SAFETY DATA SHEET

according to REACH Regulation (EC) No. 1907/2006, as amended by UK REACH Regulations SI 2019/758

Neopentyl glycol flake
10470

Version / Revision	6.01	**Revision Date**	26-Jan-2023
Supersedes Version	6.00***	**Issuing date**	26-Jan-2023

SECTION 1: Identification of the substance / mixture and of the company / undertaking

1.1. Product identifier

Identification of the substance/preparation **Neopentyl glycol flake**

Chemical Name 2,2-Dimethylpropane-1,3-diol
CAS-No 126-30-7
EC No. 204-781-0

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses
Intermediate
Formulation
Distribution of substance
laboratory chemicals
Polymerization
coatings
Road and construction applications

Uses advised against None

1.3. Details of the supplier of the safety data sheet

Company/Undertaking Identification
OQ Chemicals GmbH
Rheinpromenade 4A
D-40789 Monheim
Germany

Product Information
Product Stewardship
FAX: +49 (0)208 693 2053
email: sc.psq@oq.com

1.4. Emergency telephone number

Emergency telephone number +44 (0) 1235 239 670 (UK)
available 24/7

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

This substance is classified based on Directive 1272/2008/EC and its amendments (CLP Regulation)

Serious eye damage/eye irritation Category 1, H318

Additional information
For full text of Hazard- and EU Hazard-statements see SECTION 16.

2.2. Label elements

Labelling according to Regulation 1272/2008/EC and its amendments (CLP Regulation).

Hazard pictograms

Signal word	**Danger**
Hazard statements	H318: Causes serious eye damage.
Precautionary statements	P280: Wear protective gloves/protective clothing/eye protection/face protection. P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P310: Immediately call a POISON CENTER/doctor.

2.3. Other hazards

Dust can form an explosive mixture in air
Components of the product may be absorbed into the body by inhalation and ingestion

PBT and vPvB assessment	This substance is not considered to be persistent, bioaccumulating nor toxic (PBT), nor very persistent nor very bioaccumulating (vPvB)
Endocrine disrupting assessments	The substance is not listed on the candidate list according to Art. 59(1), REACh. The substance was not assessed as having endocrine disrupting properties according to regulation 2017/2100/EU or 2018/605/EU.

SECTION 3: Composition / information on ingredients

3.1. Substances

Component	CAS-No	1272/2008/EC	Concentration (%)
2,2-Dimethylpropane-1,3-diol	126-30-7	Eye Dam. 1; H318	> 99,0

For full text of Hazard- and EU Hazard-statements see SECTION 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation
Keep at rest. Aerate with fresh air. When symptoms persist or in all cases of doubt seek medical advice.

Skin
Wash off immediately with plenty of water. When symptoms persist or in all cases of doubt seek medical advice.

Eyes
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses. Immediate medical attention is required.

Ingestion

Call a physician immediately. Do not induce vomiting without medical advice.

4.2. Most important symptoms and effects, both acute and delayed

Main symptoms
cough.

Special hazard
Lung irritation.

4.3. Indication of any immediate medical attention and special treatment needed

General advice
Remove contaminated, soaked clothing immediately and dispose of safely. First aider needs to protect himself.

Treat symptomatically. If ingested, irrigate the stomach using activated charcoal.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media
foam, dry chemical, carbon dioxide (CO2), water spray

Unsuitable Extinguishing Media
Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

Under conditions giving incomplete combustion, hazardous gases produced may consist of:
carbon monoxide (CO)
carbon dioxide (CO2)
Combustion gases of organic materials must in principle be graded as inhalation poisons
Dust can form an explosive mixture in air

5.3. Advice for firefighters

Special protective equipment for firefighters
Fire fighter protection should include a self-contained breathing apparatus (NIOSH-approved or EN 133) and full fire-fighting turn out gear.

Precautions for firefighting
Cool containers / tanks with water spray. Dike and collect water used to fight fire. Keep people away from and upwind of fire.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel: For personal protective equipment see section 8. Avoid contact with skin and eyes. Do not breathe dust. Keep people away from and upwind of spill/leak. Ensure adequate ventilation, especially in confined areas. Keep away from heat and sources of ignition.
For emergency responders: Personal protection see section 8.

6.2. Environmental precautions

Prevent further leakage or spillage. Do not discharge product into the aquatic environment without pretreatment (biological treatment plant).

6.3. Methods and material for containment and cleaning up

Methods for containment
Stop the flow of material, if possible without risk. Dike spilled material, where this is possible.

Methods for cleaning up
Use mechanical handling equipment. Avoid dust formation. Keep in suitable, closed containers for disposal. Dispose of in accordance with local regulations. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours).

6.4. Reference to other sections

For personal protective equipment see section 8.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Further info may be available in the appropriate Exposure scenarios in the annex to this SDS.

Advice on safe handling
Avoid dust formation. Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. Provide sufficient air exchange and/or exhaust in work rooms.

Hygiene measures
When using, do not eat, drink or smoke. Take off all contaminated clothing immediately. Wash hands before breaks and immediately after handling the product.

Advice on the protection of the environment
See Section 8: Environmental exposure controls.

Incompatible products
strong oxidizing agents

7.2. Conditions for safe storage, including any incompatibilities

Advice on protection against fire and explosion
Risk of dust explosion in fine crystalline powder form. Dust can form an explosive mixture in air. Keep away from sources of ignition - No smoking. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). In case of fire, emergency cooling with water spray should be available. Ground and bond containers when transferring material.

Technical measures/Storage conditions
Keep containers tightly closed in a cool, well-ventilated place. Handle and open container with care. Protect from moisture.

Temperature class
T2

7.3. Specific end use(s)

Intermediate

Formulation
Distribution of substance
laboratory chemicals
Polymerization
coatings
Road and construction applications
For specific end use information see the annex of this safety data sheet

SECTION 8: Exposure controls / personal protection

8.1. Control parameters

Exposure limits European Union

No exposure limits established

Exposure limits UK

EH40 WELs

Component	TWA (mg/m³)	TWA (ppm)	STEL (mg/m³)	STEL (ppm)
Dust, general threshold limit value (inhalable fraction) CAS: -	10			
Dust, general threshold limit value (respirable fraction) CAS: -	4			

Note
For details and further information please refer to the original regulation.

DNEL & PNEC

2,2-Dimethylpropane-1,3-diol, CAS: 126-30-7
Workers

DN(M)EL - long-term exposure - systemic effects - Inhalation	35 mg/m³
DN(M)EL - acute / short-term exposure - systemic effects - Inhalation	Low hazard (no threshold derived)
DN(M)EL - long-term exposure - local effects - Inhalation	No hazard identified
DN(M)EL - acute / short-term exposure - local effects - Inhalation	No hazard identified
DN(M)EL - long-term exposure - systemic effects - Dermal	10 mg/kg bw/day
DN(M)EL - acute / short-term exposure - systemic effects - Dermal	No hazard identified
DN(M)EL - long-term exposure - local effects - Dermal	No hazard identified
DN(M)EL - acute / short-term exposure - local effects - Dermal	No hazard identified
DN(M)EL - local effects - eyes	Medium hazard (no threshold derived)

General population

DN(M)EL - long-term exposure - systemic effects - Inhalation	8,7 mg/m³
DN(M)EL - acute / short-term exposure - systemic effects - Inhalation	Low hazard (no threshold derived)

DN(M)EL - long-term exposure - local effects - Inhalation	No hazard identified
DN(M)EL - acute / short-term exposure - local effects - Inhalation	No hazard identified
DN(M)EL - long-term exposure - systemic effects - Dermal	5 mg/kg bw/day
DN(M)EL - acute / short-term exposure - systemic effects - Dermal	No hazard identified
DN(M)EL - long-term exposure - local effects - Dermal	No hazard identified
DN(M)EL - acute / short-term exposure - local effects - Dermal	No hazard identified
DN(M)EL - long-term exposure - systemic effects - Oral	5 mg/kg bw/day
DN(M)EL - acute / short-term exposure - systemic effects - Oral	Low hazard (no threshold derived)
DN(M)EL - local effects - eyes	Medium hazard (no threshold derived)

Environment

PNEC aqua - freshwater	5 mg/l
PNEC aqua - marine water	0,5 mg/l
PNEC aqua - intermittent releases	5 mg/l
PNEC STP	20 mg/l
PNEC sediment - freshwater	18,5 mg/kg dw
PNEC sediment - marine water	1,85 mg/kg dw
PNEC Air	No hazard identified
PNEC soil	0,77 mg/kg dw
Secondary poisoning	No potential for bioaccumulation

8.2. Exposure controls

Special adaptations (REACh)
Not applicable.

Appropriate Engineering controls
General or dilution ventilation is frequently insufficient as the sole means of controlling employee exposure. Local ventilation is usually preferred. Explosion-proof equipment (for example fans, switches, and grounded ducts) should be used in mechanical ventilation systems.

Personal protective equipment

General industrial hygiene practice
Avoid contact with skin, eyes and clothing. Do not breathe dust or mist. Ensure that eyewash stations and safety showers are close to the workstation location.

Hygiene measures
When using, do not eat, drink or smoke. Take off all contaminated clothing immediately. Wash hands before breaks and immediately after handling the product.

Eye protection
Tightly fitting safety goggles. In addition to goggles, wear a face shield if there is a reasonable chance for splash to the face.
Equipment should conform to EN 166

Hand protection
Wear protective gloves. Recommendations are listed below. Other protective material may be used, depending on the situation, if adequate degradation and permeation data is available. If other chemicals are used in conjunction with this chemical, material selection should be based on protection for all chemicals present.

Suitable material nitrile rubber

Evaluation	according to EN 374: level 6
Glove thickness	approx 0,55 mm
Break through time	> 480 min
Suitable material	polyvinylchloride
Evaluation	Information derived from practical experience
Glove thickness	approx 0,8 mm

Skin and body protection
Impervious clothing. Wear face-shield and protective suit for abnormal processing problems.

Respiratory protection
Respirator with P3 filter. Full mask with above mentioned filter according to producers using requirements or self-contained breathing apparatus. Equipment should conform to EN 136 or EN 140 and EN 143.

Environmental exposure controls
If possible use in closed systems. If leakage can not be prevented, the substance needs to be suck off at the emersion point, if possible without danger. Observe the exposure limits, clean exhaust air if needed. If recycling is not practicable, dispose of in compliance with local regulations. Inform the responsible authorities in case of leakage into the atmosphere, or of entry into waterways, soil or drains.

Additional advice
Further details on substance data can be found in the registration dossier under the following link: http://echa.europa.eu/information-on-chemicals/registered-substances. For specific exposure controls see the annex to this safety data sheet.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	crystalline Flakes
Colour	white
Odour	sweet
Odour threshold	No data available
Melting point/freezing point	128 °C
Method	DIN 53171
Boiling point or initial boiling point and boiling range	208,5 °C @ 1013 hPa
Method	DIN 53171
Flammability	Even if not classified as flammable, the product is capable of catching fire or being set on fire.***
Lower explosion limit	1,1 Vol %
Upper explosion limit	11,4 Vol %
Flash point	107 °C
Method	closed cup
Autoignition temperature	375 °C
Decomposition temperature	No data available
pH	not applicable
Kinematic Viscosity	6,213 mm²/s @ 139 °C
Solubility	830 g/l @ 20 °C, in water
Partition coefficient n-octanol/water (log value)	0 @ 25 °C (77 °F) OECD 117

Vapour pressure

Values [hPa]	Values [kPa]	Values [atm]	@ °C	@ °F	Method
0,03	0,003	< 0,001	20	68	OECD 104

6,9	0,69	0,007	90	194	OECD 104
88	8,8	0,087	140	284	OECD 104

Density and/or relative density

Values	@ °C	@ °F	Method
1,035	20	68	OECD 109

Relative vapour density No data available

Particle characteristics

Granulometry

Fraction µm	
< 200	97
< 125	57
< 71	16
< 51	9
Median	M = 120 µm

9.2. Other information

Explosive properties	Does not apply, substance is not explosive. There are no chemical groups associated with explosive properties
Oxidizing properties	Does not apply, substance is not oxidising. There are no chemical groups associated with oxidizing properties
Molecular weight	104,15
Molecular formula	C5 H12 O2
Minimum ignition energy	150 mJ < E min. < 260 mJ with inductivity
log Koc	0,019 @ 25°C (77 °F) calculated
Bulk density	~ 500 kg/m³ @ 20 °C (68 °F)
Surface tension	72 mN/m (1 g/l @ 20°C (68°F)), OECD 115
Evaporation rate	No data available

hygroscopic. Dust can form an explosive mixture in air.

SECTION 10: Stability and Reactivity

10.1. Reactivity

The reactivity of the product corresponds to the typical reactivity shown by the substance group as described in any text book on organic chemistry.

10.2. Chemical stability

Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

Dust can form an explosive mixture in air.

10.4. Conditions to avoid

Avoid contact with heat, sparks, open flame and static discharge. Avoid any source of ignition.

10.5. Incompatible materials

strong oxidizing agents.

10.6. Hazardous decomposition products

No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Likely routes of exposure Ingestion, Skin contact, Inhalation, Eye contact

Acute toxicity				
2,2-Dimethylpropane-1,3-diol (126-30-7)				
Routes of Exposure	Endpoint	Values	Species	Method
Oral	LD50	> 6400 mg/kg	rat, male/female	OECD 401
Oral	LD50	6920 mg/kg	rat, male/female	OECD 401
Inhalative	LC0	140 mg/m³ (8 h)	rat, male/female	OECD 403
Dermal	LD50	> 4000 mg/kg	guinea pig	OECD 402

2,2-Dimethylpropane-1,3-diol, CAS: 126-30-7
Assessment
Based on available data, the classification criteria are not met for:
Acute oral toxicity
Acute dermal toxicity
Acute inhalation toxicity

Irritation and corrosion				
2,2-Dimethylpropane-1,3-diol (126-30-7)				
Target Organ Effects	Species	Result	Method	
Skin	rabbit	Mild skin irritation	OECD 404	4h
Eyes	rabbit	severe irritation	OECD 405	

2,2-Dimethylpropane-1,3-diol, CAS: 126-30-7
Assessment
The available data lead to the classification given in section 2
Based on available data, the classification criteria are not met for:
skin irritation/corrosion

Sensitization				
2,2-Dimethylpropane-1,3-diol (126-30-7)				
Target Organ Effects	Species	Evaluation	Method	
Skin	mouse	not sensitizing	OECD 429	

2,2-Dimethylpropane-1,3-diol, CAS: 126-30-7
Assessment
Based on available data, the classification criteria are not met for:
Skin sensitization
For respiratory sensitization, no data are available

Subacute, subchronic and prolonged toxicity				
2,2-Dimethylpropane-1,3-diol (126-30-7)				
Type	Dose	Species	Method	
Subchronic toxicity	NOAEL: 1000 mg/kg/d	rat, male/female	OECD 408	Oral
Subacute toxicity	NOAEL: 300 mg/kg/d	rat, male	OECD 422	Inhalation Oral

2,2-Dimethylpropane-1,3-diol, CAS: 126-30-7
Assessment
Based on available data, the classification criteria are not met for:
STOT RE

Carcinogenicity, Mutagenicity, Reproductive toxicity					
2,2-Dimethylpropane-1,3-diol (126-30-7)					
Type	Dose	Species	Evaluation	Method	
Mutagenicity		Salmonella typhimurium	negative	OECD 471 (Ames)	In vitro study
Mutagenicity		CHO (Chinese Hamster Ovary) cells	negative	OECD 476 (Mammalian Gene Mutation)	In vitro study
Mutagenicity		CHL	negative	Chromosomal Aberration	In vitro study
Reproductive toxicity	NOAEL 1000 mg/kg/d	rat		OECD 422, Oral	Reproduction / developmental Toxicity
Developmental Toxicity	NOAEL 1000 mg/kg/d	rat		OECD 414	Maternal toxicity Developmental toxicity

2,2-Dimethylpropane-1,3-diol, CAS: 126-30-7
CMR Classification
The available data on CMR properties are summarized in the table above. They do not indicate a classification into categories 1A or 1B
Evaluation
Did not show reprotoxic or mutagenic effects in animal experiments
In the absence of specific alerts no cancer testing is required

2,2-Dimethylpropane-1,3-diol, CAS: 126-30-7
Main symptoms
cough.
Target Organ Systemic Toxicant - Single exposure
Based on available data, the classification criteria are not met for:
STOT SE
Target Organ Systemic Toxicant - Repeated exposure
Based on available data, the classification criteria are not met for:
STOT RE

11.2. Information on other hazards

Endocrine disrupting properties
The substance has not been identified as having endocrine disrupting properties in accordance with section 2.3.
2,2-Dimethylpropane-1,3-diol, CAS: 126-30-7
Other adverse effects
Components of the product may be absorbed into the body by inhalation and ingestion.
Note
Handle in accordance with good industrial hygiene and safety practice. Further details on substance data can be found in the registration dossier under the following link:
http://echa.europa.eu/information-on-chemicals/registered-substances.

SECTION 12: Ecological information

12.1. Toxicity

Acute aquatic toxicity			
2,2-Dimethylpropane-1,3-diol (126-30-7)			
Species	Exposure time	Dose	Method
Daphnia magna (Water flea)	48h	EC50: > 500 mg/l	84/449/EEC C.2
Desmodesmus subspicatus	72h	EC20: > 500 mg/l	DIN 38412, part 9
Oryzias latipes (Medaka)	48h	LC50: > 10000 mg/l	JIS
Leuciscus idus (Golden orfe)	48h	LC0: 10000 mg/l	
Activated sludge (domestic)	24h	TTC: 2000 mg/l	ETAD Fermentation tube method

Long term toxicity				
2,2-Dimethylpropane-1,3-diol (126-30-7)				
Type	Species	Dose	Method	
Mortality	Daphnia magna (Water flea)	NOEC: > 1000 mg/l (21 d)		

12.2. Persistence and degradability

2,2-Dimethylpropane-1,3-diol, CAS: 126-30-7
Biodegradation
80-90 % (28 d), activated sludge, domestic, aerobic, non-adapted, Readily biodegradable, OECD 301 B.

Abiotic Degradation		
2,2-Dimethylpropane-1,3-diol (126-30-7)		
Type	Result	Method
Hydrolysis	Half-life (DT50): t1/2 (pH 4): 1 yr @ 25°C	OECD 111
Hydrolysis	Half-life (DT50): t1/2 (pH 7): 1 yr @ 25°C	OECD 111
Hydrolysis	Half-life (DT50): t1/2 (pH 9): 1 yr @ 25°C	OECD 111
Photolysis	Photochemical reaction with OH Radicals Half-life (DT50): 1,851 d @ 25°C	SRC AOP v1.92

12.3. Bioaccumulative potential

2,2-Dimethylpropane-1,3-diol (126-30-7)		
Type	Result	Method
log Pow	0 @ 25 °C (77 °F)	OECD 107
BCF	< 9	OECD 305 C

12.4. Mobility in soil

2,2-Dimethylpropane-1,3-diol (126-30-7)		
Type	Result	Method
Distribution to environmental compartments	Air: 0,001 Soil: 0,0627 % Water: 99,9 % Sediment: 0,001%, Suspended sediment: < 0,001%	Calculation according Mackay, Level I

	Biota: < 0,001%	
Adsorption/Desorption	log koc: 0,019 @ 25 °C (77 °F)	calculated
Surface tension	72 mN/m (1 g/l @ 20°C (68°F))	OECD 115

12.5. Results of PBT and vPvB assessment

2,2-Dimethylpropane-1,3-diol, CAS: 126-30-7
PBT and vPvB assessment
This substance is not considered to be persistent, bioaccumulating nor toxic (PBT), nor very persistent nor very bioaccumulating (vPvB)

12.6. Endocrine disrupting properties

The substance has not been identified as having endocrine disrupting properties in accordance with section 2.3.

12.7. Other adverse effects

2,2-Dimethylpropane-1,3-diol, CAS: 126-30-7
No data available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product Information
Disposal required in compliance with all waste management related state and local regulations. The choice of the appropriate method of disposal depends on the product composition by the time of disposal as well as the local statutes and possibilities for disposal.
Hazardous waste according to European Waste Catalogue (EWC)

Uncleaned empty packaging
Contaminated packaging should be emptied as far as possible and after appropriate cleansing may be taken for reuse.

SECTION 14: Transport information

Section 14.1 - 14.6

ADR/RID Not restricted

ADN ADN Container
Not restricted

ICAO-TI / IATA-DGR Not restricted

IMDG Not restricted

14.7. Maritime transport in bulk according not applicable

to IMO instruments

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Regulation 1272/2008, Annex VI
not listed

DI 2012/18/EU (Seveso III)
Category not subject

DI 1999/13/EC (VOC Guideline)

Component	Status
2,2-Dimethylpropane-1,3-diol CAS: 126-30-7	not subject

The REACH etc. (Amendment etc.) (EU Exit) Regulations 2019 No. 758

Component	Status
2,2-Dimethylpropane-1,3-diol CAS: 126-30-7	The substance will not be pre-registered

For details and further information please refer to the original regulation.

International Inventories

2,2-Dimethylpropane-1,3-diol, CAS: 126-30-7
AICS (AU)
DSL (CA)
IECSC (CN)
EC-No. 2047810 (EU)
ENCS (2)-240 (JP)
ISHL (2)-240 (JP)
KECI KE-11811 (KR)
INSQ (MX)
PICCS (PH)
TSCA (US)
NZIoC (NZ)
TCSI (TW)

National regulatory information Great Britain

Releases to air (Pollution Inventory Substances)

Component	Annual reporting level threshold
2,2-Dimethylpropane-1,3-diol CAS: 126-30-7	not listed
Dust, general threshold limit value (inhalable fraction) CAS: -	10 tonnes, listed as particulates - total

Releases to water (Pollution Inventory Substances)

Component	Annual reporting level threshold
2,2-Dimethylpropane-1,3-diol CAS: 126-30-7	not listed

Releases to sewer (Pollution Inventory Substances)

Component	Annual reporting level threshold
2,2-Dimethylpropane-1,3-diol CAS: 126-30-7	not listed

For details and further information please refer to the original regulation

15.2. Chemical safety assessment

The Chemical Safety Report (CSR) has been generated. For Exposure Scenarios see the annex.

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3
H318: Causes serious eye damage.

Abbreviations
A table of terms and abbreviations can be found under the following link:
http://echa.europa.eu/documents/10162/13632/information_requirements_r20_en.pdf

Training advice
For effective first-aid, special training / education is needed.

Sources of key data used to compile the datasheet
Information contained in this safety data sheet is based on OQ owned data and public sources deemed valid or acceptable. The absence of data elements required by OSHA, ANSI or Annex II, Regulation 1907/2006/EC indicates, that no data meeting these requirements is available.

Further information for the safety data sheet
Changes against the previous version are marked by ***. Observe national and local legal requirements. For more information, other material safety data sheets or technical data sheets please consult the OQ homepage (www.chemicals.oq.com).

Disclaimer
For industrial use only. The information contained herein is accurate to the best of our knowledge. We do not suggest or guarantee that any hazards listed herein are the only ones which exist. OQ Chemicals makes no warranty of any kind, express or implied, concerning the safe use of this material in your process or in combination with other substances. User has the sole responsibility to determine the suitability of the materials for any use and the manner of use contemplated. User must meet all applicable safety and health standards.

End of Safety Data Sheet

Annex to the extended Safety Data Sheet (eSDS)

General information
Environmental compartment
In the absense of environmental hazards no environmental risk assessment was carried out
A quantitative approach used to conclude safe use for:
Long-term Systemic effects via inhalation
Long-term Systemic effects via skin

Operational conditions and risk management measures
Wear suitable gloves tested to EN 374 for activities, where direct contact with substance is possible
Wear suitable eye protection, where direct contact (e.g. splashes) with substance is possible

Exposure scenario identification

1 Industrial use resulting in manufacture of another substance (use of intermediates)
2 Formulation & (re)packing of substances and mixtures
3 Distribution of substance
4 Use in laboratories
5 Use in laboratories
6 Polymerisation
7 Uses in coatings
8 Uses in coatings
9 Road and construction applications
10 Road and construction applications

Number of the ES 1

Short title of the exposure scenario
Industrial use resulting in manufacture of another substance (use of intermediates)

List of use descriptors

Sector of uses [SU]
SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites
SU8: Manufacture of bulk, large scale chemicals (including petroleum products)
SU9: Manufacture of fine chemicals

Process categories [PROC]
PROC1: Use in closed process, no likelihood of exposure
PROC2: Use in closed, continuous process with occasional controlled exposure
PROC3: Use in closed batch process (synthesis or formulation)
PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises
PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC15: Use as laboratory reagent

Environmental release categories [ERC]
ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)

Product characteristics
Refer to attached safety data sheets

Processes and activities covered by the exposure scenario
Use as an intermediate (not related to Strictly Controlled Conditions). Includes incidental exposures during recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (ncluding marine vessel/barge, road/rail car and bulk container).

Further explanations
Industrial use
Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Number of the contributing scenario **1**
Contributing exposure scenario controlling worker exposure for PROC 1

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 1 hand (240 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **2**
Contributing exposure scenario controlling worker exposure for PROC 2

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **3**
Contributing exposure scenario controlling worker exposure for PROC 3

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 1 hand (240 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use

Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **4**
Contributing exposure scenario controlling worker exposure for
PROC 4

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **5**
Contributing exposure scenario controlling worker exposure for
PROC 5

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
4 h (half shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **6**
Contributing exposure scenario controlling worker exposure for
PROC 8a

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
4 h (half shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to 2 hands (960 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **7**
Contributing exposure scenario controlling worker exposure for
PROC 8b

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
4 h (half shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm^2)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **8**
Contributing exposure scenario controlling worker exposure for PROC 9

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 1 hand (240 cm^2)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **9**
Contributing exposure scenario controlling worker exposure for PROC 15

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 1 hand (240 cm^2)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Exposure estimation and reference to its source

Human exposure prediction (oral, dermal, inhalative)
Oral exposure is not expected to occur. EE(inhal): Estimated inhalative long-term exposure [mg/m^3]; EE(derm): Estimated dermal long-term exposure [mg/kg b.w./d]. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios. The RMMs

described above suffice to control risks for both local and systemic effects.

Proc 1	EE(inhal): 0.01 ; EE(derm): 0.34
Proc 2	EE(inhal): 0.01 ; EE(derm): 1.37
Proc 3	EE(inhal): 0.10 ; EE(derm): 0.69
Proc 4	EE(inhal): 0.50 ; EE(derm): 6.86
Proc 5	EE(inhal): 0.3 ; EE(derm): 8.226
Proc 8a	EE(inhal): 0.3 ; EE(derm): 8.226
Proc 8b	EE(inhal): 0.06 ; EE(derm): 8.226
Proc 9	EE(inhal): 0.10 ; EE(derm): 6.86
Proc 15	EE(inhal): 0.50 ; EE(derm): 0.34

Risk characterisation
RCR(inhal): inhalative risk characterisation ratio; RCR(derm): dermal risk characterisation ratio; total RCR= RCR(inhal) +RCR(derm). Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values.

Proc 1	RCR(inhal): 0.001 ; RCR(derm): 0.01
Proc 2	RCR(inhal): 0.01 ; RCR(derm): 0.137
Proc 3	RCR(inhal): 0.01 ; RCR(derm): 0.069
Proc 4	RCR(inhal): 0.014 ; RCR(derm): 0.686
Proc 5	RCR(inhal): 0.01 ; RCR(derm): 0.823
Proc 8a	RCR(inhal): 0.01 ; RCR(derm): 0.823
Proc 8b	RCR(inhal): 0.01 ; RCR(derm): 0.823
Proc 9	RCR(inhal): 0.01 ; RCR(derm): 0.686
Proc 15	RCR(inhal): 0.010 ; RCR(derm): 0.070

Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES
Usage of relase factors allows downstream users to verify in a first approximation, if the combination of local usage and production conditions meets the defined release quantities resulting from this exposure scenario (calculated as M(site) [see amounts used, contributing scenario 1] x release factor [Technical conditions and measures at process level (source) to prevent release; contributing scenario 1])

associated uses:

Other combinations of operational conditions may also be safe. Please contact OQ in case your local operational conditions differ from the ones described above and you are unsure if they are also safe

Number of the ES 2

Short title of the exposure scenario
Formulation & (re)packing of substances and mixtures

Sector of uses [SU]
SU10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys)

Process categories [PROC]
PROC1: Use in closed process, no likelihood of exposure
PROC2: Use in closed, continuous process with occasional controlled exposure
PROC3: Use in closed batch process (synthesis or formulation)
PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC15: Use as laboratory reagent

Environmental release categories [ERC]
ERC2: Formulation of preparations (mixtures)
ERC3: Formulation in materials

Product characteristics
Refer to attached safety data sheets

Processes and activities covered by the exposure scenario
Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tabletting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenanance and associated laboratory activities.

Further explanations
Industrial use
Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Number of the contributing scenario **1**
Contributing exposure scenario controlling worker exposure for PROC 1

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 1 hand (240 cm^2)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **2**
Contributing exposure scenario controlling worker exposure for PROC 2

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm^2)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **3**
Contributing exposure scenario controlling worker exposure for PROC 3

Further specification

Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 1 hand (240 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario 4
Contributing exposure scenario controlling worker exposure for PROC 5

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
4 h (half shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario 5
Contributing exposure scenario controlling worker exposure for PROC 8a

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
4 h (half shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to 2 hands (960 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario 6
Contributing exposure scenario controlling worker exposure for PROC 8b

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use

4 h (half shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario 7
Contributing exposure scenario controlling worker exposure for PROC 9

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario 8
Contributing exposure scenario controlling worker exposure for PROC 15

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 1 hand (240 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Human exposure prediction (oral, dermal, inhalative)
Oral exposure is not expected to occur. EE(inhal): Estimated inhalative long-term exposure [mg/m³]; EE(derm): Estimated dermal long-term exposure [mg/kg b.w./d]. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios. The RMMs described above suffice to control risks for both local and systemic effects.

Proc 1	EE(inhal): 0.01 ; EE(derm): 0.34
Proc 2	EE(inhal): 0.01 ; EE(derm): 1.37
Proc 3	EE(inhal): 0.10 ; EE(derm): 0.69
Proc 5	EE(inhal): 0.3 ; EE(derm): 8.226
Proc 8a	EE(inhal): 0.3 ; EE(derm): 8.226
Proc 8b	EE(inhal): 0.06 ; EE(derm): 8.226
Proc 9	EE(inhal): 0.10 ; EE(derm): 6.86
Proc 15	EE(inhal): 0.10 ; EE(derm): 0.34

Risk characterisation
RCR(inhal): inhalative risk characterisation ratio; RCR(derm): dermal risk characterisation ratio; total RCR= RCR(inhal) +RCR(derm). Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values.

Proc 1	RCR(inhal): 0.01 ; RCR(derm): 0.01
Proc 2	RCR(inhal): 0.01 ; RCR(derm): 0.137
Proc 3	RCR(inhal): 0.01 ; RCR(derm): 0.069
Proc 5	RCR(inhal): 0.01 ; RCR(derm): 0.823
Proc 8a	RCR(inhal): 0.01 ; RCR(derm): 0.823
Proc 8b	RCR(inhal): 0.01 ; RCR(derm): 0.823
Proc 9	RCR(inhal): 0.010 ; RCR(derm): 0.686
Proc 15	RCR(inhal): 0.010 ; RCR(derm): 0.034

Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES
Usage of relase factors allows downstream users to verify in a first approximation, if the combination of local usage and production conditions meets the defined release quantities resulting from this exposure scenario (calculated as M(site) [see amounts used, contributing scenario 1] x release factor [Technical conditions and measures at process level (source) to prevent release; contributing scenario 1])

associated uses:

Other combinations of operational conditions may also be safe. Please contact OQ in case your local operational conditions differ from the ones described above and you are unsure if they are also safe

Number of the ES 3

Short title of the exposure scenario
Distribution of substance

Sector of uses [SU]
SU8: Manufacture of bulk, large scale chemicals (including petroleum products)
SU9: Manufacture of fine chemicals
SU10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys)

Process categories [PROC]
PROC1: Use in closed process, no likelihood of exposure
PROC2: Use in closed, continuous process with occasional controlled exposure
PROC3: Use in closed batch process (synthesis or formulation)
PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC15: Use as laboratory reagent

Environmental release categories [ERC]
ERC2: Formulation of preparations (mixtures)

Product characteristics
Refer to attached safety data sheets

Processes and activities covered by the exposure scenario
Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tabletting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenanance and associated laboratory activities.

Further explanations
Industrial use
Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Contributing Scenarios

Number of the contributing scenario **1**
Contributing exposure scenario controlling worker exposure for PROC 1

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 1 hand (240 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **2**
Contributing exposure scenario controlling worker exposure for PROC 2

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **3**
Contributing exposure scenario controlling worker exposure for PROC 3

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
8 h (full shift)

Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 1 hand (240 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **4**
Contributing exposure scenario controlling worker exposure for PROC 5

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
4 h (half shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **5**
Contributing exposure scenario controlling worker exposure for PROC 8a

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
4 h (half shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to 2 hands (960 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **6**
Contributing exposure scenario controlling worker exposure for PROC 8b

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
4 h (half shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **7**
Contributing exposure scenario controlling worker exposure for PROC 9

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm^2)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **8**
Contributing exposure scenario controlling worker exposure for PROC 15

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 1 hand (240 cm^2)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Human exposure prediction (oral, dermal, inhalative)
Oral exposure is not expected to occur. EE(inhal): Estimated inhalative long-term exposure [mg/m^3]; EE(derm): Estimated dermal long-term exposure [mg/kg b.w./d]. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios. The RMMs described above suffice to control risks for both local and systemic effects.

Proc 1	EE(inhal): 0.01 ; EE(derm): 0.34
Proc 2	EE(inhal): 0.01 ; EE(derm): 1.37
Proc 3	EE(inhal): 0.10 ; EE(derm): 0.69
Proc 5	EE(inhal): 0.3 ; EE(derm): 8.226
Proc 8a	EE(inhal): 0.3 ; EE(derm): 8.226
Proc 8b	EE(inhal): 0.06 ; EE(derm): 8.226
Proc 9	EE(inhal): 0.10 ; EE(derm): 6.86
Proc 15	EE(inhal): 0.10 ; EE(derm): 0.34

Risk characterisation
RCR(inhal): inhalative risk characterisation ratio; RCR(derm): dermal risk characterisation ratio; total RCR= RCR(inhal) +RCR(derm). Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values.

Proc 1	RCR(inhal): 0.01 ; RCR(derm): 0.01
Proc 2	RCR(inhal): 0.01 ; RCR(derm): 0.137
Proc 3	RCR(inhal): 0.01 ; RCR(derm): 0.069
Proc 5	RCR(inhal): 0.01 ; RCR(derm): 0.823
Proc 8a	RCR(inhal): 0.01 ; RCR(derm): 0.823
Proc 8b	RCR(inhal): 0.01 ; RCR(derm): 0.823
Proc 9	RCR(inhal): 0.01 ; RCR(derm): 0.686
Proc 15	RCR(inhal): 0.01 ; RCR(derm): 0.034

Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES
Usage of relase factors allows downstream users to verify in a first approximation, if the combination of local usage and production conditions meets the defined release quantities resulting from this exposure scenario (calculated as M(site) [see amounts used, contributing scenario 1] x release factor [Technical conditions and measures at process level (source) to prevent release; contributing scenario 1])

associated uses:

Other combinations of operational conditions may also be safe. Please contact OQ in case your local operational conditions differ from the ones described above and you are unsure if they are also safe

Number of the ES 4

Short title of the exposure scenario
Use in laboratories

List of use descriptors

Sector of uses [SU]
SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites

Process categories [PROC]
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC15: Use as laboratory reagent

Environmental release categories [ERC]
ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

Product characteristics
Refer to attached safety data sheets

Processes and activities covered by the exposure scenario
Use of the substance within laboratory settings, including material transfers and equipment cleaning

Further explanations
Industrial use
Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Number of the contributing scenario 1
Contributing exposure scenario controlling worker exposure for PROC 8a

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
4 h (half shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to 2 hands (960 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **2**
Contributing exposure scenario controlling worker exposure for PROC 8b

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
4 h (half shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **3**
Contributing exposure scenario controlling worker exposure for PROC 9

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 1 hand (240 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **4**
Contributing exposure scenario controlling worker exposure for PROC 15

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness

Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm^2)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Human exposure prediction (oral, dermal, inhalative)
Oral exposure is not expected to occur. EE(inhal): Estimated inhalative long-term exposure [mg/m^3]; EE(derm): Estimated dermal long-term exposure [mg/kg b.w./d]. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios. The RMMs described above suffice to control risks for both local and systemic effects.

Proc 8a	EE(inhal): 0.3 ; EE(derm): 8.226
Proc 8b	EE(inhal): 0.06 ; EE(derm): 8.226
Proc 9	EE(inhal): 0.10 ; EE(derm): 6.86
Proc 15	EE(inhal): 0.10 ; EE(derm): 0.34

Risk characterisation
RCR(inhal): inhalative risk characterisation ratio; RCR(derm): dermal risk characterisation ratio; total RCR= RCR(inhal) +RCR(derm). Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values.

Proc 8a	RCR(inhal): 0.01 ; RCR(derm): 0.823
Proc 8b	RCR(inhal): 0.01 ; RCR(derm): 0.823
Proc 9	RCR(inhal): 0.01 ; RCR(derm): 0.686
Proc 15	RCR(inhal): 0.01 ; RCR(derm): 0.034

Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES
Usage of relase factors allows downstream users to verify in a first approximation, if the combination of local usage and production conditions meets the defined release quantities resulting from this exposure scenario (calculated as M(site) [see amounts used, contributing scenario 1] x release factor [Technical conditions and measures at process level (source) to prevent release; contributing scenario 1])

associated uses:

Other combinations of operational conditions may also be safe. Please contact OQ in case your local operational conditions differ from the ones described above and you are unsure if they are also safe

Number of the ES 5

Short title of the exposure scenario
Use in laboratories

Sector of uses [SU]
SU22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
SU24: Scientific research and development

Process categories [PROC]
PROC15: Use as laboratory reagent

Environmental release categories [ERC]
ERC8a: Wide dispersive indoor use of processing aids in open systems

Product characteristics
Refer to attached safety data sheets

Processes and activities covered by the exposure scenario
Use of small quantities within laboratory settings, including material transfers and equipment cleaning

Further explanations
Professional use
Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Number of the contributing scenario **1**
Contributing exposure scenario controlling worker exposure for PROC 15

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 1 hand (240 cm^2)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Human exposure prediction (oral, dermal, inhalative)
Oral exposure is not expected to occur. EE(inhal): Estimated inhalative long-term exposure [mg/m^3]; EE(derm): Estimated dermal long-term exposure [mg/kg b.w./d]. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios. The RMMs described above suffice to control risks for both local and systemic effects.

Proc 15	EE(inhal): 0.01 ; EE(derm): 0.34

Risk characterisation
RCR(inhal): inhalative risk characterisation ratio; RCR(derm): dermal risk characterisation ratio; total RCR= RCR(inhal) +RCR(derm). Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values.

Proc 15	RCR(inhal): 0.01 ; RCR(derm): 0.034

Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES
Usage of relase factors allows downstream users to verify in a first approximation, if the combination of local usage and production conditions meets the defined release quantities resulting from this exposure scenario (calculated as M(site) [see amounts used, contributing scenario 1] x release factor [Technical conditions and measures at process level (source) to prevent release; contributing scenario 1])

associated uses:

Other combinations of operational conditions may also be safe. Please contact OQ in case your local operational conditions differ from the ones described above and you are unsure if they are also safe

Number of the ES 6

Short title of the exposure scenario
Polymerisation

Sector of uses [SU]
SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites
SU12: Manufacture of plastics products, including compounding and conversion

Process categories [PROC]
PROC1: Use in closed process, no likelihood of exposure
PROC2: Use in closed, continuous process with occasional controlled exposure
PROC3: Use in closed batch process (synthesis or formulation)
PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises
PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC15: Use as laboratory reagent

Environmental release categories [ERC]
ERC6c: Industrial use of monomers for manufacture of thermoplastics

Product characteristics
Refer to attached safety data sheets

Processes and activities covered by the exposure scenario
Processing of formulated polymers including material transfers, moulding and forming activities, material re-works and associated maintenance

Further explanations
Industrial use
Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Number of the contributing scenario 1
Contributing exposure scenario controlling worker exposure for PROC 1

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 1 hand (240 cm^2)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **2**
Contributing exposure scenario controlling worker exposure for PROC 2

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **3**
Contributing exposure scenario controlling worker exposure for PROC 3

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 1 hand (240 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **4**
Contributing exposure scenario controlling worker exposure for PROC 4

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **5**
Contributing exposure scenario controlling worker exposure for PROC 5

Further specification

Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
4 h (half shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario 6
Contributing exposure scenario controlling worker exposure for PROC 8a

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
4 h (half shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to 2 hands (960 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario 7
Contributing exposure scenario controlling worker exposure for PROC 8b

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
4 h (half shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario 8
Contributing exposure scenario controlling worker exposure for PROC 9

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
8 h (full shift)

Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **9**
Contributing exposure scenario controlling worker exposure for PROC 15

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 1 hand (240 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Human exposure prediction (oral, dermal, inhalative)
Oral exposure is not expected to occur. EE(inhal): Estimated inhalative long-term exposure [mg/m³]; EE(derm): Estimated dermal long-term exposure [mg/kg b.w./d]. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios. The RMMs described above suffice to control risks for both local and systemic effects.

Proc 1	EE(inhal): 0.01 ; EE(derm): 0.034
Proc 2	EE(inhal): 0.01 ; EE(derm): 1.37
Proc 3	EE(inhal): 0.1 ; EE(derm): 0.69
Proc 4	EE(inhal): 0.5 ; EE(derm): 6.86
Proc 5	EE(inhal): 0.3 ; EE(derm): 8.226
Proc 8a	EE(inhal): 0.3 ; EE(derm): 8.226
Proc 8b	EE(inhal): 0.06 ; EE(derm): 8.226
Proc 9	EE(inhal): 0.1 ; EE(derm): 6.86
Proc 15	EE(inhal): 0.1 ; EE(derm): 0.34

Risk characterisation
RCR(inhal): inhalative risk characterisation ratio; RCR(derm): dermal risk characterisation ratio; total RCR= RCR(inhal) +RCR(derm). Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values.

Proc 1	RCR(inhal): 0.01 ; RCR(derm): 0.01
Proc 2	RCR(inhal): 0.01 ; RCR(derm): 0.137
Proc 3	RCR(inhal): 0.01 ; RCR(derm): 0.069
Proc 4	RCR(inhal): 0.014 ; RCR(derm): 0.686
Proc 5	RCR(inhal): 0.01 ; RCR(derm): 0.823
Proc 8a	RCR(inhal): 0.01 ; RCR(derm): 0.823
Proc 8b	RCR(inhal): 0.01 ; RCR(derm): 0.823
Proc 9	RCR(inhal): 0.01 ; RCR(derm): 0.686
Proc 15	RCR(inhal): 0.010 ; RCR(derm): 0.034

Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES
Usage of relase factors allows downstream users to verify in a first approximation, if the combination of local usage and production conditions meets the defined release quantities resulting from this exposure scenario (calculated as M(site) [see amounts used, contributing scenario 1] x release factor [Technical conditions and measures at process level (source) to prevent release; contributing scenario 1])

associated uses:

Other combinations of operational conditions may also be safe. Please contact OQ in case your local operational conditions differ from the ones described above and you are unsure if they are also safe

Number of the ES 7

Short title of the exposure scenario
Uses in coatings

List of use descriptors

Sector of uses [SU]
SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites
SU5: Manufacture of textiles, leather, fur
SU6a: Manufacture of wood and wood products
SU6b: Manufacture of pulp, paper and paper products
SU7: Printing and reproduction of recorded media
SU8: Manufacture of bulk, large scale chemicals (including petroleum products)
SU10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
SU11: Manufacture of rubber products
SU12: Manufacture of plastics products, including compounding and conversion
SU13: Manufacture of other non-metallic mineral products, e.g. plasters, cement

Process categories [PROC]
PROC1: Use in closed process, no likelihood of exposure
PROC2: Use in closed, continuous process with occasional controlled exposure
PROC3: Use in closed batch process (synthesis or formulation)
PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises
PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC6: Calendering operations
PROC7: Industrial spraying
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC10: Roller application or brushing
PROC13: Treatment of articles by dipping and pouring
PROC14: production of preparations or articles by tabletting, compression, extrusion, pelettisation
PROC15: Use as laboratory reagent

Environmental release categories [ERC]
ERC5: Industrial use resulting in inclusion into or onto a matrix

Product characteristics
Refer to attached safety data sheets

Processes and activities covered by the exposure scenario
Processing of formulated polymers including material transfers, additives handling (e.g. pigments, stabilisers, fillers,

plasticisers, etc.), moulding, curing and forming activities, material re-works, storage and associated maintenance.

Further explanations
Industrial use
Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Number of the contributing scenario **1**
Contributing exposure scenario controlling worker exposure for PROC 1

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 25 %
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 1 hand (240 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **2**
Contributing exposure scenario controlling worker exposure for PROC 2

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 25 %
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **3**
Contributing exposure scenario controlling worker exposure for PROC 3

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 25 %
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 1 hand (240 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **4**
Contributing exposure scenario controlling worker exposure for

PROC 4

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 25 %
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **5**
Contributing exposure scenario controlling worker exposure for
PROC 5

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 25 %
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374. Wear protective gloves (Efficiency: 80 %).

Number of the contributing scenario **6**
Contributing exposure scenario controlling worker exposure for
PROC 6

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 25 %
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to 2 hands (960 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.

Number of the contributing scenario **7**
Contributing exposure scenario controlling worker exposure for
PROC 7

Further specification
Assessment tool used: StoffenManager RiskOfDerm
Product characteristics

Covers percentage substance in the product up to 25 %
Frequency and duration of use
4 h (half shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to hands and lower arms (1500 cm²)
Other given operational conditions affecting workers exposure
Indoor use

Number of the contributing scenario **8**
Contributing exposure scenario controlling worker exposure for PROC 8a

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 25 %
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to 2 hands (960 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374. Wear protective gloves (Efficiency: 80 %).

Number of the contributing scenario **9**
Contributing exposure scenario controlling worker exposure for PROC 8b

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 25 %
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374. Wear protective gloves (Efficiency: 80% %).

Number of the contributing scenario **10**
Contributing exposure scenario controlling worker exposure for PROC 9

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 25 %
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use

Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **11**
Contributing exposure scenario controlling worker exposure for
PROC 10

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 25 %
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to 2 hands (960 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374. Wear protective gloves (Efficiency: 80 %).

Number of the contributing scenario **12**
Contributing exposure scenario controlling worker exposure for
PROC 13

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 25 %
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374. Wear protective gloves (Efficiency: 80 %).

Number of the contributing scenario **13**
Contributing exposure scenario controlling worker exposure for
PROC 14

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 25 %
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **14**
Contributing exposure scenario controlling worker exposure for

PROC 15

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 25 %
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 1 hand (240 cm^2)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Human exposure prediction (oral, dermal, inhalative)
Oral exposure is not expected to occur. EE(inhal): Estimated inhalative long-term exposure [mg/m^3]; EE(derm): Estimated dermal long-term exposure [mg/kg b.w./d]. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios. The RMMs described above suffice to control risks for both local and systemic effects.

Proc 1	EE(inhal): 0.026 ; EE(derm): 0.02
Proc 2	EE(inhal): 2.6 ; EE(derm): 0.822
Proc 3	EE(inhal): 7.8 ; EE(derm): 0.414
Proc 4	EE(inhal): 13 ; EE(derm): 4.116
Proc 5	EE(inhal): 13 ; EE(derm): 1.645
Proc 6	EE(inhal): 13 ; EE(derm): 3.292
Proc 7	EE(inhal): 0.00 ; EE(derm): 0.61
Proc 8a	EE(inhal): 18.2 ; EE(derm): 1.645
Proc 8b	EE(inhal): 13 ; EE(derm): 1.645
Proc 9	EE(inhal): 13 ; EE(derm): 4.116
Proc 10	EE(inhal): 18.2 ; EE(derm): 3.292
Proc 13	EE(inhal): 18.2 ; EE(derm): 1.645
Proc 14	EE(inhal): 13 ; EE(derm): 2.058
Proc 15	EE(inhal): 13 ; EE(derm): 0.204

Risk characterisation
RCR(inhal): inhalative risk characterisation ratio; RCR(derm): dermal risk characterisation ratio; total RCR= RCR(inhal) +RCR(derm). Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values.

Proc 1	RCR(inhal): 0.01 ; RCR(derm): 0.01
Proc 2	RCR(inhal): 0.074 ; RCR(derm): 0.082
Proc 3	RCR(inhal): 0.223 ; RCR(derm): 0.041
Proc 4	RCR(inhal): 0.371 ; RCR(derm): 0.412
Proc 5	RCR(inhal): 0.371 ; RCR(derm): 0.164
Proc 6	RCR(inhal): 0.371 ; RCR(derm): 0.329
Proc 7	RCR(inhal): 0.000 ; RCR(derm): 0.061
Proc 8a	RCR(inhal): 0.52 ; RCR(derm): 0.164
Proc 8b	RCR(inhal): 0.371 ; RCR(derm): 0.164
Proc 9	RCR(inhal): 0.371 ; RCR(derm): 0.412
Proc 10	RCR(inhal): 0.52 ; RCR(derm): 0.329
Proc 13	RCR(inhal): 0.52 ; RCR(derm): 0.164
Proc 14	RCR(inhal): 0.371 ; RCR(derm): 0.206
Proc 15	RCR(inhal): 0.371 ; RCR(derm): 0.02

Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES
Usage of relase factors allows downstream users to verify in a first approximation, if the combination of local usage and production conditions meets the defined release quantities resulting from this exposure scenario (calculated as M(site) [see amounts used, contributing scenario 1] x release factor [Technical conditions and measures at process level (source) to prevent release; contributing scenario 1])

associated uses:

Other combinations of operational conditions may also be safe. Please contact OQ in case your local operational conditions differ from the ones described above and you are unsure if they are also safe

Number of the ES 8

Short title of the exposure scenario
Uses in coatings

Sector of uses [SU]
SU22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Process categories [PROC]
PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC6: Calendering operations
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC10: Roller application or brushing
PROC13: Treatment of articles by dipping and pouring
PROC14: production of preparations or articles by tabletting, compression, extrusion, pelettisation

Environmental release categories [ERC]
ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix
ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix
ERC10a: Wide dispersive outdoor use of long-life articles and materials with low release
ERC10b: Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing)
ERC11a: Wide dispersive indoor use of long-life articles and materials with low release

Product characteristics
Refer to attached safety data sheets

Processes and activities covered by the exposure scenario
Processing of formulated polymers including material transfers, additives handling (e.g. pigments, stabilisers, fillers, plasticisers, etc.), moulding, curing and forming activities, material re-works, storage and associated maintenance.

Further explanations
Professional use
Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Number of the contributing scenario 1
Contributing exposure scenario controlling worker exposure for PROC 5

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 25 %

Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374. Wear protective gloves (Efficiency: 80 %).

Number of the contributing scenario **2**
Contributing exposure scenario controlling worker exposure for PROC 6

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 25 %
Frequency and duration of use
4 h (half shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to 2 hands (960 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374. Wear protective gloves (Efficiency: 80 %).

Number of the contributing scenario **3**
Contributing exposure scenario controlling worker exposure for PROC 8a

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 25 %
Frequency and duration of use
4 h (half shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to 2 hands (960 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374. Wear protective gloves (Efficiency: 80 %).

Number of the contributing scenario **4**
Contributing exposure scenario controlling worker exposure for PROC 8b

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 25 %
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management

Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374. Wear protective gloves (Efficiency: 80 %).

Number of the contributing scenario **5**
Contributing exposure scenario controlling worker exposure for PROC 10

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 25 %
Frequency and duration of use
4 h (half shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to 2 hands (960 cm²)
Other given operational conditions affecting workers exposure
Indoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a good standard of controlled ventilation (5 to 10 air changes per hour) .
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374. Wear protective gloves (Efficiency: 80 %).

Number of the contributing scenario **6**
Contributing exposure scenario controlling worker exposure for PROC 13

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 25 %
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374. Wear protective gloves (Efficiency: 80 %).

Number of the contributing scenario **7**
Contributing exposure scenario controlling worker exposure for PROC 14

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 25 %
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use

Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Human exposure prediction (oral, dermal, inhalative)
Oral exposure is not expected to occur. EE(inhal): Estimated inhalative long-term exposure [mg/m³]; EE(derm): Estimated dermal long-term exposure [mg/kg b.w./d]. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios. The RMMs described above suffice to control risks for both local and systemic effects.

Proc 5	EE(inhal): 26 ; EE(derm): 1.645
Proc 6	EE(inhal): 15.6 ; EE(derm): 3.292
Proc 8a	EE(inhal): 27.3 ; EE(derm): 1.645
Proc 8b	EE(inhal): 26 ; EE(derm): 1.645
Proc 10	EE(inhal): 11.7 ; EE(derm): 3.292
Proc 13	EE(inhal): 18.2 ; EE(derm): 1.645
Proc 14	EE(inhal): 26 ; EE(derm): 2.058

Risk characterisation
RCR(inhal): inhalative risk characterisation ratio; RCR(derm): dermal risk characterisation ratio; total RCR= RCR(inhal) +RCR(derm). Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values.

Proc 5	RCR(inhal): 0.743 ; RCR(derm): 0.164
Proc 6	RCR(inhal): 0.446 ; RCR(derm): 0.329
Proc 8a	RCR(inhal): 0.78 ; RCR(derm): 0.164
Proc 8b	RCR(inhal): 0.743 ; RCR(derm): 0.164
Proc 10	RCR(inhal): 0.334 ; RCR(derm): 0.329
Proc 13	RCR(inhal): 0.52 ; RCR(derm): 0.164
Proc 14	RCR(inhal): 0.743 ; RCR(derm): 0.206

Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES
Usage of relase factors allows downstream users to verify in a first approximation, if the combination of local usage and production conditions meets the defined release quantities resulting from this exposure scenario (calculated as M(site) [see amounts used, contributing scenario 1] x release factor [Technical conditions and measures at process level (source) to prevent release; contributing scenario 1])

associated uses:

Other combinations of operational conditions may also be safe. Please contact OQ in case your local operational conditions differ from the ones described above and you are unsure if they are also safe

Number of the ES 9

Short title of the exposure scenario

Road and construction applications

Sector of uses [SU]
SU13: Manufacture of other non-metallic mineral products, e.g. plasters, cement
SU19: Building and construction work

Process categories [PROC]
PROC1: Use in closed process, no likelihood of exposure

PROC2: Use in closed, continuous process with occasional controlled exposure
PROC3: Use in closed batch process (synthesis or formulation)
PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises
PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC13: Treatment of articles by dipping and pouring
PROC14: production of preparations or articles by tabletting, compression, extrusion, pelettisation
PROC15: Use as laboratory reagent

Environmental release categories [ERC]
ERC2: Formulation of preparations (mixtures)
ERC3: Formulation in materials
ERC4: Industrial use of processing aids in processes and products, not becoming part of articles
ERC5: Industrial use resulting in inclusion into or onto a matrix

Product characteristics
Refer to attached safety data sheets

Processes and activities covered by the exposure scenario
Application of surface coatings and binders in road and construction activities, including paving uses, manual mastic and in the application of roofing and water-proofing membranes

Further explanations
Industrial use
Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Number of the contributing scenario **1**
Contributing exposure scenario controlling worker exposure for PROC 1

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 10 %
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 1 hand (240 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **2**
Contributing exposure scenario controlling worker exposure for PROC 2

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 10 %
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)

Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **3**
Contributing exposure scenario controlling worker exposure for
PROC 3

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 10 %
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 1 hand (240 cm^2)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **4**
Contributing exposure scenario controlling worker exposure for
PROC 4

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 10 %
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm^2)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **5**
Contributing exposure scenario controlling worker exposure for
PROC 5

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 10 %
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm^2)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **6**

Contributing exposure scenario controlling worker exposure for PROC 8a

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 10 %
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to 2 hands (960 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario 7
Contributing exposure scenario controlling worker exposure for PROC 8b

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 10 %
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario 8
Contributing exposure scenario controlling worker exposure for PROC 9

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 10 %
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario 9
Contributing exposure scenario controlling worker exposure for PROC 13

Further specification
Assessment tool used: Chesar 2.2
Product characteristics

Covers percentage substance in the product up to 10 %
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **10**
Contributing exposure scenario controlling worker exposure for PROC 14

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 10 %
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **11**
Contributing exposure scenario controlling worker exposure for PROC 15

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 10 %
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 1 hand (240 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Human exposure prediction (oral, dermal, inhalative)
Oral exposure is not expected to occur. EE(inhal): Estimated inhalative long-term exposure [mg/m³]; EE(derm): Estimated dermal long-term exposure [mg/kg b.w./d]. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios. The RMMs described above suffice to control risks for both local and systemic effects.

Proc 1	EE(inhal): 0.006 ; EE(derm): 0.02
Proc 2	EE(inhal): 0.006 ; EE(derm): 0.822
Proc 3	EE(inhal): 0.06 ; EE(derm): 0.414
Proc 4	EE(inhal): 0.3 ; EE(derm): 4.116
Proc 5	EE(inhal): 0.3 ; EE(derm): 8.226

Proc 8a	EE(inhal): 0.3 ; EE(derm): 8.226
Proc 8b	EE(inhal): 0.06 ; EE(derm): 8.226
Proc 9	EE(inhal): 0.06 ; EE(derm): 4.116
Proc 13	EE(inhal): 0.06 ; EE(derm): 8.226
Proc 14	EE(inhal): 0.06 ; EE(derm): 2.058
Proc 15	EE(inhal): 0.06 ; EE(derm): 0.204

Risk characterisation
RCR(inhal): inhalative risk characterisation ratio; RCR(derm): dermal risk characterisation ratio; total RCR= RCR(inhal) +RCR(derm). Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values.

Proc 1	RCR(inhal): 0.01 ; RCR(derm): 0.01
Proc 2	RCR(inhal): 0.01 ; RCR(derm): 0.082
Proc 3	RCR(inhal): 0.01 ; RCR(derm): 0.041
Proc 4	RCR(inhal): 0.01 ; RCR(derm): 0.412
Proc 5	RCR(inhal): 0.01 ; RCR(derm): 0.823
Proc 8a	RCR(inhal): 0.01 ; RCR(derm): 0.823
Proc 8b	RCR(inhal): 0.01 ; RCR(derm): 0.823
Proc 9	RCR(inhal): 0.01 ; RCR(derm): 0.412
Proc 13	RCR(inhal): 0.01 ; RCR(derm): 0.823
Proc 14	RCR(inhal): 0.01 ; RCR(derm): 0.206
Proc 15	RCR(inhal): 0.01 ; RCR(derm): 0.02

Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES
Usage of relase factors allows downstream users to verify in a first approximation, if the combination of local usage and production conditions meets the defined release quantities resulting from this exposure scenario (calculated as M(site) [see amounts used, contributing scenario 1] x release factor [Technical conditions and measures at process level (source) to prevent release; contributing scenario 1])

associated uses:

Other combinations of operational conditions may also be safe. Please contact OQ in case your local operational conditions differ from the ones described above and you are unsure if they are also safe

Number of the ES 10

Short title of the exposure scenario
Road and construction applications

Sector of uses [SU]
SU22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Process categories [PROC]
PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC10: Roller application or brushing
PROC11: Non industrial spraying
PROC13: Treatment of articles by dipping and pouring
PROC14: production of preparations or articles by tabletting, compression, extrusion, pelettisation
PROC19: Hand-mixing with intimate contact and only PPE available

Environmental release categories [ERC]
ERC8a: Wide dispersive indoor use of processing aids in open systems
ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix
ERC8d: Wide dispersive outdoor use of processing aids in open systems
ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix

Product characteristics
Refer to attached safety data sheets

Processes and activities covered by the exposure scenario
Application of surface coatings and binders in road and construction activities, including paving uses, manual mastic and in the application of roofing and water-proofing membranes

Further explanations
Professional use
Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Number of the contributing scenario **1**
Contributing exposure scenario controlling worker exposure for PROC 5

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 10 %
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm^2)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **2**
Contributing exposure scenario controlling worker exposure for PROC 8a

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 10 %
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to 2 hands (960 cm^2)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario **3**
Contributing exposure scenario controlling worker exposure for PROC 8b

Further specification
Assessment tool used: Chesar 2.2
Product characteristics

Covers percentage substance in the product up to 10 %
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario 4
Contributing exposure scenario controlling worker exposure for PROC 10

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 10 %
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to 2 hands (960 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario 5
Contributing exposure scenario controlling worker exposure for PROC 11

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 10 %
Solid, low dustiness
Frequency and duration of use
4 h (half shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to hands and lower arms (1500 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374. Wear protective gloves (Efficiency: 80 %).

Number of the contributing scenario 6
Contributing exposure scenario controlling worker exposure for PROC 13

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 10 %
Solid, low dustiness
Frequency and duration of use
8 h (full shift)

Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario 7
Contributing exposure scenario controlling worker exposure for PROC 14

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 10 %
Solid, low dustiness
Frequency and duration of use
8 h (full shift)
Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario 8
Contributing exposure scenario controlling worker exposure for PROC 19

Further specification
Assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 10 %
Solid, low dustiness
Frequency and duration of use
Avoid carrying out activities involving exposure for more than 1 hour
Human factors not influenced by risk management
Area potentially exposed: corresponds to 1980 cm²
Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
Without local exhaust ventilation. provide a basic standard of general ventilation (1 to 3 air changes per hour).
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374. Wear protective gloves (Efficiency: 80 %).

Human exposure prediction (oral, dermal, inhalative)
Oral exposure is not expected to occur. EE(inhal): Estimated inhalative long-term exposure [mg/m³]; EE(derm): Estimated dermal long-term exposure [mg/kg b.w./d]. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios. The RMMs described above suffice to control risks for both local and systemic effects.

Proc 5	EE(inhal): 0.6 ; EE(derm): 8.226
Proc 8a	EE(inhal): 0.3 ; EE(derm): 8.226
Proc 8b	EE(inhal): 0.3 ; EE(derm): 8.226
Proc 10	EE(inhal): 0.18 ; EE(derm): 9.875
Proc 11	EE(inhal): 0.36 ; EE(derm): 7.714
Proc 13	EE(inhal): 0.3 ; EE(derm): 8.226
Proc 14	EE(inhal): 0.6 ; EE(derm): 2.058

Proc 19	EE(inhal): 0.06 ; EE(derm): 3.394

Risk characterisation
RCR(inhal): inhalative risk characterisation ratio; RCR(derm): dermal risk characterisation ratio; total RCR= RCR(inhal) +RCR(derm). Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values.

Proc 5	RCR(inhal): 0.017 ; RCR(derm): 0.823
Proc 8a	RCR(inhal): 0.01 ; RCR(derm): 0.823
Proc 8b	RCR(inhal): .?1; RCR(derm): .?2
Proc 10	RCR(inhal): 0.01 ; RCR(derm): 0.988
Proc 11	RCR(inhal): 0.01 ; RCR(derm): 0.771
Proc 13	RCR(inhal): 0.01 ; RCR(derm): 0.823
Proc 14	RCR(inhal): 0.017 ; RCR(derm): 0.206
Proc 19	RCR(inhal): 0.01 ; RCR(derm): 0.339

Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES
Usage of relase factors allows downstream users to verify in a first approximation, if the combination of local usage and production conditions meets the defined release quantities resulting from this exposure scenario (calculated as M(site) [see amounts used, contributing scenario 1] x release factor [Technical conditions and measures at process level (source) to prevent release; contributing scenario 1])

associated uses:
Should consumer uses be associated with this exposure scenario, please contact OQ for further details
Other combinations of operational conditions may also be safe. Please contact OQ in case your local operational conditions differ from the ones described above and you are unsure if they are also safe