
Conditions and measures related to biological sewage treatment plant			
Biological STP: Standard [Effectiveness, Water: 0.169%] Discharge rate of STP: >= 2E3 m3/day Application of the STP sludge on agricultural soil: Yes			
Other given operational conditions affecting environmental exposure			
Receiving surface water flow: >= 1.8E4 m3/day			
2.2		Contributing scenario controlling worker exposure: 10.2 Low energy manipulation of substances bound in materials and/or articles (PROC 21)	
Product characteristics			
Percentage (w/w) of substance in mixture/article: <= 100 % Physical form of the used product: Solid (medium dusty form)			
Frequency and duration of use			
Duration of activity: <= 8 h/day			
Technical conditions and measures to control dispersion from source towards the worker			
General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness, Inhalation: 0%] Occupational Health and Safety Management System: Basic Local exhaust ventilation: No [Effectiveness, Inhalation: 0%, Dermal: 0%]			
Conditions and measures related to personal protection, hygiene and health evaluation			
Respiratory protection: No [Effectiveness, Inhalation: 0%] Dermal protection: No [Effectiveness, Dermal: 0%]			
Other given operational conditions affecting workers exposure			
Place of use: Indoor Operating temperature: <= 40 °C			
SECTION 3:		10.3 Exposure estimation	
3.1. Environment			
Release	Release estimation method		Explanations
Water	Estimated release rate		Local release rate: 0 kg/day
Air	Estimated release rate		Local release rate: 0 kg/day
Non-Agricultural Soil	Estimated release factor		Release factor after on-site RMM: 0%
Protection target		Exposure concentration	Risk quantification (RCR)

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Fresh water	Local PEC: 5.0E-3 mg/l	0.01
Sedimentation (Fresh water)	Local PEC: 0.025 mg/kg dw	0.01
Marine water	Local PEC: 5.0E-4 mg/l	0.01
Sedimentation (Marine water)	Local PEC: 2.4E-3 mg/kg dw	0.01
Sewage Treatment Plant	Local PEC: 0 mg/l	< 0.01
Agricultural soil	Local PEC: 2.52E-12 mg/kg dw	< 0.01
Man via Environment - Inhalation (Systemic effects)	Concentration in air: 1.62E-21 mg/m³	< 0.01
Man via Environment - Oral	Exposure via food consumption: 1.74E-4 mg/kg bw/day	< 0.01
Man via Environment – Combined routes		< 0.01
3.2. Worker		
Contributing scenario controlling worker exposure: Low energy manipulation of substances bound in materials and/or articles (PROC 21)		
Exposure route	Exposure estimate - Worker	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	5 mg/m³	0.602
Inhalation, Systemic effects, Acute	20 mg/m³	0.243
Dermal, Systemic effects, Long Term	2.83 mg/kg bw/day	0.24
Combined routes, Systemic effects, Long Term		0.842
SECTION 4:	10.4 Guidance to DU to evaluate whether he works inside the boundaries set by the ES	
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling could be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use, additional RMMs or a site-specific chemical safety assessment is required.		

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

SECTION 1:		Title of exposure scenario	
		Service life (consumers) - PU foams – Consumers	
Contributing scenario controlling environmental exposure			
CS1	PU foams – Consumers		ERC10a, ERC11a
Contributing scenario controlling worker exposure			
CS2	Use of articles containing foam with encapsulated the substance		AC1, AC1a, AC 13, AC 13e
Exposure scenario(s) of the uses leading to the inclusion of the substance into the article(s):			
ES5	Use at industrial sites - Use as additive in foams		
SECTION 2:		Conditions of use	
2.1		Contributing scenario controlling environmental exposure: 11.1 PU foams – Consumers (ERC 10a, ERC 11a)	
Amount used, frequency and duration of use (or from service life)			
Daily local widespread use amount: not relevant for the assessment as scenario specific releases are estimated			
Conditions and measures related to biological sewage treatment plant			
Biological STP: Standard [Effectiveness, Water: 0.169%] Discharge rate of STP: >= 2E3 m3/day Application of the STP sludge on agricultural soil: Yes			
Other given operational conditions affecting environmental exposure			
Receiving surface water flow: >= 1.8E4 m3/day			
2.2		Contributing scenario controlling consumer exposure: 11.2 Use of articles containing foam with encapsulated the substance (AC1, AC1a, AC 13, AC13e)	
Product characteristics			
Percentage (w/w) of substance in mixture/article: <= 30 % Exposure via inhalation route: Inhalation exposure is considered to be not relevant Exposure via oral route: Oral exposure is considered to be not relevant			
SECTION 3:		11.3 Exposure estimation	
3.1. Environment			
Release		Release estimation method	Explanations
Water		Estimated release rate	Local release rate: 0 kg/day
Air		Estimated release rate	Local release rate: 0 kg/day
Non-Agricultural Soil		Estimated release factor	Release factor after on-site RMM: 0%
Protection target		Exposure concentration	Risk quantification (RCR)
Fresh water		Local PEC: 5.0E-3 mg/l	0.01
Sedimentation (Fresh water)		Local PEC: 0.025 mg/kg dw	0.01
Marine water		Local PEC: 5.0E-4 mg/l	0.01
Sedimentation (Marine water)		Local PEC: 2.4E-3 mg/kg dw	0.01
Sewage Treatment Plant		Local PEC: 0 mg/l	< 0.01
Agricultural soil		Local PEC: 2.52E-12 mg/kg dw	< 0.01
Man via Environment - Inhalation (Systemic effects)		Concentration in air: 1.62E-21 mg/m³	< 0.01
Man via Environment - Oral		Exposure via food consumption: 1.74E-4 mg/kg bw/day	< 0.01
Man via Environment – Combined routes			< 0.01

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3.2. Consumer		
Contributing scenario controlling consumer exposure: Use of articles containing foam with encapsulated the substance (AC1, AC1a, AC 13, AC13e)		
Exposure route	Exposure estimate - Consumer	Risk quantification (RCR)
Inhalation, Systemic effects, Long Term	Negligible (Migration study)	< 0.01
Dermal, Systemic effects, Long Term	0.1484 mg/kg bw/day: for a baby, when using additional sheets for mattress protection and comfort (Migration study)	0.035
	0.06375 mg/kg bw/day: for an adult, when using additional sheets for mattress protection and comfort (Migration study)	0.015
	0.6375 mg/kg bw/day: for an adult, when sleeping directly on the mattress cover (Migration study)	
	1.484 mg/kg bw/day: for a baby, when sleeping directly on the mattress cover (Migration study)	
Oral, Systemic effects, Long Term	Negligible (Migration study)	< 0.01
Combined routes, Systemic effects, Long Term		0.035 for a baby 0.015 for an adult
SECTION 4:	11.4 Guidance to DU to evaluate whether he works inside the boundaries set by the ES	
<u>Remarks on exposure data:</u> Migration study: Explanation: The substance is used in foam mattresses, as a non-halogenated flame retardant. The European association of flexible polyurethane foam blocks manufacturers (EUROPUR) commissioned a migration study, to evaluate the potential exposure of humans from melamine used in flexible PU foam used in mattresses. The study was submitted to ECHA by EUROPUR, as part of their response to the public consultation on the CLH report for melamine dated November 2019 and can be found on the ECHA website. Based on the vapour pressure of the substance and since mattresses are flat and not mouthed, inhalation and oral exposure are considered negligible, while potential dermal exposure is deemed the most relevant route of exposure due to the prolonged contact duration, with a large part of the body and the possible effect of sweat as a vehicle. The migration of melamine into synthetic sweat soaked filter papers from these foams was investigated. As a mattress typically consists of a PUR foam core surrounded with a fabric layer, migration was investigated with and without the use of a polyester-polypropylene mattress cover placed between the foam and filter paper. The set-up was compressed to 70% of its depth in order to simulate a person sleeping on the mattress and incubated at 40°C for 2 hours. When the foam was covered, a standard practice for every mattress with flexible PU foam, the migration was below the limit of detection (LOD) and LOD/2 was used as estimate for people sleeping directly on the mattress cover (0.6375 mg/kg bw/day for an adult and 1.484 for a baby). Note that this is a worst-case assessment as usually people don't sleep directly on the mattress cover but put additional sheets for additional mattress protection and comfort. When refined due to the use of additional sheets for mattress protection and comfort, the dermal exposure estimates were concluded to be 0.06375 for an adult and 0.1484 for a baby. Note that no melamine was detected when the mattress cover was included in the test set-up and that the calculations are therefore done based on the LOD/2.		

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12. Exposure Scenario 12: Service life (consumers) - Intumescent coating – Consumers

SECTION 1:		Title of exposure scenario	
		Service life (consumers) - Intumescent coating – Consumers	
Contributing scenario controlling environmental exposure			
CS1	Intumescent coating – Consumers		ERC10a, ERC11a
Contributing scenario controlling worker exposure			
CS2	Use of articles with intumescent coating with encapsulated the substance		AC13
Exposure scenario(s) of the uses leading to the inclusion of the substance into the article(s):			
ES6	Use at industrial sites - Use as additive in intumescent coatings		
ES7	Widespread use by professional workers - Use as additive in intumescent coatings		
SECTION 2:		Conditions of use	
2.1		Contributing scenario controlling environmental exposure: 12.1 Intumescent coating – Consumers (ERC 10a, ERC 11a)	
Amount used, frequency and duration of use (or from service life)			
Daily local widespread use amount: not relevant for the assessment as scenario specific releases are estimated			
Conditions and measures related to biological sewage treatment plant			
Biological STP: Standard [Effectiveness, Water: 0.169%] Discharge rate of STP: >= 2E3 m3/day Application of the STP sludge on agricultural soil: Yes			
Other given operational conditions affecting environmental exposure			
Receiving surface water flow: >= 1.8E4 m3/day			
2.2		Contributing scenario controlling consumer exposure: 12.2 Use of articles with intumescent coating with encapsulated the substance (AC 13)	
Product characteristics			
Percentage (w/w) of substance in mixture/article: <= 30 % Exposure via inhalation route: Inhalation exposure is considered to be not relevant Exposure via dermal route: Dermal exposure assumed to be negligible Exposure via oral route: Oral exposure is considered to be not relevant			
SECTION 3:		12.3 Exposure estimation	
3.1. Environment			
Release		Release estimation method	Explanations
Water		Estimated release rate	Local release rate: 0 kg/day
Air		Estimated release rate	Local release rate: 0 kg/day
Non-Agricultural Soil		Estimated release factor	Release factor after on-site RMM: 0%
Protection target		Exposure concentration	Risk quantification (RCR)
Fresh water		Local PEC: 5.0E-3 mg/l	0.01
Sedimentation (Fresh water)		Local PEC: 0.025 mg/kg dw	0.01
Marine water		Local PEC: 5.0E-4 mg/l	0.01
Sedimentation (Marine water)		Local PEC: 2.4E-3 mg/kg dw	0.01
Sewage Treatment Plant		Local PEC: 0 mg/l	< 0.01
Agricultural soil		Local PEC: 2.52E-12 mg/kg dw	< 0.01
Man via Environment - Inhalation (Systemic effects)		Concentration in air: 1.62E-21 mg/m³	< 0.01
Man via Environment - Oral		Exposure via food consumption: 1.74E-4 mg/kg bw/day	< 0.01
Man via Environment – Combined routes			< 0.01

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3.2 Consumer	
Contributing scenario controlling consumer exposure: Use of articles with intumescent coating with encapsulated the substance (AC 13)	
As any (dermal) contact by consumers with these coatings will be incidental and as the substance is embedded in a matrix, inhalation, dermal and oral exposure (and therefore risks) are considered to be negligible.	
SECTION 4:	12.4 Guidance to DU to evaluate whether he works inside the boundaries set by the ES
<p>Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.</p> <p>Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling could be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use, additional RMMs or a site-specific chemical safety assessment is required.</p>	