

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

HUNTSMAN

Enriching lives through innovation

ARADUR® HY 918-1 CH

Version	Revision Date:	SDS Number:	Date of last issue:
1.5	30.11.2022	400001011519	30.11.2022
			Date of first issue: 06.01.2016

Print Date 11.12.2023

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

1.1 Product identifier

Trade name	: ARADUR® HY 918-1 CH
REACH Registration Number	: 01-2119488054-36-0001
Substance name	: methyl-tetrahydrophthalic anhydride
CAS-No.	: 11070-44-3
Index-No.	: 607-240-00-0
EC-No.	: 234-290-7

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

Use of the Substance/Mixture	: Component used for the manufacture of electrical insulation parts
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ES1: Formulation of preparations Industrial

ES2: Formulation in materials Industrial

ES3: Industrial use resulting in inclusion into or onto a matrix Industrial

ES4: Used as chemical intermediate Industrial

ES5: Industrial use of reactive processing aids Industrial

ES6: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers Industrial

Recommended restrictions on use	: For industrial use only.
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1.3 Details of the supplier of the safety data sheet

Company	: Huntsman Advanced Materials (Europe)BVBA
Address	: Everslaan 45 3078 Everberg Belgium
Telephone	: +41 61 299 20 41
Telefax	: +41 61 299 20 40
E-mail address of person responsible for the SDS	: Global_Product_EHS_AdMat@huntsman.com

1.4 Emergency telephone number

Emergency telephone number	: Centres Antipoison et de Toxicovigilance: ANGERS: 02 41 48 21 21 BORDEAUX: 05 56 96 40 80 LILLE: 0 825 812 822 LYON: 04 72 11 69 11 MARSEILLE 04 91 75 25 25 NANCY: 03 83 32 36 36 PARIS: 01 40 05 48 48 RENNES: 02 99 59 22 22 STRASBOURG: 03 88 37 37 37
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TOULOUSE: 05 61 77 74 47
EUROPE: +32 35 75 1234
France ORFILA: +33(0)145425959
ASIA: +65 6336-6011
China: +86 20 39377888
+86 532 83889090
India: + 91 22 42 87 5333
Australia: 1800 786 152
New Zealand: 0800 767 437
USA: +1 800-424-9300

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Serious eye damage, Category 1	H318: Causes serious eye damage.
Respiratory sensitisation, Category 1	H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Skin sensitisation, Category 1	H317: May cause an allergic skin reaction.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :



Signal word : Danger

Hazard statements :
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Precautionary statements :
Prevention:
P261 Avoid breathing mist or vapours.
P280 Wear protective gloves/ eye protection/ face protection.
P284 Wear respiratory protection.

Response:

P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
P342 + P311 If experiencing respiratory symptoms: Call a POISON CENTER/ doctor.

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2.3 Other hazards

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.

Ecological information: 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

Toxicological information: 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

SECTION 3: Composition/information on ingredients

3.1 Substances

Substance name	: methyl-tetrahydrophthalic anhydride
Index-No.	: 607-240-00-0
EC-No.	: 234-290-7

Hazardous components

Chemical name	CAS-No. EC-No.	Concentration (%) w/w)	M-Factor, SCL, ATE
tetrahydromethylphthalic anhydride	11070-44-3 234-290-7	>= 90 - <= 100	

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice	: Move out of dangerous area. Consult a physician. Show this safety data sheet to the doctor in attendance. Treat symptomatically. Get medical attention if symptoms occur.
Protection of first-aiders	: First Aid responders should pay attention to self-protection and use the recommended protective clothing If potential for exposure exists refer to Section 8 for specific personal protective equipment. Avoid inhalation, ingestion and contact with skin and eyes. No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

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- | | | |
|-------------------------|---|--|
| If inhaled | : | Call a physician or poison control centre immediately.
If inhaled, remove to fresh air.
Get medical attention if symptoms occur. |
| In case of skin contact | : | If skin irritation persists, call a physician.
If on skin, rinse well with water.
If on clothes, remove clothes. |
| In case of eye contact | : | Small amounts splashed into eyes can cause irreversible tissue damage and blindness.
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Continue rinsing eyes during transport to hospital.
Remove contact lenses.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist. |
| If swallowed | : | Keep respiratory tract clear.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.
Take victim immediately to hospital. |

4.2 Most important symptoms and effects, both acute and delayed

None known.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Water spray
Alcohol-resistant foam
Carbon dioxide (CO₂)
Dry chemical

Unsuitable extinguishing media : Exercise caution when using a high volume water jet as it may scatter and spread fire

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting : Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products : No hazardous combustion products are known

5.3 Advice for firefighters

Special protective equipment for firefighters : Wear self-contained breathing apparatus for firefighting if necessary.

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- | | | |
|--------------------------------|---|---|
| Specific extinguishing methods | : | Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. |
| Further information | : | Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. |

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

- | | | |
|----------------------|---|--|
| Personal precautions | : | Use personal protective equipment.
Ensure adequate ventilation.
Refer to protective measures listed in sections 7 and 8. |
|----------------------|---|--|

6.2 Environmental precautions

- | | | |
|---------------------------|---|---|
| Environmental precautions | : | Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities. |
|---------------------------|---|---|

6.3 Methods and material for containment and cleaning up

- | | | |
|-------------------------|---|---|
| Methods for cleaning up | : | Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Keep in suitable, closed containers for disposal. |
|-------------------------|---|---|

6.4 Reference to other sections

For disposal considerations see section 13., See Section 1 for emergency contact information., For personal protection see section 8.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

- | | | |
|-------------------------|---|---|
| Technical measures | : | Ensure that eyewash stations and safety showers are close to the workstation location. |
| Local/Total ventilation | : | Ensure adequate ventilation. |
| Advice on safe handling | : | Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitisation of susceptible persons. Persons suffering from asthma, eczema or skin problems should avoid contact, including dermal contact, with this product.
Do not breathe vapours/dust.
Avoid exposure - obtain special instructions before use.
Avoid contact with skin and eyes.
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area. |

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To avoid spills during handling keep bottle on a metal tray.
Dispose of rinse water in accordance with local and national regulations.
Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

Hygiene measures : When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Keep container tightly closed in a dry and well-ventilated place. Keep in properly labelled containers.

Advice on common storage : For incompatible materials please refer to Section 10 of this SDS.

Further information on storage stability : Stable under normal conditions.

Recommended storage temperature : 2 - 40 °C

7.3 Specific end use(s)

Specific use(s) : See Annex to the Safety data sheet for additional information in the Exposure Scenario(s).

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Contains no substances with occupational exposure limit values.

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

Substance name	Environmental Compartment	Value
tetrahydromethylphthalic anhydride	Fresh water	2 mg/l
	Remarks:Assessment Factors	
	Marine water	0,2 mg/l
	Remarks:Assessment Factors	
	Intermittent use/release	0,79 mg/l
	Remarks:Assessment Factors	
	Fresh water sediment	46,6 mg/kg
	Remarks:Equilibrium method	
	Marine sediment	4,66 mg/kg
	Remarks:Equilibrium method	
	Sewage treatment plant	0,699 mg/l

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	Remarks:Assessment Factors	
	Soil	11,5 mg/kg
	Remarks:Equilibrium method	
tetrahydromethylphthalic anhydride	Fresh water	2 mg/l
	Remarks:Assessment Factors	
	Marine water	0,2 mg/l
	Remarks:Assessment Factors	
	Intermittent use/release	0,79 mg/l
	Remarks:Assessment Factors	
	Fresh water sediment	46,6 mg/kg
	Remarks:Equilibrium method	
	Marine sediment	4,66 mg/kg
	Remarks:Equilibrium method	
	Sewage treatment plant	0,699 mg/l
	Remarks:Assessment Factors	
	Soil	11,5 mg/kg
	Remarks:Equilibrium method	

8.2 Exposure controls

Personal protective equipment

Eye/face protection : Eye wash bottle with pure water
Tightly fitting safety goggles
Wear face-shield and protective suit for abnormal processing problems.

Hand protection
Material : butyl-rubber
Break through time : > 8 h

Material : Ethyl Vinyl Alcohol Laminate (EVAL)
Break through time : > 8 h

Material : Nitrile rubber
Break through time : > 8 h

Material : Neoprene
Break through time : 10 - 480 min

Remarks : The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Skin and body protection : Impervious clothing
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines
Equipment should conform to EN 14387

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Filter type : Combined particulates and organic vapour type (A-P)

Protective measures : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

See Annex to the Safety data sheet for additional information in the Exposure Scenario(s).

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	: liquid
Colour	: No data is available on the product itself.
Odour	: slight
Odour Threshold	: No data is available on the product itself.
pH	: No data is available on the product itself.
Melting point/freezing point	: No data is available on the product itself.
Boiling point	: > 200 °C
Flash point	: > 100 °C Method: Pensky-Martens closed cup
Flammability (solid, gas)	: No data is available on the product itself.
Upper explosion limit / Upper flammability limit	: No data is available on the product itself.
Lower explosion limit / Lower flammability limit	: No data is available on the product itself.
Vapour pressure	: No data is available on the product itself.
Relative vapour density	: No data is available on the product itself.
Relative density	: No data is available on the product itself.
Density	: 1,18 - 1,24 g/cm ³ (25 °C)
Solubility(ies)	
Water solubility	: partly soluble (20 °C)
Solubility in other solvents	: No data is available on the product itself.
Partition coefficient: n-octanol/water	: No data is available on the product itself.

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Auto-ignition temperature : No data is available on the product itself.

Decomposition temperature : > 200 °C

Viscosity : No data is available on the product itself.

9.2 Other information

No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions : No hazards to be specially mentioned.

10.4 Conditions to avoid

Conditions to avoid : None known.

10.5 Incompatible materials

Materials to avoid : Strong acids and strong bases
Strong oxidizing agents

10.6 Hazardous decomposition products

Carbon oxides
Burning produces noxious and toxic fumes.

SECTION 11: Toxicological information

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

Acute toxicity

Product:

Acute oral toxicity : LD50 (Rat): > 2 000 mg/kg

Components:

tetrahydromethylphthalic anhydride:

Acute oral toxicity : LD50 (Rat, male and female): > 2 000 mg/kg
Method: OECD Test Guideline 401
Assessment: The substance or mixture has no acute oral toxicity

Acute dermal toxicity : LD50 (Rat, male and female): > 2 000 mg/kg
Method: OECD Test Guideline 402

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Assessment: The substance or mixture has no acute dermal toxicity

Skin corrosion/irritation

Components:

tetrahydromethylphthalic anhydride:

Species	:	Rabbit
Assessment	:	Mild skin irritant
Method	:	OPPTS 870.2500
Result	:	slight irritation

Serious eye damage/eye irritation

Components:

tetrahydromethylphthalic anhydride:

Species	:	Rabbit
Method	:	OECD Test Guideline 405
Result	:	Corrosive

Respiratory or skin sensitisation

Components:

tetrahydromethylphthalic anhydride:

Exposure routes	:	Respiratory Tract
Species	:	Humans
Result	:	May cause sensitisation by inhalation.
Result	:	May cause sensitisation by skin contact.

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

STOT - single exposure

No data available

STOT - repeated exposure

No data available

Repeated dose toxicity

No data available

Aspiration toxicity

No data available

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11.2 Information on other hazards

Endocrine disrupting properties

Product:

Assessment : 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

Experience with human exposure

No data available

Toxicology, Metabolism, Distribution

No data available

Neurological effects

No data available

Further information

No data available

SECTION 12: Ecological information

12.1 Toxicity

Components:

tetrahydromethylphthalic anhydride:

Toxicity to fish	: LC50 (Oryzias latipes (Orange-red killifish)): > 100 mg/l Exposure time: 96 h Test Type: flow-through test Test substance: Fresh water Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia magna (Water flea)): 130 mg/l Exposure time: 48 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	: EgC50 (Selenastrum capricornutum (green algae)): 68 mg/l Exposure time: 72 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 201
Toxicity to microorganisms	: IC20 : 9,33 mg/l Exposure time: 3 h Test Type: flow-through test Test substance: Fresh water Method: OECD Test Guideline 209
Toxicity to fish (Chronic toxicity)	: NOEC: 100 mg/l Exposure time: 14 d

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Species: *Oryzias latipes* (Orange-red killifish)
Test Type: flow-through test
Test substance: Fresh water
Method: OECD Test Guideline 204

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 20 mg/l
Exposure time: 21 d
Species: *Daphnia magna* (Water flea)
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 211

12.2 Persistence and degradability

Components:

tetrahydromethylphthalic anhydride:

Biodegradability : Inoculum: activated sludge
Concentration: 100 mg/l
Result: Not readily biodegradable.
Biodegradation: 0 %
Exposure time: 28 d
Method: OECD Test Guideline 301C

Stability in water : Degradation half life (DT50): 3,3 min (20 °C)
pH: 4
Method: OECD Test Guideline 111
Remarks: Fresh water

12.3 Bioaccumulative potential

Components:

tetrahydromethylphthalic anhydride:

Bioaccumulation : Bioconcentration factor (BCF): 3,16

Partition coefficient: n-octanol/water : log Pow: 2,38 - 2,51 (25 °C)
pH: 6
Method: QSAR

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Product:

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

Product:

Assessment : The substance/mixture does not contain components

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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 data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product	: Dispose of contents and container in accordance with all local, regional, national and international regulations. Do not dispose of waste into sewer. Do not contaminate ponds, waterways or ditches with chemical or used container.
Contaminated packaging	: Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.

SECTION 14: Transport information

14.1 UN number or ID number

UNRTDG	: Not regulated as dangerous goods
ADN	: Not regulated as dangerous goods
ADR	: Not regulated as dangerous goods
RID	: Not regulated as dangerous goods
IMDG	: Not regulated as dangerous goods
IATA	: Not regulated as dangerous goods

14.2 UN proper shipping name

UNRTDG	: Not regulated as dangerous goods
ADN	: Not regulated as dangerous goods
ADR	: Not regulated as dangerous goods
RID	: Not regulated as dangerous goods
IMDG	: Not regulated as dangerous goods
IATA	: Not regulated as dangerous goods

14.3 Transport hazard class(es)

ADN	: Not regulated as dangerous goods
ADR	: Not regulated as dangerous goods
RID	: Not regulated as dangerous goods
IMDG	: Not regulated as dangerous goods

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IATA : Not regulated as dangerous goods

14.4 Packing group

ADN : Not regulated as dangerous goods

ADR : Not regulated as dangerous goods

RID : Not regulated as dangerous goods

IMDG : Not regulated as dangerous goods

IATA (Cargo) : Not regulated as dangerous goods

IATA (Passenger) : Not regulated as dangerous goods

14.5 Environmental hazards

Not regulated as dangerous goods

14.6 Special precautions for user

Remarks : Not classified as dangerous in the meaning of transport regulations.

14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

SECTION 15: Regulatory information

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

REACH - List of substances subject to authorisation (Annex XIV) : Not applicable

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59). : This product does not contain substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 57).

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII) : Conditions of restriction for the following entries should be considered:
Number on list 3

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances. Not applicable

Occupational Illnesses (R-461-3, France) : Not applicable

Other regulations:

Take note of Directive 94/33/EC on the protection of young people at work or stricter national regulations, where applicable.

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The components of this product are reported in the following inventories:

DSL	: All components of this product are on the Canadian DSL
AIIC	: On the inventory, or in compliance with the inventory
ENCS	: On the inventory, or in compliance with the inventory
KECI	: On the inventory, or in compliance with the inventory
PICCS	: On the inventory, or in compliance with the inventory
IECSC	: On the inventory, or in compliance with the inventory
TCSI	: On the inventory, or in compliance with the inventory
TSCA	: All substances listed as active on the TSCA inventory

Inventories

AICS (Australia), AIIC (Australia), DSL (Canada), IECSC (China), ENCS (Japan), KECI (Korea), NZIOC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (United States of America (USA))

15.2 Chemical safety assessment

For further information see eSDS.

SECTION 16: Other information

Further information

The information and recommendations in this publication are to the best of our knowledge, information and belief accurate at the date of publication, NOTHING HEREIN IS TO BE CONSTRUED AS A WARRANTY, EXPRESS OR OTHERWISE.

IN ALL CASES, IT IS THE RESPONSIBILITY OF THE USER TO DETERMINE THE APPLICABILITY OF SUCH INFORMATION AND RECOMMENDATIONS AND THE SUITABILITY OF ANY PRODUCT FOR ITS OWN PARTICULAR PURPOSE.

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THE PRODUCT MAY PRESENT HAZARDS AND SHOULD BE USED WITH CAUTION. WHILE CERTAIN HAZARDS ARE DESCRIBED IN THIS PUBLICATION, NO GUARANTEE IS MADE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.

Hazards, toxicity and behaviour of the products may differ when used with other materials and are dependent upon the manufacturing circumstances or other processes. Such hazards, toxicity and behaviour should be determined by the user and made known to handlers, processors and end users.

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Annex to the Safety Data Sheet (eSDS)

ES 1	Formulation of preparations Industrial
ES 2	Formulation in materials Industrial
ES 3	Industrial use resulting in inclusion into or onto a matrix Industrial
ES 4	Used as chemical intermediate Industrial
ES 5	Industrial use of reactive processing aids Industrial
ES 6	Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers Industrial

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ES 1: Formulation of preparations.

1.1. Title section

Exposure Scenario name	: Formulation of preparations
Substance	: tetrahydromethylphthalic anhydride <u>EC-No.:</u> 234-290-7 <u>Registration number:</u> 01-2119488054-36

Environment		
CS 1	Formulation of preparations	ERC2
Worker		
CS 2	Formulation	PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC15

1.2. Conditions of use affecting exposure

1.2.1. Control of environmental exposure: Formulation into mixture (ERC2)

Product (article) characteristics	
Physical form of product	: Liquid
Amount used (or contained in articles), frequency and duration of use/exposure	
Annual site tonnage	: 1000 t
Daily amount per site	: 10000 kg
Emission days	: 100
Technical and organisational conditions and measures	
No discharge of substance into waste water Municipal sewage treatment is not assumed.	
Conditions and measures related to sewage treatment plant	
STP type	: none

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Conditions and measures related to treatment of waste (including article waste)	
Waste treatment	: Liquid and/or solid waste is treated by incineration.
Other conditions affecting environmental exposure	
Receiving surface water flow	: 18 000 m3/d
Local freshwater dilution factor	: 10
Local marine water dilution factor	: 100

1.2.2. Control of worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Chemical production where opportunity for exposure arises (PROC4) / Mixing or blending in batch processes (PROC5) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) / Use as laboratory reagent (PROC15)

Product (article) characteristics
Covers concentrations up to 100 %
Physical form of product : Liquid Low volatile liquid
Technical and organisational conditions and measures
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Assumes a good basic standard of occupational hygiene is implemented Ensure control measures are regularly inspected and maintained. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Ensure there is no direct skin contact with product. Identify potential areas for indirect skin contact. Supervision in place to check that the risk management measures in place are being used correctly and operation conditions followed. When not in use, keep containers tightly closed.
Conditions and measures related to personal protection, hygiene and health evaluation
Use suitable eye protection.
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Wear an impervious suit.
Wear suitable respiratory protection.
For further specification, refer to section 8 of the SDS.

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Other conditions affecting workers exposure

Indoor or outdoor use	: Indoor use
Professional or industrial settings	: Industrial use

1.3. Exposure estimation and reference to its source

1.3.1. Environmental release and exposure: Formulation into mixture (ERC2)

Release route	Release rate	Release estimation method
Water	0 %	
Air	2,5 %	
Soil	0,01 %	

Protection Target	Exposure estimate	RCR
Freshwater	< 0,001µg/L (EASY TRA v4.1)	9,35 E-7
Freshwater sediment	0,044µg/kg dry weight (EASY TRA v4.1)	9,34 E-7
Marine water	< 0,001µg/L (EASY TRA v4.1)	9,02 E-7
Marine sediment	< 0,001µg/kg dry weight (EASY TRA v4.1)	9,01 E-7
Soil	< 0,001µg/kg dry weight (EASY TRA v4.1)	0,003511

1.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Chemical production where opportunity for exposure arises (PROC4) / Mixing or blending in batch processes (PROC5) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) / Use as laboratory reagent (PROC15)

Additional information on exposure estimation

No exposure assessment presented for human health.
Risk management measures are based on qualitative risk characterisation.

1.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Wastewater emission controls are not applicable as there is no direct release to wastewater.

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ES 2: Formulation in materials

2.1. Title section

Exposure Scenario name	: Formulation in materials
Substance	: tetrahydromethylphthalic anhydride <u>EC-No.:</u> 234-290-7 <u>Registration number:</u> 01-2119488054-36

Environment		
CS 1	Formulation in materials	ERC3
Worker		
CS 2	Formulation	PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC15

2.2. Conditions of use affecting exposure

2.2.1. Control of environmental exposure: Formulation into solid matrix (ERC3)

Product (article) characteristics	
Physical form of product	: Liquid
Amount used (or contained in articles), frequency and duration of use/exposure	
Annual site tonnage	: 1000 t
Daily amount per site	: 10000 kg
Emission days	: 100
Technical and organisational conditions and measures	
Municipal sewage treatment plant is assumed.	
Conditions and measures related to sewage treatment plant	
STP type	: Municipal Sewage Treatment Plant
Conditions and measures related to treatment of waste (including article waste)	

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Waste treatment	:	Liquid and/or solid waste is treated by incineration.
Other conditions affecting environmental exposure		
Receiving surface water flow	:	18 000 m ³ /d
Local freshwater dilution factor	:	10
Local marine water dilution factor	:	100

2.2.2. Control of worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Chemical production where opportunity for exposure arises (PROC4) / Mixing or blending in batch processes (PROC5) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) / Use as laboratory reagent (PROC15)

Product (article) characteristics	
Covers concentrations up to 100 %	
Physical form of product	: Liquid Low volatile liquid
Technical and organisational conditions and measures	
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).	
Assumes a good basic standard of occupational hygiene is implemented Ensure control measures are regularly inspected and maintained. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Ensure there is no direct skin contact with product. Identify potential areas for indirect skin contact. Supervision in place to check that the risk management measures in place are being used correctly and operation conditions followed. When not in use, keep containers tightly closed.	
Conditions and measures related to personal protection, hygiene and health evaluation	
Use suitable eye protection.	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Wear an impervious suit.	
Wear suitable respiratory protection.	
For further specification, refer to section 8 of the SDS.	
Other conditions affecting workers exposure	
Indoor or outdoor use	: Indoor use

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Professional or industrial settings : Industrial use

2.3. Exposure estimation and reference to its source

2.3.1. Environmental release and exposure: Formulation into solid matrix (ERC3)

Release route	Release rate	Release estimation method
Water	0,2 %	
Air	30 %	
Soil	0,1 %	

Protection Target	Exposure estimate	RCR
Freshwater	0,05mg/L (EASY TRA v4.1)	0,025
Freshwater sediment	1,166mg/kg dry weight (EASY TRA v4.1)	0,025
Marine water	0,005mg/L (EASY TRA v4.1)	0,025
Marine sediment	0,116mg/kg dry weight (EASY TRA v4.1)	0,025
Sewage treatment plant	0,501mg/L (EASY TRA v4.1)	0,717
Soil	2,026mg/kg dry weight (EASY TRA v4.1)	0,176

2.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Chemical production where opportunity for exposure arises (PROC4) / Mixing or blending in batch processes (PROC5) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) / Use as laboratory reagent (PROC15)

Additional information on exposure estimation

No exposure assessment presented for human health.
Risk management measures are based on qualitative risk characterisation.

2.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented.

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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.

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ES 3: Industrial use resulting in inclusion into or onto a matrix

3.1. Title section

Exposure Scenario name	: Industrial use resulting in inclusion into or onto a matrix
Substance	: tetrahydromethylphthalic anhydride <u>EC-No.:</u> 234-290-7 <u>Registration number:</u> 01-2119488054-36

Environment		
CS 1	Industrial use resulting in inclusion into or onto a matrix	ERC5
Worker		
CS 2	Industrial use	PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC15

3.2. Conditions of use affecting exposure

3.2.1. Control of environmental exposure: Use at industrial site leading to inclusion into/onto article (ERC5)

Product (article) characteristics	
Physical form of product	: Liquid
Amount used (or contained in articles), frequency and duration of use/exposure	
Annual site tonnage	: 1000 t
Daily amount per site	: 5000 kg
Emission days	: 20
Technical and organisational conditions and measures	
Municipal sewage treatment is not assumed. No discharge of substance into waste water	
Conditions and measures related to sewage treatment plant	

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STP type	: none
Conditions and measures related to treatment of waste (including article waste)	
Waste treatment	: Liquid and/or solid waste is treated by incineration.
Other conditions affecting environmental exposure	
Receiving surface water flow	: 18 000 m3/d
Local freshwater dilution factor	: 10
Local marine water dilution factor	: 100

3.2.2. Control of worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Chemical production where opportunity for exposure arises (PROC4) / Mixing or blending in batch processes (PROC5) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) / Roller application or brushing (PROC10) / Treatment of articles by dipping and pouring (PROC13) / Use as laboratory reagent (PROC15)

Product (article) characteristics	
Covers concentrations up to 100 %	
Physical form of product	: Liquid Low volatile liquid
Technical and organisational conditions and measures	
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).	
Assumes a good basic standard of occupational hygiene is implemented Ensure control measures are regularly inspected and maintained. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Ensure there is no direct skin contact with product. Identify potential areas for indirect skin contact. Supervision in place to check that the risk management measures in place are being used correctly and operation conditions followed. When not in use, keep containers tightly closed.	
Conditions and measures related to personal protection, hygiene and health evaluation	
Use suitable eye protection.	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Wear an impervious suit.	
Wear suitable respiratory protection.	

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For further specification, refer to section 8 of the SDS.

Other conditions affecting workers exposure

Indoor or outdoor use : Indoor use

Professional or industrial settings : Industrial use

3.3. Exposure estimation and reference to its source

3.3.1. Environmental release and exposure: Use at industrial site leading to inclusion into/onto article (ERC5)

Release route	Release rate	Release estimation method
Water	0 %	
Air	50 %	
Soil	1 %	

Protection Target	Exposure estimate	RCR
Freshwater	< 0,001µg/L (EASY TRA v4.1)	< 0,001
Freshwater sediment	< 0,001µg/kg dry weight (EASY TRA v4.1)	< 0,001
Marine water	< 0,001µg/L (EASY TRA v4.1)	< 0,001
Marine sediment	0,044µg/kg dry weight (EASY TRA v4.1)	< 0,001
Soil	0,807mg/kg dry weight (EASY TRA v4.1)	0,07

3.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Chemical production where opportunity for exposure arises (PROC4) / Mixing or blending in batch processes (PROC5) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) / Roller application or brushing (PROC10) / Treatment of articles by dipping and pouring (PROC13) / Use as laboratory reagent (PROC15)

Additional information on exposure estimation

No exposure assessment presented for human health.
Risk management measures are based on qualitative risk characterisation.

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3.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Wastewater emission controls are not applicable as there is no direct release to wastewater.

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ES 4: Used as chemical intermediate

4.1. Title section

Exposure Scenario name	: Used as chemical intermediate
Substance	: tetrahydromethylphthalic anhydride <u>EC-No.:</u> 234-290-7 <u>Registration number:</u> 01-2119488054-36

Environment		
CS 1	Used as chemical intermediate	ERC6a
Worker		
CS 2	Industrial use	PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC15

4.2. Conditions of use affecting exposure

4.2.1. Control of environmental exposure: Use of intermediate (ERC6a)

Product (article) characteristics	
Physical form of product	: Liquid
Amount used (or contained in articles), frequency and duration of use/exposure	
Annual site tonnage	: 1000 t
Daily amount per site	: 50000 kg
Emission days	: 20
Technical and organisational conditions and measures	
Municipal sewage treatment is not assumed. No discharge of substance into waste water	
Conditions and measures related to sewage treatment plant	

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STP type	: none
Conditions and measures related to treatment of waste (including article waste)	
Waste treatment	: Liquid and/or solid waste is treated by incineration.
Other conditions affecting environmental exposure	
Receiving surface water flow	: 18 000 m3/d
Local freshwater dilution factor	: 10
Local marine water dilution factor	: 100

4.2.2. Control of worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Chemical production where opportunity for exposure arises (PROC4) / Mixing or blending in batch processes (PROC5) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) / Roller application or brushing (PROC10) / Treatment of articles by dipping and pouring (PROC13) / Use as laboratory reagent (PROC15)

Product (article) characteristics	
Covers concentrations up to 100 %	
Physical form of product	: Liquid Low volatile liquid
Technical and organisational conditions and measures	
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).	
Assumes a good basic standard of occupational hygiene is implemented Ensure control measures are regularly inspected and maintained. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Ensure there is no direct skin contact with product. Identify potential areas for indirect skin contact. Supervision in place to check that the risk management measures in place are being used correctly and operation conditions followed. When not in use, keep containers tightly closed.	
Conditions and measures related to personal protection, hygiene and health evaluation	
Use suitable eye protection.	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Wear an impervious suit.	
Wear suitable respiratory protection.	

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For further specification, refer to section 8 of the SDS.

Other conditions affecting workers exposure

Indoor or outdoor use : Indoor use

Professional or industrial settings : Industrial use

4.3. Exposure estimation and reference to its source

4.3.1. Environmental release and exposure: Use of intermediate (ERC6a)

Release route	Release rate	Release estimation method
Water	0 %	
Air	5 %	
Soil	0,1 %	

Protection Target	Exposure estimate	RCR
Freshwater	< 0,001µg/L (EASY TRA v4.1)	9,35 E-7
Freshwater sediment	0,044µg/kg dry weight (EASY TRA v4.1)	9,34 E-7
Marine water	< 0,001µg/L (EASY TRA v4.1)	9,02 E-7
Marine sediment	< 0,001µg/kg dry weight (EASY TRA v4.1)	9,01 E-7
Soil	0,081mg/kg dry weight (EASY TRA v4.1)	0,007

4.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Chemical production where opportunity for exposure arises (PROC4) / Mixing or blending in batch processes (PROC5) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) / Roller application or brushing (PROC10) / Treatment of articles by dipping and pouring (PROC13) / Use as laboratory reagent (PROC15)

Additional information on exposure estimation

No exposure assessment presented for human health.
Risk management measures are based on qualitative risk characterisation.

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4.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Wastewater emission controls are not applicable as there is no direct release to wastewater.

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ES 5: Industrial use of reactive processing aids

5.1. Title section

Exposure Scenario name	: Industrial use of reactive processing aids
Substance	: tetrahydromethylphthalic anhydride <u>EC-No.:</u> 234-290-7 <u>Registration number:</u> 01-2119488054-36

Environment		
CS 1	Industrial use of reactive processing aids	ERC6b
Worker		
CS 2	Industrial use	PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC15

5.2. Conditions of use affecting exposure

5.2.1. Control of environmental exposure: Use of reactive processing aid at industrial site (no inclusion into or onto article) (ERC6b)

Product (article) characteristics	
Physical form of product	: Liquid
Amount used (or contained in articles), frequency and duration of use/exposure	
Annual site tonnage	: 1000 t
Daily amount per site	: 50000 kg
Emission days	: 20
Technical and organisational conditions and measures	
Municipal sewage treatment is not assumed. No discharge of substance into waste water	
Conditions and measures related to sewage treatment plant	

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STP type	: none
Conditions and measures related to treatment of waste (including article waste)	
Waste treatment	: Liquid and/or solid waste is treated by incineration.
Other conditions affecting environmental exposure	
Receiving surface water flow	: 18 000 m3/d
Local freshwater dilution factor	: 10
Local marine water dilution factor	: 100

5.2.2. Control of worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Chemical production where opportunity for exposure arises (PROC4) / Mixing or blending in batch processes (PROC5) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) / Roller application or brushing (PROC10) / Treatment of articles by dipping and pouring (PROC13) / Use as laboratory reagent (PROC15)

Product (article) characteristics
Covers concentrations up to 100 %
Physical form of product : Liquid Low volatile liquid
Technical and organisational conditions and measures
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
Assumes a good basic standard of occupational hygiene is implemented Ensure control measures are regularly inspected and maintained. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Ensure there is no direct skin contact with product. Identify potential areas for indirect skin contact. Supervision in place to check that the risk management measures in place are being used correctly and operation conditions followed. When not in use, keep containers tightly closed.
Conditions and measures related to personal protection, hygiene and health evaluation
Use suitable eye protection.
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Wear an impervious suit.
Wear suitable respiratory protection.

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For further specification, refer to section 8 of the SDS.

Other conditions affecting workers exposure

Indoor or outdoor use : Indoor use

Professional or industrial settings : Industrial use

5.3. Exposure estimation and reference to its source

5.3.1. Environmental release and exposure: Use of reactive processing aid at industrial site (no inclusion into or onto article) (ERC6b)

Release route	Release rate	Release estimation method
Water	0 %	
Air	0,1 %	
Soil	0,025 %	

Protection Target	Exposure estimate	RCR
Freshwater	< 0,001µg/L (EASY TRA v4.1)	9,35 E-7
Freshwater sediment	0,044µg/kg dry weight (EASY TRA v4.1)	9,34 E-7
Marine water	< 0,001µg/L (EASY TRA v4.1)	9,02 E-7
Marine sediment	< 0,001µg/kg dry weight (EASY TRA v4.1)	9,01 E-7
Soil	1,64µg/kg dry weight (EASY TRA v4.1)	0,000124

5.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Chemical production where opportunity for exposure arises (PROC4) / Mixing or blending in batch processes (PROC5) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) / Roller application or brushing (PROC10) / Treatment of articles by dipping and pouring (PROC13) / Use as laboratory reagent (PROC15)

Additional information on exposure estimation

No exposure assessment presented for human health.
Risk management measures are based on qualitative risk characterisation.

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5.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Wastewater emission controls are not applicable as there is no direct release to wastewater.

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ES 6: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

6.1. Title section

Exposure Scenario name	: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers
Substance	: tetrahydromethylphthalic anhydride <u>EC-No.:</u> 234-290-7 <u>Registration number:</u> 01-2119488054-36

Environment		
CS 1	Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers	ERC6d
Worker		
CS 2	Industrial use	PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC15

6.2. Conditions of use affecting exposure

6.2.1. Control of environmental exposure: Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article) (ERC6d)

Product (article) characteristics	
Physical form of product	: Liquid
Amount used (or contained in articles), frequency and duration of use/exposure	
Annual site tonnage	: 1000 t
Daily amount per site	: 50000 kg
Emission days	: 20
Technical and organisational conditions and measures	
Municipal sewage treatment plant is assumed.	

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Conditions and measures related to sewage treatment plant	
STP type	: Municipal Sewage Treatment Plant
Conditions and measures related to treatment of waste (including article waste)	
Waste treatment	: Liquid and/or solid waste is treated by incineration.
Other conditions affecting environmental exposure	
Receiving surface water flow	: 18 000 m3/d
Local freshwater dilution factor	: 10
Local marine water dilution factor	: 100

6.2.2. Control of worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Chemical production where opportunity for exposure arises (PROC4) / Mixing or blending in batch processes (PROC5) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) / Roller application or brushing (PROC10) / Treatment of articles by dipping and pouring (PROC13) / Use as laboratory reagent (PROC15)

Product (article) characteristics	
Covers concentrations up to 100 %	
Physical form of product	: Liquid Low volatile liquid
Technical and organisational conditions and measures	
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).	
Assumes a good basic standard of occupational hygiene is implemented Ensure control measures are regularly inspected and maintained. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Ensure there is no direct skin contact with product. Identify potential areas for indirect skin contact. Supervision in place to check that the risk management measures in place are being used correctly and operation conditions followed. When not in use, keep containers tightly closed.	
Conditions and measures related to personal protection, hygiene and health evaluation	
Use suitable eye protection.	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	

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Wear an impervious suit.

Wear suitable respiratory protection.

For further specification, refer to section 8 of the SDS.

Other conditions affecting workers exposure

Indoor or outdoor use : Indoor use

Professional or industrial settings : Industrial use

6.3. Exposure estimation and reference to its source

6.3.1. Environmental release and exposure: Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article) (ERC6d)

Release route	Release rate	Release estimation method
Water	0,005 %	
Air	35 %	
Soil	0,025 %	

Protection Target	Exposure estimate	RCR
Freshwater	0,006mg/L (EASY TRA v4.1)	0,003
Freshwater sediment	0,146mg/kg dry weight (EASY TRA v4.1)	0,003
Marine water	0,626µg/L (EASY TRA v4.1)	0,003
Marine sediment	0,015mg/kg dry weight (EASY TRA v4.1)	0,003
Sewage treatment plant	0,063mg/L (EASY TRA v4.1)	0,089
Soil	0,757mg/kg dry weight (EASY TRA v4.1)	0,066

6.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Chemical production where opportunity for exposure arises (PROC4) / Mixing or blending in batch processes (PROC5) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) / Roller application or brushing (PROC10) / Treatment of articles by dipping and pouring (PROC13) / Use as laboratory reagent (PROC15)

Additional information on exposure estimation

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No exposure assessment presented for human health.
Risk management measures are based on qualitative risk characterisation.

6.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given 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.