

# SAFETY DATA SHEET

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe, mixing rate 2:1  
Date of printing: 07.10.2023

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

### 1.1 Product identifier

Product name: DD-Härter B05-901/67 for DD-Lackfarbe, mixing rate 2:1  
Unique Formula Identifier (UFI-Code): FC00-60K5-W004-GHH5  
Product type: Curing agent

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

Field of application: metal industry  
Identified uses: Industrial applications, Professional applications, Used by spraying.

### 1.3 Details of the supplier of the safety data sheet:

Producer/Supplier: Bisdorf GmbH  
Industriestraße 49-51  
D-52224 Stolberg  
Telephone: +49 (0) 2402 / 71048  
Telefax: +49 (0) 2402 / 75465  
E-Mail address: [bisdorf-lacke@arcor.de](mailto:bisdorf-lacke@arcor.de)

### 1.4 Emergency telephone number

Emergency information: Information Center against Poisons  
University Bonn  
Telephone number: +49 (0)228 / 19240  
Date of issue: 07.10.2023  
Date of previous issue: 01.10.2021

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

Product definition: Mixture  
Classification according to Regulation (EC) No. 1272/2008 [CLP]

#### Classification acc. to GHS

Section	Hazard class	Hazard class and category	Hazard statement
2.6	flammable liquid	Flam. Liq. 3	H226
3.1I	acute toxicity (inhal.)	Acute Tox. 4	H332
3.2	skin corrosion/irritation	Skin Irrit. 2	H315
3.4S	skin sensitisation	Skin Sens. 1	H317
3.3	serious eye damage/eye irritation	Eye Irrit. 2	H319
3.4R	skin sensitisation	Resp. Sens. 1	H334
3.9	specific target organ toxicity - repeated exposure	STOT RE 2	H373

See Section 11 for more detailed information on health effects and symptoms.

# SAFETY DATA SHEET

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



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mixing rate 2:1  
Date of printing: 07.10.2023

## 2.2 Label elements

Hazard pictograms:



Signal word: Danger

Hazard statements:  
H226 - Flammable liquid and vapor.  
H315 - Causes skin irritation.  
H317 - May cause an allergic skin reaction.  
H319 - Causes serious eye irritation.  
H332 - Harmful if inhaled.  
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled  
H373 - May cause damage to organs through prolonged or repeated exposure.  
EUH066 - Repeated exposure may cause skin dryness or cracking.  
EUH204 - Contains isocyanates. May produce an allergic reaction.

Precautionary statements:

Prevention:  
P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking.  
P260 - Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.  
P271 - Use only outdoors or in a well-ventilated area.  
P280 - Wear protective gloves/protective clothing/eye protection/face protection.

Response:  
P301 + P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.  
P303 + P361 + P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.  
P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing  
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P314 - Get medical advice/attention if you feel unwell.  
P331 - Do NOT induce vomiting.  
Storage:  
P403 + P233 - Store in a well-ventilated place. Keep container tightly closed.  
P403 + P235 - Store in a well-ventilated place. Keep cool.  
P405 - Store locked up.

Disposal:  
P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements: Contains isocyanates. May produce an allergic reaction.

Indication at Labelling:

The pictogram GHS 02 (flame) can according GHS/CLP Art. 33 (3) substituted to label of ADR.

## 2.3 Other hazards

Endocrine disrupting properties (human health):

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Endocrine disrupting properties (environment):

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

# SAFETY DATA SHEET

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1

Date of printing: 07.10.2023

PBT and vPvB assessment:

This substance/mixture contains components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB).

## SECTION 3: Composition/information on ingredients

### 3.2 Mixtures

Product/ingredient name	Identifiers	%	Classification 1272/2008/EC (CLP)	Type
xylene (mixture of isomers)	REACH: 01-2119488216-32 CAS: 1330-20-7 EG: 215-535-7	15-20	Flam. Liq. 3, H226 Acute Tox. 4, H312 Acute Tox. 4, H332 Asp. Tox. 1, H304 Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335 STOT RE 2, H373 (hearing organs)	C [1] [2]
ethylbenzene	REACH: 01-2119489370-35 CAS: 100-41-4 EG: 202-849-4	1-5	Flam. Liq. 2, H225 Asp. Tox. 1, H304 Acute Tox. 4, H332 STOT SE 3, H335 STOT RE 2, H373 (hearing organs)	- [1] [2]
2-methoxy-1-methylethylacetate (PMA)	REACH: 01-2119475791-29 CAS: 108-65-6 EG: 203-603-9	10-15	Flam. Liq. 3, H226	- [2]
n-butyl acetate	REACH: 01-2119485493-29 CAS: 123-86-4 EG: 204-658-1	5-10	Flam. Liq. 3, H226 STOT SE 3, H336	- [1]
aromatic polyisocyanate	REACH: Polymer CAS: 53317-61-6 EG: 500-120-8	50-60	Skin Sens. 1, H317 Eye Irrit. 2, H319	- [1]
m-tolylidene diisocyanate, toluene-diisocyanate	REACH: 01-2119454791-34 CAS: 26471-62-5 EG: 247-722-4	<0,4	Acute Tox. 2, H330 Skin Irrit. 2, H315 Skin Sens. 1, H317 Eye Irrit. 2, H319 Resp. Sens. 1, H334 STOT SE 3, H335 (Respiratory tract Irritation) Carc. 2, H351 Aquatic Chronic 3, H412	- [1]

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Type

[1] Substance classified with a health or environmental hazard

[2] Substance with a workplace exposure limit

[3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII

[4] Substance does not meet the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII.

[5] Substance of equivalent conce.

Occupational exposure limits, if available, are listed in Section 8.

# SAFETY DATA SHEET

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

General information: In all cases of doubt, or when symptoms persist, seek medical attention. If unconscious, place in recovery position and get medical attention immediately. Never give anything by mouth to an unconscious person. In any case show the physician the Safety Data Sheet.

Inhalation: Remove affected persons from dangerous area by observing suitable respiratory Protection measures. Remove the casualty into fresh air and keep at rest. After intensive inhalation consult a doctor in every case, even if no symptoms occur.

Skin contact: Take off immediately all contaminated clothing. Wash contaminated clothing before reusing. Do not allow the product to dry on the skin. Wash skin thoroughly with soap and water or use recognised skin cleanser. Consult a doctor in case of persisting skin irritation.

Eye contact: Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Begin with medical treatment.

Ingestion: If swallowed, rinse mouth with water (only if the person is conscious). Do not induce vomiting unless directed to do so by medical personnel. Seek medical attention.

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

General information: When inhaled or swallowed depending on the time and amount, it can give rise to the following symptoms: headaches, giddiness, tiredness, nausea, vomiting, irregular heart beat, intoxication, unconsciousness, asphyxiation and fatality.

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

Notes to physician: Symptomatic treatment.

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media



Suitable: Extinguishing measures to suit surroundings. In case of fire, use water spray jet, dry extinguishing powder, foam or carbon dioxide.

Not suitable: water jet.

### 5.2 Special hazards arising from the substance or mixture

Hazardous combustion

Products: Fire will produce dense black smoke containing hazardous combustion products. In a fire, the following may be released: carbon dioxide, carbon monoxide, not combusted hydrocarbons.

### 5.3 Advice for firefighters

Special protective equipment for fire-fighters: During fire-fighting wear self-contained breathing apparatus and protective clothing.

Additional information: The product is flammable. Use water spray to keep fire-exposed containers cool. Use extinguishing media suitable for surrounding materials. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

# SAFETY DATA SHEET

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023

## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

General information: To avoid fire, eliminate ignition sources. Provide adequate ventilation. Use personal protective equipment. Avoid contact with eyes, skin and clothing. Avoid breathing vapours, spray or mists.

### 6.2 Environmental precautions

General information: Do not discharge into the drains / surface waters / groundwater. Prevent spread over a wide area e.g. by containment or oil barriers.

### 6.3 Methods and material for containment and cleaning up

General information: Absorb with liquid-binding material (sand, diatomite, universal binders etc.) or use a spill kit. Containers in which spilt substance has been collected must be adequately labelled. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

### 6.4 Reference to other sections

General information: See Section 1 for emergency contact information.  
See Section 8 for information on appropriate personal protective equipment.  
See Section 13 for additional waste treatment information.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

Protective measures: Keep away from sources of ignition - No smoking. Vapours may form explosive mixtures with air.  
Take precautionary measures against electrostatic discharges. Provide good ventilation of working area. The working procedure should be planned as far as allowed by state-of-the-art technology so as to avoid release of hazardous substances or prevent skin contact. The level of risk involved in product handling must be reduced to a minimum by means of protective and preventive measures.

### 7.2 Conditions for safe storage, including any incompatibilities

General information: Store in a dry, cool and well-ventilated area. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. Store in accordance with local regulations.

German storage class: 10 - Combustible liquids neither in Storage Class 3

### 7.3 Specific end use(s)

See separate Product Data Sheet for recommendations or industrial sector specific solutions.

# SAFETY DATA SHEET

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



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mixing rate 2:1  
Date of printing: 07.10.2023

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### Occupational exposure limit values (Workplace Exposure Limits)

Product/ingredient name	CAS-Nr.	Notation	Identifier	TWA [ppm]	TWA [mg/m <sup>3</sup> ]	STEL [ppm]	STEL [mg/m <sup>3</sup> ]	Source
xylene (mixture of isomers)	1330-20-7	skin	IOELV	50	221	100	442	2017/164/EU
ethylbenzene	100-41-4	skin	IOELV	100	442	200	884	2017/164/EU
2-methoxy-1-methylethylacetate (PMA)	108-65-6		IOELV	50	275	270	550	2000/39/EG
n-butyl acetate	123-86-4	skin	MAK	2	11	4	22	DFG/GER
Di-isocyanatotoluene (mixture of isomers)	584-84-9	Sa			0,035		0,02	ACGIH

#### Notation

- STEL Short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period unless otherwise specified
- TWA Time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average
- Sa Sensitizing substance by inhalation.

#### DNELs/DMELs

Product/ingredient name		
xylene (mixture of isomers)		
Oral	DNEL (population)	1,6 mg/kg bw/day (Long-term - systemic effects)
Dermal	DNEL (worker)	180 mg/kg bw/day (Long-term - systemic effects)
Inhalation	DNEL (population)	108 mg/kg bw/day (Long-term - systemic effects)
	DNEL (worker)	77 mg/m <sup>3</sup> (Long-term - systemic effects)
	DNEL (population)	289 mg/m <sup>3</sup> (Acute - systemic and local effects)
	DNEL (population)	14,8 mg/m <sup>3</sup> (Long-term - systemic effects)
		174 mg/m <sup>3</sup> (Acute - systemic and local effects)

Product/ingredient name		
ethylbenzene		
Dermal	DNEL (worker)	180 mg/kg bw/day (Long-term - systemic effects)
Inhalation	DNEL (worker)	77 mg/m <sup>3</sup> (Long-term - systemic effects)
		289 mg/m <sup>3</sup> (Acute - systemic and local effects)

Product/ingredient name		
2-methoxy-1-methylethylacetate (PMA)		
Oral	DNEL (population)	36 mg/kg bw/day (Long-term - systemic effects)
Dermal	DNEL (worker)	796 mg/kg bw/day (Long-term - systemic effects)
Inhalation	DNEL (population)	320 mg/kg bw/day (Long-term - systemic effects)
	DNEL (worker)	275 mg/m <sup>3</sup> (Long-term - systemic effects)
	DNEL (population)	33 mg/m <sup>3</sup> (Long-term - systemic effects)

# SAFETY DATA SHEET

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe, mixing rate 2:1  
 Date of printing: 07.10.2023

Product/ingredient name		
n-butyl acetate		
Oral	DNEL (population)	2 mg/kg bw/day (Long-term - systemic effects)
Dermal	DNEL (worker)	11 mg/kg bw/day (Long-term - systemic effects)
Inhalation	DNEL (population)	6 mg/kg bw/day (Long-term - systemic effects)
	DNEL (worker)	600 mg/m <sup>3</sup> (Acute - local effects)
	DNEL (population)	300 mg/m <sup>3</sup> (Long-term - systemic effects)
		300 mg/m <sup>3</sup> (Acute - local effects)
		35,7 mg/m <sup>3</sup> (Long-term - systemic effects)

Product/ingredient name		
Di-isocyanatotoluene (mixture of isomers)		
Inhalation	DNEL (worker)	0,14 mg/m <sup>3</sup> (Acute - systemic and local effects)
	DNEL (worker)	0,035 mg/m <sup>3</sup> (Long-term - systemic and local effects)

## PNECs

Product/ingredient name	
xylene (mixture of isomers)	
PNEC aqua	0,327 mg/l (fresh water) 0,327 mg/l (marine water)
PNEC	6,58 mg/l (STP (sewage treatment plant)) 2,31 mg/kg dw (soil)
PNEC sediment	12,46 mg/kg dw (fresh water) 12,46 mg/kg dw (marine water)

Product/ingredient name	
ethylbenzole	
PNEC aqua	0,1 mg/l (fresh water) 0,01 mg/l (marine water)
PNEC	6,58 mg/l (STP (sewage treatment plant)) 2,68 mg/kg dw (soil)
PNEC sediment	13,7 mg/kg dw (fresh water) 1,37 mg/kg dw (marine water)

Product/ingredient name	
2-methoxy-1-methylethylacetate (PMA)	
PNEC aqua	0,635 mg/l (fresh water) 0,064 mg/l (marine water)
PNEC	100 mg/l (STP (sewage treatment plant)) 0,29 mg/kg dw (soil)
PNEC sediment	3,29 mg/kg dw (fresh water) 0,329 mg/kg dw (marine water)

# SAFETY DATA SHEET

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023

Product/ingredient name	
n-butyl acetate	
PNEC aqua	0,18 mg/l (fresh water) 0,018 mg/l (marine water)
PNEC	35,6 mg/l (STP (sewage treatment plant)) 0,09 mg/kg dw (soil)
PNEC sediment	0,981 mg/kg dw (fresh water) 0,098 mg/kg dw (marine water)

Product/ingredient name	
Di-isocyanatotoluene (mixture of isomers)	
PNEC aqua	0,013 mg/l (fresh water) 0,00125 mg/l (marine water)
PNEC	>1 mg/l (STP (sewage treatment plant)) >1 mg/kg dw (soil)
PNEC sediment	Not relevant. (fresh water) Not relevant. (marine water)

## 8.2 Exposure controls / personal protection

### Engineering measures

Refer to protective measures listed in sections 7.

### Personal protective equipment:

#### Respiratory protection

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. If working areas have insufficient ventilation: When the product is applied by means that will not generate an aerosol such as, brush or roller wear half or totally covering mask equipped with gas filter of type A, when grinding use particle filter of type P. Be sure to use an approved/certified respirator or equivalent.

#### Hand protection

If there is a potential for product skin contact, use of gloves tested to e.g. EN 374 will provide sufficient protection. Protective gloves should in any case be tested for workplace-specific suitability (e.g. mechanical resistance, product compatibility, antistatic properties). Comply with instructions and information provided by the glove manufacturer concerning use, care and replacement of the gloves. Replace protective gloves immediately upon damage or at the first signs of wear. As far as possible, plan work procedures so that wearing gloves will not be necessary.

	Long term exposure	Short term exposure
Recommended gloves should be made of	Viton®	Nitril.
Material thickness	>0,7 mm	>0,4 mm
Permeation time	>480 min	>480 min

#### Eye protection

Safety goggles with lateral shielding (DIN EN 166)

#### Body protection

Usual working clothes for the chemical industry, suitable for the job.



# SAFETY DATA SHEET

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023

## Environmental exposure controls:

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

#### Appearance

Physical state: Fluid                      Colour: Yellowish

Odor: Characteristic

Odor threshold: Not relevant for the hazard classification of the product.

#### Security-relevant basic data

Parameter	
pH-value	Not applicable.
Melting point/Melting range	<-25 °C
Boiling point/Boiling range	136 - 145 °C
Flash point	~23-27 °C (IP 170 (ABEL))
Flammability (solid / gas)	Not applicable.
Ignition temperature	~460 ° C (lowest value of the individual components)
Decomposition temperature	Not determined.
Auto-ignition temperature	The product is not self-igniting.
Explosive properties	Product is not explosive. However, formation of explosive air/steam mixtures as possible.
Explosion limits	
Lower	1 %(Vol)
Upper	7 %(Vol)
Oxidizing properties	Not determined
Vapour pressure	10 hPa (20 °C)
Density	~1,10 g/cm <sup>3</sup> (20 °C)
Vapor density	Not determined
Evaporation rate	No data available.
Solubility in Miscibility with water	Organic solvents (see point 3) 0.175 g/l
Partition coefficient: (n-octanol/water)	Testing not relevant or not possible due to nature of the product.
Viscosity (expiry time after DIN 53211) Dynamic: Kinematic:	~60 s DIN 4mm (20°C)
Solvent separation test	< 3% (20°C)

### 9.2. Other information

No additional information.

# SAFETY DATA SHEET

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe, mixing rate 2:1  
Date of printing: 07.10.2023

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

General information: No specific test data related to reactivity available for this product or its ingredients.

### 10.2 Chemical stability

General information: The product is stable.

### 10.3 Possibility of hazardous reactions

General information: Rubber and other synthetic material can be affected.

### 10.4 Conditions to avoid

General information: The product is flammable. Keep away from excessive heat, sparks or open fire.

### 10.5 Incompatible materials

General information: oxidising agents, acids

### 10.6 Hazardous decomposition products

General information: Thermal disintegration depends to a great extent on the external conditions. A complex mixture of solids, liquids and gases forms in the air, including among other substances carbon dioxide, carbon monoxide and other organic compounds, when this material is burnt or is thermally or oxidatively degraded.

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

Product/ingredient name	Result	Species	Dose	Exposure
xylene (mixture of isomers)	LC50 Inhalation Gas	Rat	5000 ppm	4 hours
	LC50 Inhalation Vapour	Rat	6350 ppm	4 hours
	LD50 Dermal	Rabbit	>5000 mg/kg	-
ethylbenzene	LD50 Oral	Rat	4300 mg/kg	-
	LC50 Inhalation Vapour	Rat	17,2 mg/l	4 hours
	LD50 Dermal	Rabbit	>5000 mg/kg	-
2-methoxy-1-methylethylacetate (PMA)	LD50 Oral	Rat	3500 mg/kg	-
	LC50 Inhalation Vapour	Rat	> 10,8 mg/l	6 hours
	LD50 Dermal	Rabbit	> 5 000 mg/kg	-
n-butyl acetate	LD50 Oral	Rat	> 5 000 mg/kg	-
	LC50 Inhalation Gas	Rat	2730 ppm	4 hours
	LC50 Inhalation Vapour	Rat	>21 mg/l	4 hours
aromatic polyisocyanate	LD50 Dermal	Rabbit	>17600 mg/kg	-
	LD50 Oral	Rat	10768 mg/kg	-
	LC50 Inhalation Vapour	Rat	> 2,462 mg/l	4 hours
Di-isocyanatotoluene (mixture of isomers)	LD50 Dermal	Rabbit	-	-
	LD50 Oral	Rat	>5000 mg/kg	-
	LC50 Inhalation Vapour	Rat	0,107 mg/l	4 hours
	LD50 Dermal	Rabbit	> 9.400 mg/kg	-
	LD50 Oral	Rat	4130 mg/kg	-

### Acute toxicity estimates

Route	ATE-Value
Oral	not rated
Dermal	not rated
Inhalation (vapors)	38,505 mg/l/4h

# SAFETY DATA SHEET

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1

Date of printing: 07.10.2023

## Corrosion/Irritation

Product/ingredient name	Result	Species	Score	Exposure
xylene (mixture of isomers)	Eyes - Severe irritant	Rabbit	-	24 hours 5 milligrams
	Skin - Moderate irritant	Rabbit	-	24 hours 500 milligrams
ethylbenzene	Skin - Mild irritant	Rabbit	-	24 hours 15 milligrams
	Respiratory - Mild irritant	Rabbit	-	-
2-methoxy-1-methylethylacetate (PMA)	Eyes - Mild irritant	Rabbit	-	-
	Respiratory - Mild irritant	Rabbit	-	-
n-butyl acetate	Eyes - Mild irritant	Rabbit	-	-
	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams
	Skin - Mild irritant	Rabbit	-	24 hours 10 milligrams
	Respiratory - Mild irritant	Rabbit	-	-
aromatic polyisocyanate	Eyes - Severe irritant	Rabbit	-	-
Di-isocyanatotoluene	Eyes - Severe irritant	Rabbit	-	-
(mixture of isomers)	Skin - Moderate irritant	Rabbit	-	-

## Sensitiser

Product/ingredient name	Route of exposure	Species	Result
aromatic polyisocyanate	Skin	Guinea pig	Sensitising
Di-isocyanatotoluene (mixture of isomers)	Skin	Rat	Sensitising

## Mutagenicity

Remarks: No evidence of mutagenic effects.

## Carcinogenicity

Remarks: No evidence of carcinogenic effects.

Di-isocyanatotoluene (mixture of isomers)

Carcinogenicity: Animal testing did not show any carcinogenic effects after inhalation. The European Union classifies this product as a carcinogen. Suspected of causing cancer (Carc. 2).

## Reproductive toxicity

Remarks: No evidence that the substance is toxic for reproduction.

## Teratogenicity

Remarks: No evidence that the substance may cause birth defects.

## Specific target organ toxicity (single exposure)

Product/ingredient name	Category	Route of exposure	Target organs
xylene (mixture of isomers)	Category 3	Not applicable.	Respiratory tract Irritation
n-butyl acetate	Category 3	Not applicable.	Narcotic effects
Di-isocyanatotoluene (mixture of isomers)	Category 3	Not applicable.	Respiratory tract Irritation

## Specific target organ toxicity (repeated exposure)

Product/ingredient name	Category	Route of exposure	Target organs
xylene (mixture of isomers)	Category 2	Not determined	Hearing organs
ethylbenzene	Category 2	Not determined	Hearing organs

# SAFETY DATA SHEET

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1

Date of printing: 07.10.2023

## Aspiration hazard

Product/ingredient name	Result
xylene (mixture of isomers)	ASPIRATION HAZARD - Category 1
ethylbenzene	ASPIRATION HAZARD - Category 1

## Information on the likely routes of exposure

Routes of entry anticipated: Oral, Dermal, Inhalation.

## Potential chronic health effects

Remarks: Not available.

## 11.2 Endocrine disrupting properties

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

## 11.3 Other hazards

The product is flammable. Keep away from excessive heat, sparks or open fire. In use, may form flammable/explosive vapour/air mixture. Electrostatic charges may be generated during pumping, release of which may cause a fire.

## SECTION 12: Ecological information

### 12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
xylene (mixture of isomers)	Acute EC50 3,82 mg/l	Daphnie - Daphnia magna	48 hours
	Acute EC50 4,7 mg/l	Algae- Pseudokirchneriella subcapitata	72 hours
ethylbenzene	Acute LC50 7,6 mg/l	Fish - Oncorhynchus mykiss	96 hours
	Acute EC50 2,4 mg/l	Daphnie - Daphnia magna	48 hours
	Acute EC50 4,6 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours
2-methoxy-1-methylethylacetate (PMA)	Acute LC50 7 mg/l	Fish - Oncorhynchus mykiss	96 hours
	Acute EC50 408 mg/l	Daphnie - Daphnia magna	48 hours
	Acute EC50 1000 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours
n-butyl acetate	Acute LC50 134 mg/l	Fish - Pimephales promelas	96 hours
	Acute LC50 44 mg/l	Daphnie - Daphnia magna	48 hours
	Acute EC50 647,7 mg/l	Algae- Pseudokirchneriella subcapitata	72 hours
aromatic polyisocyanate	Acute LC50 18 mg/l	Fish - Oncorhynchus mykiss	96 hours
	Acute EC50 >100 mg/l	Daphnie - Daphnia magna	48 hours
	Acute EC50 >100 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours
Di-isocyanatotoluene (mixture of isomers)	Acute LC50 199 mg/l	Fish - Danio rerio	96 hours
	Acute EC50 12,5 mg/l	Daphnie - Daphnia magna	48 hours
	Acute EC50 4.300 mg/l	Algae - Chlorella vulgaris	96 hours
	Acute LC50 133 mg/l	Fish - Pimephales promelas	96 hours

### 12.2 Persistence and degradability

Product/ingredient name	Result
xylene (mixture of isomers)	87,8 % - 28 days
ethylbenzene	>70 % - 28 days
2-methoxy-1-methylethylacetate	83% - 28 days
n-butyl acetate	90 % - 28 days
aromatic polyisocyanate	-
Di-isocyanatotoluene (mixture of isomers)	0% - 28 days

# SAFETY DATA SHEET

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1

Date of printing: 07.10.2023

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
xylene (mixture of isomers)	-	-	Readily
ethylbenzene	-	-	Readily
2-methoxy-1-methylethylacetate	-	-	Readily
n-butyl acetate	-	-	Readily
aromatic polyisocyanate	-	-	Not readily biodegradable.
Di-isocyanatotoluene (mixture of isomers)	-	-	Not potentially degradable

## 12.3 Bioaccumulative potential

Product/ingredient name	LogPow	BCF	Potential
xylene (mixture of isomers)	3.16	8.1 - 25.9	low
ethylbenzene	3.6	-	low
solvent naphtha (petroleum), light arom.	3.7 bis 4.5	10 - 2500	high
1-methoxy-2-propanol (PM)	<1	-	low
methyl-methacrylate	1.38	-	low

## 12.4 Mobility in soil

Soil/water partition coefficient (KOC): Not available.

## 12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

## 12.6 Endocrine disrupting properties

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

## 12.7 Other adverse effects

No known significant effects or critical hazards.

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods



The generation of waste should be avoided or minimised wherever possible. Residues of the product is listed as hazardous waste. Dispose of according to all state and local applicable regulations. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Spillage, remains, discarded clothes and similar should be discarded in a fireproof container.

European waste catalogue no. (EWC) is given below.

European waste catalogue (EWC): 08 01 11\*

### Packaging

The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

# SAFETY DATA SHEET




Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023

## SECTION 14: Transport information

Transport may take place according to national regulation or ADR for transport by road, RID for transport by train, IMDG for transport by sea, IATA for transport by air.

	14.1 UN no.	14.2 Proper shipping name	14.3 Transport hazard class(es)	14.4 PG*	14.5 Env* Additional information
<b>ADR/RID Class</b>	UN1263	PAINT RELATED MATERIAL	3 	III	No. <u>Tunnel code</u> (D/E)
<b>IMDG Class</b>	UN1263	PAINT RELATED MATERIAL	3 	III	No. <u>Emergency schedules</u> F-E, S-E
<b>IATA Class</b>	UN1263	PAINT RELATED MATERIAL	3 	III	No. -

PG\*.: Packing group

Env.\* : Environmental hazards

### 14.6 Special precautions for user

Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

### 14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not applicable.

## SECTION 15: Regulatory information

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

#### EU Regulation

Regulation (EG) Nr. 1907/2006 (REACH)

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), with supplements.

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

Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labeling and packaging of substances and mixtures (CLP), with supplements.

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorisation

Substances of very high concern

Substances mentioned on the so-called "candidate list of substances of very high concern (SVHC) for authorisation" published by the ECHA are not intentionally added to this product. Therefore it is not expected, that these substances are present in amounts of  $\geq 0,1\%$  in this product.

#### National legislation (Germany)

**Water hazard class:** WGK 2 (Assessment by list): hazardous for water.

**VOC:** 510 g/l DIN ISO 11890 (Council Directive 1999/13/EC).

**Information about limitation of use:** Employment restrictions concerning young persons must be observed.

### 15.2 Chemical Safety Assessment

This product contains substances for which Chemical Safety Assessments are still required.

# SAFETY DATA SHEET

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II

Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023



## SECTION 16: Other information

### Abbreviations and acronyms:

Abbr.	Descriptions of used abbreviations
ADR	Accord européen relatif au transport international des marchandises dangereuses par route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
BCF	bioconcentration factor
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
CLP	Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures
CMR	Carcinogenic, Mutagenic or toxic for Reproduction
DGR	Dangerous Goods Regulations (see IATA/DGR)
DMEL	Derived Minimal Effect Level
DNEL	Derived No-Effect Level
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
EmS	Emergency Schedule
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods Code
IOELV	indicative occupational exposure limit value
MARPOL	International Convention for the Prevention of Pollution from Ships (abbr. of "Marine Pollutant")
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No-Effect Concentration
ppm	parts per million
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail)
STEL	short-term exposure limit
TWA	time-weighted average
VOC	Volatile Organic Compounds
vPvB	very Persistent and very Bioaccumulative

### Full text of classifications [CLP/GHS]:

Acute Tox. 4, H312 ACUTE TOXICITY (dermal) - Category 4  
Acute Tox. 4, H332 ACUTE TOXICITY (inhalation) - Category 4  
Aquatic Chronic 2, H411 LONG-TERM AQUATIC HAZARD - Category 2  
Asp. Tox. 1, H304 ASPIRATION HAZARD - Category 1  
Eye Irrit. 2, H319 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2  
Flam. Liq. 3, H225 FLAMMABLE LIQUIDS - Category 2  
Flam. Liq. 3, H226 FLAMMABLE LIQUIDS - Category 3  
Skin Irrit. 2, H315 SKIN CORROSION/IRRITATION - Category 2  
Skin Sens. 1, H317 SKIN SENSITIZATION - Category 1  
STOT RE 2, H373 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2  
STOT RE 2, H373 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (hearing organs) - Category 2  
STOT SE 3, H335 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3  
STOT SE 3, H336 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3

# SAFETY DATA SHEET

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1

Date of printing: 07.10.2023

## Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Classification	Justification
Flam. Liq. 3, H226	On basis of test data
Skin Irrit. 2, H315	Calculation method
Skin Sens. 1, H317	Calculation method
Eye Irrit. 2, H319	Calculation method
Acute Tox. 4 (Inhalation), H332	Calculation method
Resp. Sens. 1, H334	Calculation method
STOT RE 2, H373	Calculation method

### Notice to reader

*The information contained in this safety data sheet is based on the present state of knowledge and EU and national legislation. It provides guidance on health, safety and environmental aspects for handling the product in a safe way and should not be construed as any guarantee of the technical performance or suitability for particular applications. It is always the duty of the user/employer to ascertain that the work is planned and carried out in accordance with the national regulations.*



# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II

Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023



**xylene, mixture of isomers**

## Annex: Exposure scenario 1

### SECTION 1: Title section

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

**Sector of Use** SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

#### Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC5 Mixing or blending in batch processes

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

PROC14 Tableting, compression, extrusion, pelletisation, granulation

PROC15 Use as laboratory reagent

**Environmental release category** ERC2 Formulation into mixture

#### Description of the activities / processes covered in the Exposure Scenario

Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tableting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.

### SECTION 2: Conditions of use affecting exposure

The usual precautionary measures should be adhered to in handling the chemicals.

**Duration and frequency** 8hrs (full working shift).

#### Worker

Frequency of use:

5 workdays/week.

#### Physical parameters

##### Physical state

Fluid

Vapour pressure: 0.5-10 kPa (20 °C)

**Concentration of the substance in the mixture** Covers use of substance / product up to 100%

#### Used amount per time or activity

Regional use tonnage (tonnes/year): 15000, SU3

Annual site tonnage (tonnes/year): 3750, SU3

Maximum daily site tonnage (kg/day): 12500, SU3

#### Other operational conditions

Emission days / year: 300

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

Assumes a good basic standard of occupational hygiene is implemented.

#### Other operational conditions affecting environmental exposure

Local freshwater dilution factor: 10

Local marine water dilution factor: 100

Release fraction to air from process (initial release prior to RMM) / wide dispersive use (regional only): 1 %.

Release fraction to wastewater from process (initial release prior to RMM) / wide dispersive use: 0.2 %.

Release fraction to soil from process (initial release prior to RMM) / wide dispersive use (regional only): 0.01 %.

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023

## **Other operational conditions affecting worker exposure**

Clean working place and equipment every day. Avoid splashing. Remove spilled product immediately.  
Keep container tightly closed in a cool place.  
Avoid contact with the skin and eyes.

## **Other operational conditions affecting consumer exposure during the use of the product**

Not applicable.

**Risk management measures** Ensure that personal protective measures are used at all activities.

## **Worker protection**

Storage (PROC1 / PROC2):

Store substance within a closed system.

General exposures / Use (closed systems) PROC1 / PROC2 / PROC3:

Laboratory activities (PROC15):

No other specific measures identified.

Batch processes at elevated temperatures. Operation is carried out at elevated temperature (> 20°C above ambient temperature) PROC3:

Store / Handle product in closed systems.

Provide extract ventilation to points where emissions (can) occur.

Preparation of material for application. Use in contained batch (PROC3):

General exposures / Use (open systems) PROC4:

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

Process sampling (PROC3):

Provide a good standard of general ventilation.

Avoid carrying out activities involving exposure for more than 1 hour(s).

Mixing operations (open systems) PROC5:

Material transfers Drum/Batch transfer (Non-dedicated facility) PROC8a:

Material transfers Drum/batch transfers (Non-dedicated facility) PROC8b:

Material transfers Drum/batch transfers (dedicated facility) PROC8b:

Filling of drums and small containers (PROC 9):

Production or preparation or articles by tableting, compression, extrusion or pelletisation (PROC14):

Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour).

Bulk transfers (closed systems) PROC8b:

Ensure that material transfer is avoided or provide extract ventilation. Use local exhaust at places where emission can occur.

Equipment cleaning and maintenance (PROC 8a, 8b):

Drain or remove substance from equipment prior to break-in or maintenance.

Retain drain downs in sealed storage pending disposal or for subsequent recycle.

## **Organisational protective measures**

Ensure good ventilation. This can be achieved by using a local exhaust or general exhaust system. If these measures are insufficient to keep the solvent vapour concentration below the workplace limit, wear an adequate respiratory protective device.

The employer must ensure that the necessary personal protective devices are available and applied accordingly to the instructions.

## **Technical protective measures**

Provide explosion-proof electrical equipment.

Ensure that suitable extractors are available on processing machines

## **Personal protective measures**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

Do not inhale gases / fumes / aerosols.

Safety glasses

**Measures for consumer protection** Not relevant for this Exposure Scenario.

## **Environmental protection measures**

### **Air**

Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other environmental legislation.

Treat air emission to provide a typical removal efficiency of (%): 0

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023

## Water

*Sludge treatment: Incineration or in a landfill*

*Prevent discharge of undissolved substance to or recover from onsite wastewater.*

*Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):  
93.6*

*Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal  
(kg/day): 6.31*

*Assumed domestic sewage treatment plant flow (m<sup>3</sup>/d): 2000*

**Soil** *Use bunds or dykes around storage facilities to prevent soil and water pollution in the event of a spill.*

## Disposal measures

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

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

**Waste type** *Partially emptied and uncleaned packaging*

**Notes** *Disposal must be made according to official regulations.*

## SECTION 3: Exposure estimation

**Worker (oral)** *No significant oral exposure.*

### Worker (dermal)

PROC 1 / 3 / 15:

*Exposure estimate: 0.34 mg/kg/day*

*RCR: 0*

PROC 2:

*Exposure estimate: 1.37 mg/kg/day*

*RCR: 0.01*

PROC 4 / 8b / 9:

*Exposure estimate: 6.86 mg/kg/day*

*RCR: 0.04*

PROC 5 / 8a:

*Exposure estimate: 13.71 mg/kg/day*

*RCR: 0.04*

PROC 14:

*Exposure estimate: 3.43 mg/kg/day*

*RCR: 0.02*

### Worker (inhalation)

PROC 1:

*Exposure estimate: 0.01 ppm*

*RCR: 0*

PROC 2 / 15:

*Exposure estimate: 10 ppm*

*RCR: 0.56*

PROC 3:

*Exposure estimate: 17.5 ppm*

*RCR: 0.99*

PROC 4:

*Exposure estimate: 14 ppm*

*RCR: 0.79*

PROC 5 / 8a / 8b / 9 / 14:

*Exposure estimate: 15 ppm*

*RCR: 0.85*

**Environment** *The calculated value is smaller than the PNEC.*

**Consumer** *Not relevant for this Exposure Scenario.*

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II

Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023



## **SECTION 4: Guidance for downstream users**

*The exposure estimation was carried out in accordance with ECETOC TRA.*

*Version 3. <http://www.ecetoc.org/tra>*

*Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/ Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/ Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.*

*Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.*

*Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.*

*Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.*

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II

Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023



## Annex: Exposure scenario 2

### SECTION 1: Title section

**Short title of the exposure scenario** *Uses in Coatings - Industrial*

**Sector of Use** *SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites*

#### **Process category**

*PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.*

*PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions*

*PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition*

*PROC4 Chemical production where opportunity for exposure arises*

*PROC5 Mixing or blending in batch processes*

*PROC7 Industrial spraying*

*PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities*

*PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities*

*PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)*

*PROC10 Roller application or brushing*

*PROC13 Treatment of articles by dipping and pouring*

*PROC14 Tableting, compression, extrusion, pelletisation, granulation*

*PROC15 Use as laboratory reagent*

#### **Environmental release category**

*ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)*

#### **Description of the activities / processes covered in the Exposure Scenario**

*Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, spreader, dip, flow, fluidised bed on production lines and film formation) and equipment cleaning, maintenance and associated laboratory activities.*

### SECTION 2: Conditions of use affecting exposure

*The usual precautionary measures should be adhered to in handling the chemicals.*

**Duration and frequency** *8hrs (full working shift).*

#### **Worker**

*Frequency of use:*

*5 workdays/week.*

#### **Physical parameters**

##### **Physical state**

*Fluid*

*Vapour pressure: 0.5-10 kPa (20 °C)*

**Concentration of the substance in the mixture** *Covers use of substance / product up to 100%*

#### **Used amount per time or activity**

*Regional use tonnage (tonnes/year): 5000, SU3*

*Annual site tonnage (tonnes/year): 5000, SU3*

*Maximum daily site tonnage (kg/day): 17000, SU3*

#### **Other operational conditions**

*Continuous release.*

*Emissiondays /year: 300*

*Assumes use at not more than 20°C above ambient temperature (unless stated differently).*

*Assumes a good basic standard of occupational hygiene is implemented.*

#### **Other operational conditions affecting environmental exposure**

*Local freshwater dilution factor: 10*

*Local marine water dilution factor: 100*

*Release fraction to air from process (initial release prior to RMM) / wide dispersive use (regional only): 98 %.*

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023

Release fraction to wastewater from process (initial release prior to RMM) / wide dispersive use: 0.7 %.  
Release fraction to soil from process (initial release prior to RMM) / wide dispersive use (regional only): 0 %.

## **Other operational conditions affecting worker exposure**

Clean working place and equipment every day. Avoid splashing. Remove spilled product immediately. Keep container tightly closed in a cool place. Avoid contact with the skin and eyes.

## **Other operational conditions affecting consumer exposure during the use of the product**

Not applicable.

## **Risk management measures**

Ensure that personal protective measures are used at all activities. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.

## **Worker protection**

Storage (PROC1 / PROC2):

Store substance within a closed system.

General exposures / Use (closed systems) PROC1 / PROC2 / PROC3:

Laboratory activities (PROC15):

No other specific measures identified.

Film formation - force drying, stoving and other technologies (closed systems).

Operation is carried out at elevated temperature (> 20°C above ambient temperature) PROC2:

Store / Handle product in closed systems.

Provide extract ventilation to points where emissions (can) occur.

Mixing operations (closed systems) PROC:

Film formation - air drying (PROC4):

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

Preparation of material for application (PROC5):

Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).

Avoid manual contact with wet work pieces.

Transfer from/pouring from containers (PROC8a,8b,9):

Apply by Rolling or Brushing (PROC10):

Treatment by dipping and pouring (PROC13):

Production or preparation of articles by tableting, compression, extrusion or pelletisation (PROC14):

Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour).

Material transfers Drum/Batch transfer (Non-dedicated facility) PROC8a:

Material transfers Drum/batch transfers (Non-dedicated facility) PROC8b:

Material transfers Drum/batch transfers (dedicated facility) PROC8b:

Ensure that material transfer is avoided or provide extract ventilation.

Spraying (automatic/robotic) PROC7:

Carry out in a vented booth or extracted enclosure.

Spraying (PROC 7 (manuell)):

Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour).

Wear a respirator conforming to EN140 with Type A filter or better.

Equipment cleaning and maintenance (Non-dedicated facility) PROC 8a:

Drain or remove substance from equipment prior to break-in or maintenance.

## **Organisational protective measures**

Ensure good ventilation. This can be achieved by using a local exhaustion or general exhaust system. If these measures are insufficient to keep the solvent vapour concentration below the workplace limit, wear an adequate respiratory protective device.

The employer must ensure that the necessary personal protective devices are available and applied accordingly to the instructions.

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023

## Technical protective measures

Provide explosion-proof electrical equipment.

Ensure that suitable extractors are available on processing machines

## Personal protective measures

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

Do not inhale gases / fumes / aerosols.

Safety glasses

**Measures for consumer protection** Not relevant for this Exposure Scenario.

## Environmental protection measures

### Air

Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other environmental legislation.

Treat air emission to provide a typical removal efficiency of (%): 90

### Water

Sludge treatment: Incineration or in a landfill

Prevent discharge of undissolved substance to or recover from onsite wastewater.

Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 93.6

Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/day): 69000

Assumed domestic sewage treatment plant flow (m3/d): 2000

**Soil** Use bunds or dykes around storage facilities to prevent soil and water pollution in the event of a spill.

**Notes** In case of unintended release of the product: See section 6 of the Safety Data Sheet.

## Disposal measures

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

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

**Waste type** Partially emptied and uncleaned packaging

**Notes** Disposal must be made according to official regulations.

## SECTION 3: Exposure estimation

**Worker (oral)** No significant oral exposure.

### Worker (dermal)

PROC 1 / 3 / 15:

Exposure estimate: 0.34 mg/kg/day

RCR: 0

PROC 2 / 8a:

Exposure estimate: 1.37 mg/kg/day

RCR: 0.01

PROC 4 / 13:

Exposure estimate: 13.71 mg/kg/day

RCR: 0.08

PROC 5:

Exposure estimate: 0.07 mg/kg/day

RCR: 0

PROC 7 (automatisch):

Exposure estimate: 2.14 mg/kg/day

RCR: 0.01

PROC 7 (manuell):

Exposure estimate: 42.86 mg/kg/day

RCR: 0.24

PROC 8a (Anlagenr.):

Exposure estimate: 0.69 mg/kg/day

RCR: 0

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023

PROC 8b / 9:

Exposure estimate: 6.86 mg/kg/day

RCR: 0.04

PROC 10:

Exposure estimate: 27.43 mg/kg/day

RCR: 0.15

PROC 14:

Exposure estimate: 3.43 mg/kg/day

RCR: 0.02

## Worker (inhalation)

PROC 1:

Exposure estimate: 0.01 ppm

RCR: 0

PROC 2 / 8a (Anlagenr.) / 15:

Exposure estimate: 10 ppm

RCR: 0.56

PROC 3:

Exposure estimate: 17.5 ppm

RCR: 0.99

PROC 4 / 5 / 9 / 13 / 14:

Exposure estimate: 15 ppm

RCR: 0.85

PROC 7 (automatisch):

Exposure estimate: 12.5 ppm

RCR: 0.71

PROC 7 (manuell):

Exposure estimate: 7.5 ppm

RCR: 0.42

PROC 8a / 10:

Exposure estimate: 5 ppm

RCR: 0.28

PROC 8b:

Exposure estimate: 1.5 ppm

RCR: 0.08

**Environment** The calculated value is smaller than the PNEC.

**Consumer** Not relevant for this Exposure Scenario.

## SECTION 4: Guidance for downstream users

The exposure estimation was carried out in accordance with ECETOC TRA.

Version 3. <http://www.ecetoc.org/tra>

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/ Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/ Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.



# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II

Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023



## Annex: Exposure scenario 3

### SECTION 1: Title section

**Short title of the exposure scenario** *Uses in Coatings - Professional*

#### Sector of Use

SU22 Professional uses: *Public domain (administration, education, entertainment, services, craftsmen)*

#### Process category

PROC1 *Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.*

PROC2 *Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions*

PROC3 *Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition*

PROC4 *Chemical production where opportunity for exposure arises*

PROC5 *Mixing or blending in batch processes*

PROC8a *Transfer of substance or mixture (charging and discharging) at non-dedicated facilities*

PROC8b *Transfer of substance or mixture (charging and discharging) at dedicated facilities*

PROC10 *Roller application or brushing*

PROC11 *Non industrial spraying*

PROC13 *Treatment of articles by dipping and pouring*

PROC15 *Use as laboratory reagent*

PROC19 *Manual activities involving hand contact*

#### Environmental release category

ERC8a *Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)*

ERC8d *Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)*

#### Description of the activities / processes covered in the Exposure Scenario

*Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, spreader, dip, flow, fluidised bed on production lines and film formation) and equipment cleaning, maintenance and associated laboratory activities.*

### SECTION 2: Conditions of use affecting exposure

*The usual precautionary measures should be adhered to in handling the chemicals.*

**Duration and frequency** *8hrs (full working shift).*

#### Worker

*Frequency of use:*

*5 workdays/week.*

#### Physical parameters

##### Physical state

*Fluid*

*Vapour pressure: 0.5-10 kPa (20 °C)*

##### Concentration of the substance in the mixture

*Covers use of substance / product up to 100% (unless stated otherwise).*

##### Used amount per time or activity

*Regional use tonnage (tonnes/year): 5000, SU22*

*Annual site tonnage (tonnes/year): 10, SU22*

*Maximum daily site tonnage (kg/day): 27.4, SU22*

##### Other operational conditions

*Continuous release.*

*Emissiondays /year: 365*

*Assumes use at not more than 20°C above ambient temperature (unless stated differently).*

*Assumes a good basic standard of occupational hygiene is implemented.*

##### Other operational conditions affecting environmental exposure

*Local freshwater dilution factor: 10*

*Local marine water dilution factor: 100*

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023

Release fraction to air from process (initial release prior to RMM) / wide dispersive use (regional only): 98 %.

Release fraction to wastewater from process (initial release prior to RMM) / wide dispersive use: 1 %.

Release fraction to soil from process (initial release prior to RMM) / wide dispersive use (regional only): 1 %.

## **Other operational conditions affecting worker exposure**

Clean working place and equipment every day. Avoid splashing. Remove spilled product immediately.

Keep container tightly closed in a cool place.

Avoid contact with the skin and eyes.

## **Other operational conditions affecting consumer exposure during the use of the product**

Not applicable.

## **Risk management measures**

Ensure that personal protective measures are used at all activities.

Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.

## **Worker protection**

Storage (PROC1 / PROC2):

Store substance within a closed system.

General exposures / Use (closed systems) PROC1 / PROC2 / PROC3:

Filling / preparation of equipment from drums or containers (Use in closed systems) PROC2:

Ensure material transfers are under containment or extract ventilation.

Preparation of material for application. Use in contained batch (PROC3):

Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).

Use drum pumps or carefully pour from container.

Film formation - air drying Indoor (PROC4):

Provide a good standard of general ventilation.

Provide extract ventilation to points where emissions (can) occur.

Avoid manual contact with wet work pieces.

Film formation - air drying Outdoors (PROC 4):

Ensure operation is undertaken outdoors. Avoid manual contact with wet work pieces. Clear spills immediately.

Avoid carrying out activities involving exposure for more than 1 hour(s).

Preparation of material for application Indoor PROC 5:

Provide a good standard of general ventilation (10 to 15 air changes per hour).

Controlled ventilation means air is supplied or removed by a powered fan.

Avoid carrying out activities involving exposure for more than 1 hour(s).

Preparation of material for application Outdoor (PROC 5):

Ensure operation is undertaken outdoors.

Avoid carrying out activities involving exposure for more than 1 hour(s).

Material transfers Drum/Batch transfer (Non-dedicated facility) PROC8a:

Material transfers Drum/batch transfers (Non-dedicated facility) PROC8b:

Material transfers Drum/batch transfers (dedicated facility) PROC8b:

Transfer via enclosed lines.

Clear transfer lines prior to de-coupling.

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

Equipment cleaning and maintenance (Non-dedicated facility) PROC 8a:

Drain down system prior to equipment break-in or maintenance.

Avoid carrying out activities involving exposure for more than 4 hour(s).

Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour).

Roller, spreader, flow application Indoor (PROC 10):

Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour).

Wear a respirator conforming to EN140 with Type A filter or better.

Roller, spreader, flow application Outdoor (PROC 10):

Dipping, immersion and pouring Outdoor (PROC 13):

Ensure Operation is undertaken outdoors. Wear a respirator conforming to EN140 with Type A filter or better. Automate activity where possible.

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023

## *Spraying Manual (PROC 11):*

*Carry out in a vented booth or extracted enclosure.*

## *Spraying (PROC 11, außen):*

*Ensure operation is undertaken outdoors.*

*Avoid carrying out activities involving exposure for more than 4 hour(s).*

*Wear a respirator conforming to EN140 with Type A filter or better.*

## *Dipping, immersion and pouring Indoor (PROC 13):*

*Use local exhaustion at places where emission can occur.*

*Avoid carrying out activities involving exposure for more than 4 hour(s).*

## *Laboratory activities (PROC15):*

*Handle substance within a predominantly closed system provided with extract ventilation.*

## *Hand application - fingerpaints, pastels, adhesives PROC19 Indoor:*

*Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour).*

*Limit the substance content in the product to 5%.*

## *Hand application - fingerpaints, pastels, adhesives PROC19 Outdoor:*

*Ensure operation is undertaken outdoors.*

*Limit the substance content in the product to 5%.*

*Avoid carrying out activities involving exposure for more than 4 hour(s).*

## **Organisational protective measures**

*Ensure good ventilation. This can be achieved by using a local exhaustion or general exhaust system. If these measures are insufficient to keep the solvent vapour concentration below the workplace limit, wear an adequate respiratory protective device.*

*The employer must ensure that the necessary personal protective devices are available and applied accordingly to the instructions.*

## **Technical protective measures**

*Provide explosion-proof electrical equipment.*

*Ensure that suitable extractors are available on processing machines*

## **Personal protective measures**

*Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.*

*Do not inhale gases / fumes / aerosols.*

*Safety glasses*

**Measures for consumer protection** *Not relevant for this Exposure Scenario.*

## **Environmental protection measures**

### **Air**

*Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other environmental legislation.*

*Treat air emission to provide a typical removal efficiency of (%): 0*

### **Water**

*Sludge treatment: Incineration or in a landfill*

*Prevent discharge of undissolved substance to or recover from onsite wastewater.*

*Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 93.6*

*Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/day): 4600*

*Assumed domestic sewage treatment plant flow (m3/d): 2000*

**Soil** *Use bunds or dykes around storage facilities to prevent soil and water pollution in the event of a spill.*

## **Disposal measures**

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

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

**Waste type** *Partially emptied and uncleaned packaging*

**Notes** *Disposal must be made according to official regulations.*

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II

Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023



## SECTION 3: Exposure estimation

**Worker (oral)** No significant oral exposure.

### Worker (dermal)

PROC 1:

Exposure estimate: 0.34 mg/kg/day

RCR: 0

PROC 2:

Exposure estimate: 0.14 mg/kg/day

RCR: 0

PROC 3 / 15:

Exposure estimate: 0.03 mg/kg/day

RCR: 0

PROC 4 (innen) / 8b:

Exposure estimate: 6.86 mg/kg/day

RCR: 0.04

PROC 4 (außen):

Exposure estimate: 1.37 mg/kg/day

RCR: 0.01

PROC 5 / 8a:

Exposure estimate: 13.71 mg/kg/day

RCR: 0.08

PROC 10:

Exposure estimate: 27.43 mg/kg/day

RCR: 0.15

PROC 11 (innen):

Exposure estimate: 2.14 mg/kg/day

RCR: 0.01

PROC 11 (außen):

Exposure estimate: 21.43 mg/kg/day

RCR: 0.12

PROC 13:

Exposure estimate: 0.69 mg/kg/day

RCR: 0

PROC 19:

Exposure estimate: 28.29 mg/kg/day

RCR: 0.16

### Worker (inhalation)

PROC 1:

Exposure estimate: 0.1 ppm

RCR: 0.01

PROC 2:

Exposure estimate: 4 ppm

RCR: 0.23

PROC 3:

Exposure estimate: 7.5 ppm

RCR: 0.42

PROC 4 (innen):

Exposure estimate: 3.5 ppm

RCR: 0.2

PROC 4 + 10 + 13 (jew. außen):

Exposure estimate: 7 ppm

RCR: 0.39

PROC 5 (innen) / 19 (innen):

Exposure estimate: 6 ppm

RCR: 0.34

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II

Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023



*PROC 5 (außen) / 8a:*

*Exposure estimate: 14 ppm*

*RCR: 0.79*

*PROC 8b:*

*Exposure estimate: 15 ppm*

*RCR: 0.85*

*PROC 10 (innen):*

*Exposure estimate: 3 ppm*

*RCR: 0.17*

*PROC 11 (innen):*

*Exposure estimate: 5 ppm*

*RCR: 0.28*

*PROC 11 (außen):*

*Exposure estimate: 10.5 ppm*

*RCR: 0.59*

*PROC 13 (innen):*

*Exposure estimate: 12 ppm*

*RCR: 0.68*

*PROC 15:*

*Exposure estimate: 0.6 ppm*

*RCR: 0.03*

*PROC 19 (außen):*

*Exposure estimate: 8.4 ppm*

*RCR: 0.47*

**Environment** *The calculated value is smaller than the PNEC.*

**Consumer** *Not relevant for this Exposure Scenario.*

## **SECTION 4: Guidance for downstream users**

*The exposure estimation was carried out in accordance with ECETOC TRA.*

*Version 3. <http://www.ecetoc.org/tra>*

*Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/ Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/ Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.*

*Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.*

*Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.*

*Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.*

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II

Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023



## 2-methoxy-1-methylethylacetate (PMA)

### Annex: Exposure scenario 1

#### SECTION 1: Title section

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

**Sector of Use** SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

#### Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC5 Mixing or blending in batch processes

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

PROC14 Tableting, compression, extrusion, pelletisation, granulation

PROC15 Use as laboratory reagent

**Environmental release category** ERC2 Formulation into mixture

#### Description of the activities / processes covered in the Exposure Scenario

Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tableting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.

#### SECTION 2: Conditions of use affecting exposure

The usual precautionary measures should be adhered to in handling the chemicals.

**Duration and frequency** 8hrs (full working shift).

#### Worker

Frequency of use:

5 workdays/week.

**Environment** No exposure assessment presented for the environment.

#### Physical parameters

##### Physical state

Fluid

Vapour pressure: < 5 hPa (20 °C)

**Concentration of the substance in the mixture** Covers use of substance / product up to 100%

#### Used amount per time or activity

Regional use tonnage (tonnes/year): 5300, SU3

Annual site tonnage (tonnes/year): 5300, SU3

Maximum daily site tonnage (kg/day): 23000, SU3

#### Other operational conditions

Emission days / year: 225

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

Assumes a good basic standard of occupational hygiene is implemented.

#### Other operational conditions affecting environmental exposure

Local freshwater dilution factor: 10

Local marine water dilution factor: 100

Release fraction to air from process (initial release prior to RMM) / wide dispersive use (regional only): 0.6%.

Release fraction to wastewater from process (initial release prior to RMM) / wide dispersive use: 0 %.

Release fraction to soil from process (initial release prior to RMM) / wide dispersive use (regional only): 0 %.

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023

## **Other operational conditions affecting worker exposure**

Keep container tightly closed in a cool place.

Avoid contact with eyes.

Avoid contact with the skin.

## **Other operational conditions affecting consumer exposure during the use of the product**

Not applicable.

**Risk management measures** Ensure that personal protective measures are used at all activities.

### **Worker protection**

General exposures / Use (closed systems) PROC1 / PROC2 / PROC3:

General exposures. Continuous process with sample collection (closed systems) PROC2:

Film formation - force drying, stoving and other technologies (PROC 2):

Batch processes at elevated temperatures. Operation is carried out at elevated temperature (> 20°C above ambient temperature) PROC3:

General exposures / Use (open systems) PROC4:

General exposures / Use (open systems) Elevated Temperature PROC4:

Preparation of material for application (PROC5):

Material transfers Drum/Batch transfer (Non-dedicated facility) PROC8a:

Filling of drums and small containers (PROC 9):

Production or preparation of articles by tableting, compression, extrusion or pelletisation (PROC14):

Laboratory activities (PROC15):

No other specific measures identified.

Material transfers Drum/batch transfers (Non-dedicated facility) PROC8b:

Material transfers Drum/batch transfers (dedicated facility) PROC8b:

Transfer via enclosed lines.

Clear transfer lines prior to de-coupling.

Mixing operations (open systems) PROC5:

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

### **Organisational protective measures**

Ensure good ventilation. This can be achieved by using a local exhaust or general exhaust system. If these measures are insufficient to keep the solvent vapour concentration below the workplace limit, wear an adequate respiratory protective device.

The employer must ensure that the necessary personal protective devices are available and applied accordingly to the instructions.

**Technical protective measures** Ensure that suitable extractors are available on processing machines

### **Personal protective measures**

Detailed measures on hand protection according to Safety Data Sheet, section 8.

Do not inhale gases / fumes / aerosols.

Safety glasses

**Measures for consumer protection** Not relevant for this Exposure Scenario.

### **Environmental protection measures**

#### **Air**

Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other environmental legislation.

#### **Water**

Sludge treatment: Incineration or in a landfill

Prevent discharge of undissolved substance to or recover from onsite wastewater.

Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):  
87.3

Assumed domestic sewage treatment plant flow (m<sup>3</sup>/d): 2000

**Soil** No special measures required.

### **Disposal measures**

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

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

**Waste type** Partially emptied and uncleaned packaging

**Notes** Disposal must be made according to official regulations.

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II

Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023



## SECTION 3: Exposure estimation

**Worker (oral)** No significant oral exposure.

**Worker (dermal)**

PROC 1 / 3 / 15:

Exposure estimate: 0.34 mg/kg/day

RCR: < 0.01

PROC 2:

Exposure estimate: 1.37 mg/kg/day

RCR: 0.01

PROC 4 / 8b / 9:

Exposure estimate: 6.86 mg/kg/day

RCR: 0.04

PROC 5 / 8a:

Exposure estimate: 13.71 mg/kg/day

RCR: 0.09

PROC 14:

Exposure estimate: 3.43 mg/kg/day

RCR: 0.02

**Worker (inhalation)**

PROC 1:

Exposure estimate: 0.06 mg/m<sup>3</sup>

RCR: < 0.01

PROC 2:

Exposure estimate: 5.51 mg/m<sup>3</sup>

RCR: 0.02

PROC 2 (Schichtbild.):

Exposure estimate: 55.08 mg/m<sup>3</sup>

RCR: 0.2

PROC 3:

Exposure estimate: 16.53 mg/m<sup>3</sup>

RCR: 0.06

PROC 3 (erhöhte Temperatur):

Exposure estimate: 137.71 mg/m<sup>3</sup>

RCR: 0.5

PROC 5:

Exposure estimate: 192.79 mg/m<sup>3</sup>

RCR: 0.7

PROC 4 / 8b / 9 / 14 / 15:

Exposure estimate: 27.54 mg/m<sup>3</sup>

RCR: 0.1

PROC 8a:

Exposure estimate: 55.08 mg/m<sup>3</sup>

RCR: 0.2

**Environment**

As no environmental hazard was identified no environmental -related exposure assessment and risk characterization was performed.

**Consumer** Not relevant for this Exposure Scenario.

## SECTION 4: Guidance for downstream users

The exposure estimation was carried out in accordance with ECETOC TRA.

Version 3. <http://www.ecetoc.org/tra>

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/ Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/ Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.



# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II

Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023



## Annex: Exposure scenario 2

### SECTION 1: Title section

#### Short title of the exposure scenario

Uses in Coatings - Industrial

Use in printing inks (industrial)

**Sector of Use** SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

#### Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC5 Mixing or blending in batch processes

PROC7 Industrial spraying

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

PROC10 Roller application or brushing

PROC13 Treatment of articles by dipping and pouring

PROC14 Tableting, compression, extrusion, pelletisation, granulation

PROC15 Use as laboratory reagent

#### Environmental release category

ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)

#### Description of the activities / processes covered in the Exposure Scenario

Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, spreader, dip, flow, fluidised bed on production lines and film formation) and equipment cleaning, maintenance and associated laboratory activities.

### SECTION 2: Conditions of use affecting exposure

The usual precautionary measures should be adhered to in handling the chemicals.

**Duration and frequency** 8hrs (full working shift).

#### Worker

Frequency of use:

5 workdays/week.

#### Physical parameters

##### Physical state

Fluid

Vapour pressure: < 5 hPa (20 °C)

**Concentration of the substance in the mixture** Covers use of substance / product up to 100%

#### Used amount per time or activity

Regional use tonnage (tonnes/year): 53000, SU3

Annual site tonnage (tonnes/year): 13000, SU3

Maximum daily site tonnage (kg/day): 44000, SU3

#### Other operational conditions

Emission days / year: 300

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

Assumes a good basic standard of occupational hygiene is implemented.

#### Other operational conditions affecting environmental exposure

Local freshwater dilution factor: 10

Local marine water dilution factor: 100

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023

Release fraction to air from process (initial release prior to RMM) / wide dispersive use (regional only): 2 %  
Release fraction to wastewater from process (initial release prior to RMM) / wide dispersive use: 0 %  
Release fraction to soil from process (initial release prior to RMM) / wide dispersive use (regional only): 0 %

## **Other operational conditions affecting worker exposure**

Keep container tightly closed in a cool place.

Avoid contact with eyes.

Avoid contact with the skin.

## **Other operational conditions affecting consumer exposure during the use of the product**

Not applicable.

**Risk management measures** Ensure that personal protective measures are used at all activities.

## **Worker protection**

General exposures / Use (closed systems) PROC1 / PROC2 / PROC3:

General exposures. Continuous process with sample collection (closed systems) PROC2:

Film formation - force drying, stoving and other technologies (closed systems).

Operation is carried out at elevated temperature (> 20°C above ambient temperature) PROC2:

General exposures / Use (open systems) PROC4:

General exposures / Use (open systems) Elevated Temperature PROC4:

Material transfers Drum/Batch transfer (Non-dedicated facility) PROC8a:

Filling of drums and small containers (PROC 9):

Apply by Rolling or Brushing (PROC10):

Treatment by dipping and pouring (PROC13):

Production or preparation or articles by tableting, compression, extrusion or pelletisation (PROC14):

Laboratory activities (PROC15):

No other specific measures identified.

Mixing operations (open systems) PROC5:

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

Spraying (automatic/robotic) PROC7:

Carry out in a vented booth or extracted enclosure.

Spraying (PROC 7 (manuell)):

Carry out in a vented booth or extracted enclosure.

Or: Wear a respirator conforming to EN140 with Type A filter or better.

Cleaning with high pressure washers (PROC7):

Provide a good standard of general ventilation.

Avoid carrying out activities involving exposure for more than 4 hour(s).

Material transfers Drum/batch transfers (Non-dedicated facility) PROC8b:

Material transfers Drum/batch transfers (dedicated facility) PROC8b:

Transfer via enclosed lines.

Clear transfer lines prior to de-coupling.

## **Organisational protective measures**

Ensure good ventilation. This can be achieved by using a local exhaustion or general exhaust system. If these measures are insufficient to keep the solvent vapour concentration below the workplace limit, wear an adequate respiratory protective device.

The employer must ensure that the necessary personal protective devices are available and applied accordingly to the instructions.

**Technical protective measures** Ensure that suitable extractors are available on processing machines

## **Personal protective measures**

Detailed measures on hand protection according to Safety Data Sheet, section 8.

Do not inhale gases / fumes / aerosols.

Safety glasses

**Measures for consumer protection** Not relevant for this Exposure Scenario.

## **Environmental protection measures**

**Air** Treat air emission to provide a typical removal efficiency of (%): 98

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023

## Water

*Sludge treatment: Incineration or in a landfill*

*Prevent discharge of undissolved substance to or recover from onsite wastewater.*

*Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):  
87.3*

*Assumed domestic sewage treatment plant flow (m<sup>3</sup>/d): 2000*

**Soil** No special measures required.

## Disposal measures

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

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

**Waste type** Partially emptied and uncleaned packaging

**Notes** Disposal must be made according to official regulations.

## SECTION 3: Exposure estimation

**Worker (oral)** No significant oral exposure.

### Worker (dermal)

PROC 1 / 3 / 15:

*Exposure estimate: 0.34 mg/kg/day*

*RCR: < 0.01*

PROC 2:

*Exposure estimate: 1.37 mg/kg/day*

*RCR: 0.01*

PROC 4 / 8b / 9:

*Exposure estimate: 6.86 mg/kg/day*

*RCR: 0.04*

PROC 5 / 8a / 13:

*Exposure estimate: 13.71 mg/kg/day*

*RCR: 0.09*

PROC 7 (manuell):

*Exposure estimate: 42.86 mg/kg/day*

*RCR: 0.28*

PROC 7 (Hochdruck):

*Exposure estimate: 8.57 mg/kg/day*

*RCR: 0.06*

PROC 7 (automatisiert):

*Exposure estimate: 2.14 mg/kg/day*

*RCR: 0.01*

PROC 10:

*Exposure estimate: 27.43 mg/kg/day*

*RCR: 0.18*

PROC 14:

*Exposure estimate: 3.43 mg/kg/day*

*RCR: 0.02*

### Worker (inhalation)

PROC 1:

*Exposure estimate: 0.06 mg/m<sup>3</sup>*

*RCR: < 0.01*

PROC 2:

*Exposure estimate: 5.51 mg/m<sup>3</sup>*

*RCR: 0.02*

PROC 2 (Schichtbildung):

*Exposure estimate: 55.08 mg/m<sup>3</sup>*

*RCR: 0.2*

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II

Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023



PROC 3:

Exposure estimate: 16.53 mg/m<sup>3</sup>

RCR: 0.06

PROC 3 (erh. Temperatur):

Exposure estimate: 137.71 mg/m<sup>3</sup>

RCR: 0.5

PROC 4 / 7 (autom.) / 8b / 9 / 14 / 15:

Exposure estimate: 27.54 mg/m<sup>3</sup>

RCR: 0.1

PROC 5:

Exposure estimate: 192.79 mg/m<sup>3</sup>

RCR: 0.7

PROC 7 (Hochdruck):

Exposure estimate: 231.35 mg/m<sup>3</sup>

RCR: 0.86

PROC 7 (manuell) / 8a / 10 / 13:

Exposure estimate: 55.08 mg/m<sup>3</sup>

RCR: 0.2

## Environment

As no environmental hazard was identified no environmental -related exposure assessment and risk characterization was performed.

**Consumer** Not relevant for this Exposure Scenario.

## SECTION 4: Guidance for downstream users

The exposure estimation was carried out in accordance with ECETOC TRA.

Version 3. <http://www.ecetoc.org/tra>

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/ Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/ Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II

Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023



## n-butyl acetate

### Annex: Exposure scenario 1

#### SECTION 1: Title section

##### Short title of the exposure scenario

Use in formulation. (Industrial)

Formulation & (re)packing of substances and mixtures (Industrial)

**Sector of Use** SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

##### Process category

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC5 Mixing or blending in batch processes

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

PROC15 Use as laboratory reagent

**Environmental release category** ERC2 Formulation into mixture

##### Description of the activities / processes covered in the Exposure Scenario

Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tableting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.

#### SECTION 2: Conditions of use affecting exposure

The usual precautionary measures should be adhered to in handling the chemicals.

**Duration and frequency** 8hrs (full working shift).

##### Worker

Frequency of use:

5 workdays/week.

**Environment** The product may not be released into the environment without control.

##### Physical parameters

##### Physical state

Fluid

Vapour pressure: 11.6 hPa (20 °C)

**Concentration of the substance in the mixture** Covers use of substance / product up to 100%

##### Other operational conditions

Emission days / year: 225

Assumes a good basic standard of occupational hygiene is implemented.

Assumes use at ambient temperature (unless stated differently).

##### Other operational conditions affecting environmental exposure

Local freshwater dilution factor: 10

Local marine water dilution factor: 100

Flow rate of receiving surface water: 18000 m<sup>3</sup>/day.

Release fraction to air from process (initial release prior to RMM) / wide dispersive use (regional only): 3.6 %.

Release fraction to wastewater from process (initial release prior to RMM) / wide dispersive use: 0 %.

Release fraction to soil from process (initial release prior to RMM) / wide dispersive use (regional only): 0 %.

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023

## **Other operational conditions affecting worker exposure**

*Clean working place and equipment every day. Avoid splashing. Remove spilled product immediately. Keep container tightly closed in a cool place.*

*Avoid contact with the skin and eyes.*

## **Other operational conditions affecting consumer exposure during the use of the product**

*Not applicable.*

## **Risk management measures**

*Ensure that personal protective measures are used at all activities.*

*Wear suitable gloves tested to EN374 during the activities where excessive skin contact is possible.*

*Eye Protection – suitable eye protection should be worn when handling product if there is a risk of splashing.*

## **Worker protection**

*General exposures / Use (closed systems) PROC1 / PROC2 / PROC3:*

*Material transfers Drum/batch transfers (Non-dedicated facility) PROC8b:*

*Material transfers Drum/batch transfers (dedicated facility) PROC8b:*

*Laboratory activities (PROC15):*

*No other specific measures identified.*

*Mixing operations (open systems) PROC5:*

*Material transfers Drum/Batch transfer (Non-dedicated facility) PROC8a:*

*Filling of drums and small containers (PROC 9):*

*Small scale weighing PROC9:*

*Use local exhaust at places where emission can occur.*

## **Organisational protective measures**

*Ensure good ventilation. This can be achieved by using a local exhaust or general exhaust system. If these measures are insufficient to keep the solvent vapour concentration below the workplace limit, wear an adequate respiratory protective device.*

*The employer must ensure that the necessary personal protective devices are available and applied accordingly to the instructions.*

## **Technical protective measures**

*Provide explosion-proof electrical equipment.*

*Ensure that suitable extractors are available on processing machines*

## **Personal protective measures**

*Detailed measures on hand protection according to Safety Data Sheet, section 8.*

*Do not inhale gases / fumes / aerosols.*

**Measures for consumer protection** *Not relevant for this Exposure Scenario.*

## **Environmental protection measures**

### **Air**

*Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other environmental legislation.*

### **Water**

*Size of sewage treatment plant (m<sup>3</sup>/d): 2000*

*Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/day): 119631*

*Prevent discharge of undissolved substance to or recover from onsite wastewater.*

**Soil** *No special measures required.*

## **Disposal measures**

*Must not be disposed of with household waste. Do not allow to reach sewage system.*

*Disposal must be made according to official regulations.*

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II

Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023



## SECTION 3: Exposure estimation

**Worker (oral)** No significant oral exposure.

### Worker (dermal)

PROC 2, 5, 8a, 8b:

Exposure estimate: 1.3714 mg/kg/day

RCR: 0.124675

PROC 3, 9:

Exposure estimate: 0.6857 mg/kg/day

RCR: 0.06234

PROC 15:

Exposure estimate: 0.3429 mg/kg/day

RCR: 0.03117

### Worker (inhalation)

PROC 2, 5, 8a, 9:

Exposure estimate: 24.2 mg/m<sup>3</sup>

RCR: 0.080665

PROC 3, 15:

Exposure estimate: 48.3993 mg/m<sup>3</sup>

RCR: 0.16133

PROC 8b:

Exposure estimate: 120.9982 mg/m<sup>3</sup>

RCR: 0.40333

### Environment

Highest estimated Values for ERC2:

Risc characterisation ratio (RCR): 0.2229

**Consumer** Not relevant for this Exposure Scenario.

## SECTION 4: Guidance for downstream users

The exposure estimation was carried out in accordance with ECETOC TRA.

Version 3. <http://www.ecetoc.org/tra>

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/ Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/ Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II

Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023



## Annex: Exposure scenario 2

### SECTION 1: Title section

**Short title of the exposure scenario** Uses in Coatings - Industrial

**Sector of Use** SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

#### Process category

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC5 Mixing or blending in batch processes

PROC7 Industrial spraying

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC10 Roller application or brushing

PROC13 Treatment of articles by dipping and pouring

PROC15 Use as laboratory reagent

#### Environmental release category

ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)

#### Description of the activities / processes covered in the Exposure Scenario

Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, spreader, dip, flow, fluidised bed on production lines and film formation) and equipment cleaning, maintenance and associated laboratory activities.

### SECTION 2: Conditions of use affecting exposure

The usual precautionary measures should be adhered to in handling the chemicals.

**Duration and frequency** 8hrs (full working shift).

#### Worker

Frequency of use:

5 workdays/week.

**Environment** The product may not be released into the environment without control.

#### Physical parameters

##### Physical state

Fluid

Vapour pressure: 11.6 hPa (20 °C)

**Concentration of the substance in the mixture** Covers use of substance / product up to 100%

**Used amount per time or activity** Annual site tonnage (tons per year): 43000

#### Other operational conditions

Emission days / year: 225

Assumes a good basic standard of occupational hygiene is implemented.

Assumes use at ambient temperature (unless stated differently).

#### Other operational conditions affecting environmental exposure

Local freshwater dilution factor: 10

Local marine water dilution factor: 100

Flow rate of receiving surface water: 18000 m<sup>3</sup>/day.

Release fraction to air from process (initial release prior to RMM) / wide dispersive use (regional only): 0.8 %.

Release fraction to wastewater from process (initial release prior to RMM) / wide dispersive use: 2 %.

Release fraction to soil from process (initial release prior to RMM) / wide dispersive use (regional only): 0 %.



# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023

## **Other operational conditions affecting worker exposure**

*Clean working place and equipment every day. Avoid splashing. Remove spilled product immediately. Keep container tightly closed in a cool place. Avoid contact with the skin and eyes.*

## **Other operational conditions affecting consumer exposure during the use of the product**

*Not applicable.*

## **Risk management measures**

*Ensure that personal protective measures are used at all activities. Wear suitable gloves tested to EN374 during the activities where excessive skin contact is possible. Eye Protection – suitable eye protection should be worn when handling product if there is a risk of splashing.*

## **Worker protection**

*General exposures / Use (closed systems) PROC1 / PROC2 / PROC3:*

*General exposures / Use (open systems) PROC4:*

*Mixing operations (open systems) PROC5:*

*No other specific measures identified.*

*Spraying PROC7:*

*Daily cleaning of equipment and work area. It must be ensured that the work is carried out outside the breathing zone of the worker (head-product distance greater than 1m). Regular inspection and maintenance of equipment and machinery.*

*Carry out in a vented booth or extracted enclosure.*

*Material transfers Drum/Batch transfer (Non-dedicated facility) PROC8a:*

*Use local exhaust at places where emission can occur.*

*Material transfers Drum/batch transfers (Non-dedicated facility) PROC8b:*

*Material transfers Drum/batch transfers (dedicated facility) PROC8b:*

*Transfer via enclosed lines.*

*Clear transfer lines prior to de-coupling.*

*Apply by Rolling or Brushing (PROC10):*

*Treatment by dipping and pouring (PROC13):*

*Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour).*

*Use of a local source exhaust with adequate effectiveness.*

## **Organisational protective measures**

*Ensure good ventilation. This can be achieved by using a local exhaust or general exhaust system. If these measures are insufficient to keep the solvent vapour concentration below the workplace limit, wear an adequate respiratory protective device.*

*The employer must ensure that the necessary personal protective devices are available and applied accordingly to the instructions.*

## **Technical protective measures**

*Provide explosion-proof electrical equipment.*

*Ensure that suitable extractors are available on processing machines*

## **Personal protective measures**

*Detailed measures on hand protection according to Safety Data Sheet, section 8.*

*Do not inhale gases / fumes / aerosols.*

**Measures for consumer protection** Not relevant for this Exposure Scenario.

## **Environmental protection measures**

### **Air**

*Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other environmental legislation.*

### **Water**

*Size of sewage treatment plant (m<sup>3</sup>/d): 2000*

*Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/day): 1080.7*

*Prevent discharge of undissolved substance to or recover from onsite wastewater.*

**Soil** No special measures required.

## **Disposal measures**

*Must not be disposed of with household waste. Do not allow to reach sewage system.*

*Disposal must be made according to official regulations.*

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II

Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023



## SECTION 3: Exposure estimation

**Worker (oral)** No significant oral exposure.

### Worker (dermal)

PROC 1:

Exposure estimate: 0.0343 mg/kg/day

RCR: 0.003117

PROC 2, 5, 8a, 8b, 13:

Exposure estimate: 1.3714 mg/kg/day

RCR: 0.124675

PROC 3, 4:

Exposure estimate: 0.6857 mg/kg/day

RCR: 0.06234

PROC 7:

Exposure estimate: 4.2857 mg/kg/day

RCR: 0.3896

PROC 10:

Exposure estimate: 2.7429 mg/kg/day

RCR: 0.24935

PROC 15:

Exposure estimate: 0.3429 mg/kg/day

RCR: 0.03117

### Worker (inhalation)

PROC 1:

Exposure estimate: 0.0484 mg/m<sup>3</sup>

RCR: 0.000161

PROC 2, 5, 8a, 10, 13:

Exposure estimate: 24.2 mg/m<sup>3</sup>

RCR: 0.080665

PROC 3, 15:

Exposure estimate: 48.3993 mg/m<sup>3</sup>

RCR: 0.16133

PROC 4:

Exposure estimate: 96.7986 mg/m<sup>3</sup>

RCR: 0.3227

PROC 7:

Exposure estimate: 0.0001 mg/m<sup>3</sup>

RCR: 0

PROC 8b:

Exposure estimate: 120.9982 mg/m<sup>3</sup>

RCR: 0.40333

### Environment

Highest estimated Values for ERC4:

Risc characterisation ratio (RCR): 0.9254

**Consumer** Not relevant for this Exposure Scenario.

## SECTION 4: Guidance for downstream users

The exposure estimation was carried out in accordance with ECETOC TRA.

Version 3. <http://www.ecetoc.org/tra>

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/ Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/ Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II

Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023



## Annex: Exposure scenario 3

### SECTION 1: Title section

**Short title of the exposure scenario** *Uses in Coatings - Professional*

#### Sector of Use

SU22 Professional uses: *Public domain (administration, education, entertainment, services, craftsmen)*

#### Process category

PROC1 *Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.*

PROC2 *Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions*

PROC3 *Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition*

PROC4 *Chemical production where opportunity for exposure arises*

PROC5 *Mixing or blending in batch processes*

PROC8a *Transfer of substance or mixture (charging and discharging) at non-dedicated facilities*

PROC8b *Transfer of substance or mixture (charging and discharging) at dedicated facilities*

PROC10 *Roller application or brushing*

PROC11 *Non industrial spraying*

PROC13 *Treatment of articles by dipping and pouring*

PROC15 *Use as laboratory reagent*

PROC19 *Manual activities involving hand contact*

#### Environmental release category

ERC8a *Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)*

ERC8d *Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)*

#### Description of the activities / processes covered in the Exposure Scenario

*Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, spreader, dip, flow, fluidised bed on production lines and film formation) and equipment cleaning, maintenance and associated laboratory activities.*

### SECTION 2: Conditions of use affecting exposure

*The usual precautionary measures should be adhered to in handling the chemicals.*

**Duration and frequency** *8hrs (full working shift).*

#### Worker

*Frequency of use:*

*5 workdays/week.*

**Environment** *The product may not be released into the environment without control.*

#### Physical parameters

##### Physical state

*Fluid*

*Vapour pressure: 11.6 hPa (20 °C)*

**Concentration of the substance in the mixture** *Covers use of substance / product up to 100%*

**Used amount per time or activity** *Annual site tonnage (tons per year): 2000*

#### Other operational conditions

*Emission days / year: 225*

*Assumes a good basic standard of occupational hygiene is implemented.*

*Assumes use at ambient temperature (unless stated differently).*

#### Other operational conditions affecting environmental exposure

*Local freshwater dilution factor: 10*

*Local marine water dilution factor: 100*

*Flow rate of receiving surface water: 18000 m<sup>3</sup>/day.*

*Release fraction to air from process (initial release prior to RMM) / wide dispersive use (regional only): 99 %.*

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023

Release fraction to wastewater from process (initial release prior to RMM) / wide dispersive use: 1 %.  
Release fraction to soil from process (initial release prior to RMM) / wide dispersive use (regional only): 0 %.

## **Other operational conditions affecting worker exposure**

Clean working place and equipment every day. Avoid splashing. Remove spilled product immediately.  
Keep container tightly closed in a cool place.  
Avoid contact with the skin and eyes.

## **Other operational conditions affecting consumer exposure during the use of the product**

Not applicable.

## **Risk management measures**

Ensure that personal protective measures are used at all activities.  
Wear suitable gloves tested to EN374 during the activities where excessive skin contact is possible.  
Eye Protection – suitable eye protection should be worn when handling product if there is a risk of splashing.

## **Worker protection**

General exposures / Use (closed systems) PROC1 / PROC2 / PROC3:

General exposures / Use (open systems) PROC4:

Mixing operations (open systems) PROC5:

Laboratory activities (PROC15):

No other specific measures identified.

Material transfers Drum/Batch transfer (Non-dedicated facility) PROC8a:

Limit the substance content in the product to 25%.

Use local exhaust at places where emission can occur.

Material transfers Drum/batch transfers (Non-dedicated facility) PROC8b:

Material transfers Drum/batch transfers (dedicated facility) PROC8b:

Transfer via enclosed lines.

Clear transfer lines prior to de-coupling.

Apply by Rolling or Brushing (PROC10):

Treatment by dipping and pouring (PROC13):

Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour).

Spraying (PROC 11):

Daily cleaning of equipment and work area. It must be ensured that the work is carried out outside the breathing zone of the worker (head-product distance greater than 1m). Regular inspection and maintenance of equipment and machinery.

Carry out in a vented booth or extracted enclosure.

Manual Spraying Indoor (PROC11) bis 45%:

Limit the substance content in the product to 45%.

It must be ensured that manual activity is minimized. Avoid frequent and direct contact with the substance.

Checks to verify the correct application of risk minimization measures and Compliance with the conditions of use are established. Daily cleaning of equipment and work area. Regular inspection and maintenance of equipment and machinery. Avoid splashes. Make sure doors and windows are open (general ventilation).

Use of a local source exhaust with adequate effectiveness.

Or:

Wearing a half mask with filter type P2L or better.

Hand application - fingerpaints, pastels, adhesives. PROC19:

Use local exhaust at places where emission can occur.

Avoid carrying out activities involving exposure for more than 4 hour(s).

Or: Provide a good standard of controlled ventilation (10 to 15 air changes per hour).

Avoid carrying out activities involving exposure for more than 1 hour(s).

## **Organisational protective measures**

Ensure good ventilation. This can be achieved by using a local exhaust or general exhaust system. If these measures are insufficient to keep the solvent vapour concentration below the workplace limit, wear an adequate respiratory protective device.

The employer must ensure that the necessary personal protective devices are available and applied accordingly to the instructions.

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023

## Technical protective measures

Provide explosion-proof electrical equipment.

Ensure that suitable extractors are available on processing machines

## Personal protective measures

Detailed measures on hand protection according to Safety Data Sheet, section 8.

Do not inhale gases / fumes / aerosols.

**Measures for consumer protection** Not relevant for this Exposure Scenario.

## Environmental protection measures

### Air

Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other environmental legislation.

### Water

Size of sewage treatment plant (m<sup>3</sup>/d): 2000

Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/day): 1934.6

Prevent discharge of undissolved substance to or recover from onsite wastewater.

**Soil** No special measures required.

## Disposal measures

Must not be disposed of with household waste. Do not allow to reach sewage system.

Disposal must be made according to official regulations.

## SECTION 3: Exposure estimation

**Worker (oral)** No significant oral exposure.

### Worker (dermal)

PROC 1:

Exposure estimate: 0.0343 mg/kg/day

RCR: 0.003117

PROC 2, 5, 8a, 8b, 13:

Exposure estimate: 1.3714 mg/kg/day

RCR: 0.124675

PROC 3, 4:

Exposure estimate: 0.6857 mg/kg/day

RCR: 0.06234

PROC 10:

Exposure estimate: 2.7429 mg/kg/day

RCR: 0.24935

PROC 11 (Kabine):

Exposure estimate: 10.7143 mg/kg/day

RCR: 0.974

PROC 11 (Absaugung / Maske):

Exposure estimate: 4.8214 mg/kg/day

RCR: 0.4383

PROC 15:

Exposure estimate: 0.3429 mg/kg/day

RCR: 0.03117

PROC 19 (Absaug., 4h):

Exposure estimate: 8.4857 mg/kg/day

RCR: 0.77143

PROC 19 (Belüft., 1h):

Exposure estimate: 2.8286 mg/kg/day

RCR: 0.2571

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II

Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023



## Worker (inhalation)

PROC 1:

Exposure estimate: 0.0484 mg/m<sup>3</sup>

RCR: 0.000161

PROC 2, 5, 8a:

Exposure estimate: 24.2 mg/m<sup>3</sup>

RCR: 0.080665

PROC 3, 15:

Exposure estimate: 48.3993 mg/m<sup>3</sup>

RCR: 0.16133

PROC 4:

Exposure estimate: 96.7986 mg/m<sup>3</sup>

RCR: 0.3227

PROC 8b:

Exposure estimate: 120.9982 mg/m<sup>3</sup>

RCR: 0.40333

PROC 11 (Kabine):

Exposure estimate: 0.0001 mg/m<sup>3</sup>

RCR: 0

PROC 11 (Absaugung):

Exposure estimate: 153 mg/m<sup>3</sup>

RCR: 0.51

PROC 11 (Maske):

Exposure estimate: 116 mg/m<sup>3</sup>

RCR: 0.3867

PROC 10, 13, 19 (Belüft., 1h):

Exposure estimate: 145.1979 mg/m<sup>3</sup>

RCR: 0.484

PROC 19 (Absaug., 4h):

Exposure estimate: 67.759 mg/m<sup>3</sup>

RCR: 0.22586

## Environment

Highest estimated Values for ERC8a, 8d:

Risc characterisation ratio (RCR): 0.012923

**Consumer** Not relevant for this Exposure Scenario.

## SECTION 4: Guidance for downstream users

The exposure estimation was carried out in accordance with ECETOC TRA.

Version 3. <http://www.ecetoc.org/tra>

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II

Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023



## aromatic polyisocyanate

### Annex: Exposure scenario 1

#### 1. Short title of Exposure Scenario: - Use in coatings: Industrial

Main User Groups	: <b>SU 3:</b> Industrial uses: Uses of substances as such or in preparations at industrial sites
Process category	: <b>PROC1:</b> Use in closed process, no likelihood of exposure <b>PROC2:</b> Use in closed, continuous process with occasional controlled exposure <b>PROC3:</b> Use in closed batch process (synthesis or formulation) <b>PROC4:</b> Use in batch and other process (synthesis) where opportunity for exposure arises <b>PROC5:</b> Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) <b>PROC7:</b> Industrial spraying <b>PROC8a:</b> Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities <b>PROC8b:</b> Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities <b>PROC10:</b> Roller application or brushing <b>PROC13:</b> Treatment of articles by dipping and pouring <b>PROC14:</b> Production of preparations or articles by tableting, compression, extrusion, pelletisation <b>PROC15:</b> Use as laboratory reagent
Environmental release category	: <b>ERC4:</b> Industrial use of processing aids in processes and products, not becoming part of articles
Further information	: Only the uses defined in the short title and the use descriptors listed above are regarded as safe/covered within this Exposure Scenario. In case of mixtures the other chapters may also contain additional information about further uses that are not safe/covered within this scenario.

#### 2.1 Contributing scenario controlling worker exposure for:

**PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC13, PROC14, PROC15[Xylene isomer mixture (with up to 20 % Ethylbenzene)]**

**- Use in coatings: Industrial**

#### Product characteristics

Concentration of the Substance in Mixture/Article

Remarks : Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Vapour pressure : > 10 kPa  
Physical Form (at time of use) : Liquid substance

#### Frequency and duration of use

Daily exposure : 8 hours/day

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe, mixing rate 2:1

Date of printing: 07.10.2023

## Other operational conditions affecting workers exposure

- Remarks : Assumes use at not more than 20°C above ambient temperature. Film formation - force drying (50 - 100 °C)
- Remarks : Assumes a good basic standard of occupational hygiene is implemented.

## Technical conditions and measures

### General exposures, (closed systems), with sample collection, use in contained system

Handle substance within a closed system.

### Film formation - force drying (50 - 100 °C)

Handle substance within a closed system. Provide extraction ventilation at points where emissions occur.

### Film formation - air drying

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

### Bulk transfers

Ensure material transfers are under containment or extract ventilation.

### Roller, spreader, flow application

Provide extraction ventilation at points where emissions occur.

### Drum/batch transfers, Material transfers, Transfer from/pouring from containers

Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour).

### Material transfers

Ensure material transfers are under containment or extract ventilation.

### Equipment cleaning and maintenance

Drain down and flush system prior to equipment opening or maintenance.

### Storage, with occasional controlled exposure

Store substance within a closed system. Handle substance within a closed system.

### PROC1: Use in closed process, no likelihood of exposure

Handle substance within a closed system.

### PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact): General exposures, (closed systems)

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Handle substance within a closed system.



# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe, mixing rate 2:1  
Date of printing: 07.10.2023

**PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact): Preparation of material for application, (open systems)**

Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour).

**PROC7: Industrial spraying: Automatic**

Operation must be performed in a vented cabin with a laminar air flow

**PROC7: Industrial spraying: Manual**

Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour).

**PROC13: Treatment of articles by dipping and pouring: Dipping, immersion and pouring**

Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour).

**PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation**

Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour).

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

Avoid all skin contact with product, clean up contamination/spills as soon as they occur. Wear gloves (tested to EN374) if hand contamination likely, wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop. Clear up spills immediately and dispose of waste safely. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.

These general measures are mandatory for all contributing scenarios. Additional measures are specific for the following contributing scenarios:

**PROC7: Industrial spraying: Manual**

Wear a respirator conforming to EN140 with Type A filter or better.

## 3. Exposure estimation and reference to its source

### Workers

Based on the applied RMMs the risk towards humans and the environment is sufficiently controlled (RCR  $\leq$  1).

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterisation ratio (Exposure value/DNEL)
2.1 Not specified.	ECETOC TRA			Not specified.	

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II

Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023



## 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

The risk management measures given in this exposure scenario apply to the specified substance in a concentration as indicated in the scenario. The concentration of the substance in the product may differ. A downstream user should evaluate if the risk management measures may be adapted accordingly.

### Xylene isomer mixture (with up to 20 % Ethylbenzene)

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

The necessary separation efficiency for sewage can be reached by the application of on-site technology, either on its own or in combination. The necessary separation efficiency for air can be reached by the application of on-site technology, either on its own or in combination. Detailed information on scaling and control techniques refer to SpERC data sheet (<http://cefic.org/en/reach-for-industries-libraries.html>)

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II

Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023



## Annex: Exposure scenario 2

### 1. Short title of Exposure Scenario: - Use in coatings: Professional

Main User Groups	: <b>SU 22:</b> Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process category	: <b>PROC1:</b> Use in closed process, no likelihood of exposure <b>PROC2:</b> Use in closed, continuous process with occasional controlled exposure <b>PROC3:</b> Use in closed batch process (synthesis or formulation) <b>PROC4:</b> Use in batch and other process (synthesis) where opportunity for exposure arises <b>PROC5:</b> Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) <b>PROC8a:</b> Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities <b>PROC8b:</b> Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities <b>PROC10:</b> Roller application or brushing <b>PROC11:</b> Non industrial spraying <b>PROC13:</b> Treatment of articles by dipping and pouring <b>PROC15:</b> Use as laboratory reagent
Environmental release category	: <b>ERC8a:</b> Wide dispersive indoor use of processing aids in open systems <b>ERC8c:</b> Wide dispersive indoor use resulting in inclusion into or onto a matrix <b>ERC8d:</b> Wide dispersive outdoor use of processing aids in open systems <b>ERC8f:</b> Wide dispersive outdoor use resulting in inclusion into or onto a matrix
Further information	: Only the uses defined in the short title and the use descriptors listed above are regarded as safe/covered within this Exposure Scenario. In case of mixtures the other chapters may also contain additional information about further uses that are not safe/covered within this scenario.

#### 2.1 Contributing scenario controlling worker exposure for:

**PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15**  
**[Xylene isomer mixture (with up to 20 % Ethylbenzene)]**  
**- Use in coatings: Professional**

#### Product characteristics

Concentration of the Substance in Mixture/Article

Remarks : Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Vapour pressure : 0,5 - 10 kPa  
Physical Form (at time of use) : Liquid substance

#### Frequency and duration of use

Daily exposure : 8 hours/day

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023

Remarks : Exceptions: Preparation of the material (indoor + outdoor), Film formation (outdoor): < 1 h/day; PROC 11 (outdoor), PROC 13 (indoor), PROC 19 (outdoor), Equipment cleaning and maintenance: < 4 h/day

## Other operational conditions affecting workers exposure

Remarks : Assumes use at not more than 20°C above ambient temperature.  
Remarks : Assumes a good basic standard of occupational hygiene is implemented.

## Technical conditions and measures

### General exposures, (closed systems)

Handle substance within a closed system. Ensure material transfers are under containment or extract ventilation.

### Filling/ preparation of equipment from drums or containers.

Handle substance within a closed system. Ensure material transfers are under containment or extract ventilation.

### General exposures, (closed systems), use in contained system

Handle substance within a closed system. Ensure material transfers are under containment or extract ventilation.

### Preparation of material for application

Handle substance within a closed system. Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour).

### Preparation of material for application, Indoor use

Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour).

### Preparation of material for application, Outdoor use

Ensure operation is undertaken outdoors.

### Film formation - air drying, Outdoor use

Ensure operation is undertaken outdoors.

### Film formation - air drying, Indoor use

Provide extraction ventilation at points where emissions occur. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

### Material transfers, Drum/batch transfers

Transfer via enclosed lines. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

### Roller, spreader, flow application, Indoor use

Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour).

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1  
Date of printing: 07.10.2023

## **Roller, spreader, flow application, Outdoor use**

Ensure operation is undertaken outdoors.

## **Equipment cleaning and maintenance**

Drain down and flush system prior to equipment opening or maintenance.

## **Storage, with occasional controlled exposure**

Store substance within a closed system. Handle substance within a closed system. Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour).

## **PROC11: Non industrial spraying: Manual, Indoor use**

Carry out in a vented booth or extracted enclosure.

## **PROC11: Non industrial spraying: Manual, Outdoor use**

Ensure operation is undertaken outdoors.

## **PROC13: Treatment of articles by dipping and pouring: Dipping, immersion and pouring, Indoor use**

Provide extraction ventilation at points where emissions occur.

## **PROC13: Treatment of articles by dipping and pouring: Dipping, immersion and pouring, Outdoor use**

Ensure operation is undertaken outdoors.

## **PROC15: Use as laboratory reagent**

Handle in a fume cupboard or under extract ventilation.

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

Avoid all skin contact with product, clean up contamination/spills as soon as they occur. Wear gloves (tested to EN374) if hand contamination likely, wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop. Clear up spills immediately and dispose of waste safely. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.

These general measures are mandatory for all contributing scenarios. Additional measures are specific for the following contributing scenarios:

### **Film formation - air drying, Outdoor use**

Wear suitable gloves tested to EN374.

### **Roller, spreader, flow application, Indoor use**

Wear a respirator conforming to EN140 with Type A filter or better.

# Annex to the extended Safety Data Sheet (eSDS)

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II



Product name: DD-Härter B05-901/67 for DD-Lackfarbe,  
mixing rate 2:1

Date of printing: 07.10.2023

## Roller, spreader, flow application, Outdoor use

Wear a respirator conforming to EN140 with Type A filter or better.

## PROC11: Non industrial spraying: Manual, Outdoor use

Wear a respirator conforming to EN140 with Type A filter or better. Wear suitable gloves tested to EN374.

## PROC13: Treatment of articles by dipping and pouring: Dipping, immersion and pouring, Outdoor use

Wear a respirator conforming to EN140 with Type A filter or better.

### 3. Exposure estimation and reference to its source

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterisation ratio (Exposure value/DNEL)
2.1 Not specified.	ECETOC TRA			Not specified.	

#### Workers

Based on the applied RMMs the risk towards humans and the environment is sufficiently controlled ( $RCR \leq 1$ ).

### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

The risk management measures given in this exposure scenario apply to the specified substance in a concentration as indicated in the scenario. The concentration of the substance in the product may differ. A downstream user should evaluate if the risk management measures may be adapted accordingly.

#### Xylene isomer mixture (with up to 20 % Ethylbenzene)

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

The necessary separation efficiency for sewage can be reached by the application of on-site technology, either on its own or in combination. The necessary separation efficiency for air can be reached by the application of on-site technology, either on its own or in combination.

Detailed information on scaling and control techniques refer to SpERC data sheet

<http://cefic.org/en/reach-for-industries-libraries.html>