We create chemistry

Safety data sheet

BASF Safety data sheet according to Regulation UK SI 2019/758 and UK SI 2020/1577 as amended from time to time.
Date / Revised: 06.10.2025 Version: 16.0
Date / Previous version: 23.10.2023 Previous version: 15.0
Product: **Dihydrodicyclopentadienyl Acrylate (DCPA)**
(ID no. 30041958/SDS_GEN_GB/EN)
Date of print 23.10.2025

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

1.1. Product identifier

Dihydrodicyclopentadienyl Acrylate (DCPA)

Chemical name: Hexahydro-4,7-methano-1H-indenyl acrylate
INDEX-Number: 607-133-00-9
CAS Number: 12542-30-2

REACH registration number: 01-2119977078-24-0000

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

Relevant identified uses: Monomer.
Recommended use: Chemical

For the detailed identified uses of the product see appendix of the safety data sheet.

1.3. Details of the supplier of the safety data sheet

Company:
BASF SE
67056 Ludwigshafen
GERMANY

Contact address:
BASF plc
4th and 5th Floors, 2 Stockport Exchange
Railway Road, Stockport, SK1 3GG
UNITED KINGDOM

Telephone: +44 161 475 3000
E-mail address: product-safety-uk-and-ireland@basf.com

1.4. Emergency telephone number

International emergency number:
Telephone: +49 180 2273-112

SECTION 2: Hazards Identification

2.1. Classification of the substance or mixture

According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567

Skin Corr./Irrit. 2	H315 Causes skin irritation.
Eye Dam./Irrit. 2	H319 Causes serious eye irritation.
Skin Sens. 1	H317 May cause an allergic skin reaction.
STOT SE 3	H335 May cause respiratory irritation.
Aquatic Chronic 2	H411 Toxic to aquatic life with long lasting effects.

Specific Concentration Limits According to Regulation (EC) No 1272/2008 [CLP]

STOT SE 3, irr. to respiratory syst.: >= 10 %

For the classifications not written out in full in this section the full text can be found in section 16.

2.2. Label elements

According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567

Pictogram:

Signal Word:
Warning

Hazard Statement:

H319	Causes serious eye irritation.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H335	May cause respiratory irritation.
H411	Toxic to aquatic life with long lasting effects.

Precautionary Statements (Prevention):

P280	Wear protective gloves and eye protection or face protection.
P273	Avoid release to the environment.
P271	Use only outdoors or in a well-ventilated area.
P260	Do not breathe dust/gas/mist/vapours.
P272	Contaminated work clothing should not be allowed out of the workplace.
P264	Wash contaminated body parts thoroughly after handling.

Precautionary Statements (Response):

P333 + P311	If skin irritation or rash occurs: Call a POISON CENTER or physician.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P303 + P352	IF ON SKIN (or hair): Wash with plenty of soap and water.
P332 + P313	If skin irritation occurs: Get medical attention.
P362 + P364	Take off contaminated clothing and wash it before reuse.
P391	Collect spillage.
P337 + P311	If eye irritation persists: Call a POISON CENTER or physician.

Precautionary Statements (Storage):

P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.

Precautionary Statements (Disposal):

P501	Dispose of contents and container to hazardous or special waste collection point.

Hazard determining component(s) for labelling: Hexahydro-4,7-methano-1H-indenyl acrylate

2.3. Other hazards

According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567

If applicable information is provided in this section on other hazards which do not result in classification but which may contribute to the overall hazards of the substance or mixture.

See section 12 - Results of PBT and vPvB assessment.

SECTION 3: Composition/Information on Ingredients

3.1. Substances

Chemical nature

Hexahydro-4,7-methano-1H-indenyl acrylate
CAS Number: 12542-30-2
EC-Number: 235-697-2
INDEX-Number: 607-133-00-9

Hazardous ingredients (GHS)

Hexahydro-4,7-methano-1H-indenyl acrylate

Content (W/W): >= 95 % - <= 100 %	Skin Irrit. 2
CAS Number: 12542-30-2	Eye Irrit. 2
EC-Number: 235-697-2, 235-697-2	Skin Sens. 1
INDEX-Number: 607-133-00-9	STOT SE 3 (irr. to respiratory syst.)
	Aquatic Chronic 2
	H319, H315, H317, H335, H411
	Specific concentration limit:
	STOT SE 3, irr. to respiratory syst.: >= 10 %

acrylic acid

Content (W/W): < 1 %	Acute Tox. 4 (Inhalation - vapour)
CAS Number: 79-10-7	Acute Tox. 4 (oral)
EC-Number: 201-177-9	Aquatic Chronic 2
INDEX-Number: 607-061-00-8	Aquatic Acute 1
	Acute Tox. 4 (dermal)
	Flam. Liq. 3
	Eye Dam. 1
	Skin Corr. 1A
	M-factor acute: 1
	H226, H314, H302 + H312 + H332, H411, H400
	Specific concentration limit:
	STOT SE 3, irr. to respiratory syst.: >= 1 %

3a,4,7,7a-tetrahydro-4,7-methanoindene

Content (W/W): >= 0.01 % - <= 0.5 %	Asp. Tox. 1
CAS Number: 77-73-6	Flam. Liq. 2
EC-Number: 201-052-9	Acute Tox. 2 (Inhalation - vapour)
INDEX-Number: 601-044-00-9	Acute Tox. 4 (oral)
	Skin Irrit. 2
	Eye Irrit. 2
	Repr. 2 (unborn child)
	STOT SE 3 (irr. to respiratory syst.)
	STOT RE (Central nervous system) 2
	Aquatic Acute 1
	Aquatic Chronic 2
	M-factor acute: 1
	H225, H319, H315, H330, H302, H304, H335, H361d, H373, H411, H400

For the classifications not written out in full in this section, including the hazard classes and the hazard statements, the full text is listed in section 16.

3.2. Mixtures

Not applicable

SECTION 4: First-Aid Measures

4.1. Description of first aid measures

First aid personnel should pay attention to their own safety. If the patient is likely to become unconscious, place and transport in stable sideways position (recovery position). Immediately remove contaminated clothing.

If inhaled:
Keep patient calm, remove to fresh air, seek medical attention.

On skin contact:
Wash thoroughly with soap and water

On contact with eyes:
Wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

On ingestion:
Immediately rinse mouth and then drink 200-300 ml of water, seek medical attention.

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

Symptoms: Information, i.e. additional information on symptoms and effects may be included in the GHS labeling phrases available in Section 2 and in the Toxicological assessments available in Section 11.

Hazards: Information, i.e. additional information on symptoms and effects may be included in the GHS labeling phrases available in Section 2 and in the Toxicological assessments available in Section 11. (Further) symptoms and / or effects are not known so far

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

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

SECTION 5: Fire-Fighting Measures

5.1. Extinguishing media

Suitable extinguishing media:
dry powder, water spray, carbon dioxide, foam

Unsuitable extinguishing media for safety reasons:
water jet

Additional information:
Use extinguishing measures to suit surroundings.

5.2. Special hazards arising from the substance or mixture

Advice: Risk of violent self-polymerization if overheated in a container. Cool endangered containers with water-spray.

Advice: The product is combustible. See SDS section 7 - Handling and storage.

5.3. Advice for fire-fighters

Special protective equipment:
Wear a self-contained breathing apparatus. Special protective equipment for firefighters

Further information:
Extend fire extinguishing measures to the surroundings. Fight fire from maximum distance. Vapours are heavier than air and may accumulate in low areas and travel a considerable distance up to the source of ignition.

In case of a fire in the vicinity a restabilization system should be used if the temperature in the bulk storage-tank reaches 45°C. Evacuate area of all unnecessary personnel. In case of a fire in the vicinity evacuate all personnel in a greater area if the temperature in the bulk storage-tank reaches 60°C.

Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

SECTION 6: Accidental Release Measures

High risk of slipping due to leakage/spillage of product.

Release of substance/product can cause fire or explosion. Shut off or stop source of leak. Shut off or stop released substance/product under safe conditions.

Pack in tightly closed containers for disposal.

6.1. Personal precautions, protective equipment and emergency procedures

Handle in accordance with good industrial hygiene and safety practice.

Avoid all sources of ignition: heat, sparks, open flame. Use antistatic tools.

6.2. Environmental precautions

Discharge into the environment must be avoided.

6.3. Methods and material for containment and cleaning up

For large amounts: Pump off product.
Spills should be contained, solidified, and placed in suitable containers for disposal. Dispose of absorbed material in accordance with regulations. Ensure adequate ventilation. Suppress gases/vapours/mists with water spray jet. Clean contaminated floors and objects thoroughly with water and detergents, observing environmental regulations. Cleaning operations should be carried out only while wearing breathing apparatus. Pick up with suitable appliance and dispose of.

6.4. Reference to other sections

Information regarding exposure controls/personal protection and disposal considerations can be found in section 8 and 13.

SECTION 7: Handling and Storage

7.1. Precautions for safe handling

The substance/ product may be handled only by appropriately trained personnel. Facility parts must be checked for polymer residues and cleaned on regular basis in order to avoid hazardous reactions.

Ensure thorough ventilation of stores and work areas. Encapsulation or exhaust ventilation required. When filling, transferring, or emptying of containers, adequate local exhaust ventilation is necessary. Vent waste air to atmosphere only through suitable separators. Check the condition of seals and connector screw threads.

The temperatures which must be avoided are to be considered. Protect against heat. Protect from direct sunlight. Protect contents from the effects of light. Do not open warm or swollen product containers. Remove persons to safety and alert fire brigade.

Ensure adequate inhibitor and dissolved oxygen level.

Avoid inhalation of dusts/mists/vapours. Avoid aerosol formation. Avoid all direct contact with the substance/product.

Protection against fire and explosion:
Avoid all sources of ignition: heat, sparks, open flame. Substance/product can form explosive mixture with air. Ground all transfer equipment properly to prevent electrostatic discharge. It is recommended that all conductive parts of the machinery are grounded. Explosion-proof equipment is not necessary when loading and processing of the product takes place at a minimum of 5 °C below the flash point.

Heated containers should be cooled to prevent polymerization. If exposed to fire, keep containers cool by spraying with water. Emergency cooling must be provided for the eventuality of a fire in the vicinity.

7.2. Conditions for safe storage, including any incompatibilities

Further information on storage conditions: Prior to storage ensure that the transfer equipment used and the intended storage containers do not contain other substances/products. Before transfer to stock the identity of the product must be proved to be without doubt. The entrance to storage rooms is to be granted only to appropriately trained personnel.
The stabilizer is only effective in the presence of oxygen. Maintain contact with atmosphere containing 5 - 21% oxygen. Never use tanks with inert-gas installation for storage.
Risk of polymerization. Protect against heat. Protect from direct sunlight. Avoid UV-light and other radiation with high energy. Protect against contamination.
In case of bulk storage, the storage-tanks should at least be equipped with two high temperature alert devices.
Even if the product is stored and handled as prescribed/indicated it should be used up within the indicated duration of storage.

Storage stability:
Storage temperature: < 35 °C
Storage duration: 12 Months
The stated storage temperature should be noted.
Avoid prolonged storage.
The stated storage temperature should be noted.
Avoid prolonged storage.

This product should be processed as soon as possible.
Ensure adequate inhibitor and dissolved oxygen level.
Do not store with less than 10 % headspace above liquid.
Storage stability is based upon ambient temperatures and conditions described.
It is recommended to keep a safe distance of +2 degrees above the crystallization range.
The product is stabilized, the shelf life should be noted.
Storage temperature: 45 °C
A restabilization system should be used if the temperature in the bulk storage-tank reaches the indicated value.
Storage temperature: 60 °C
All personnel in a greater area should be evacuated if the temperature in the bulk storage-tank reaches the indicated value.

7.3. Specific end use(s)
See exposure scenario(s) in the attachment to this safety data sheet.

SECTION 8: Exposure Controls/Personal Protection

8.1. Control parameters

Components with occupational exposure limits

77-73-6: 3a,4,7,7a-tetrahydro-4,7-methanoindene
TWA value 27 mg/m3 ; 5 ppm (WEL/EH 40 (UK))
79-10-7: acrylic acid
STEL value 59 mg/m3 ; 20 ppm (OEL (EU))
indicative
TWA value 29 mg/m3 ; 10 ppm (OEL (EU))
indicative
TWA value 29 mg/m3 ; 10 ppm (WEL/EH 40 (UK))
STEL value 59 mg/m3 ; 20 ppm (WEL/EH 40 (UK))
Ceiling limit value/factor: 15 min
STEL value 59 mg/m3 ; 20 ppm (WEL/EH 40 (UK))
Ceiling limit value/factor: 1 min

PNEC
STP: 17 mg/l

freshwater: 0.00551 mg/l

marine water: 0.000551 mg/l

sediment (freshwater): 0.720 mg/kg

sediment (marine water): 0.072 mg/kg

DNEL

worker:
Long-term exposure- systemic effects, Inhalation: 97.9 mg/m3

worker:
Long-term exposure- systemic effects, dermal: 138.9 mg/kg

8.2. Exposure controls

Appropriate engineering controls
Ensure adequate ventilation.

Personal protective equipment

Respiratory protection:
Suitable respiratory protection for lower concentrations or short-term effect: Gas filter for gases/vapours of organic compounds (boiling point >65 °C, e. g. EN 14387 Type A)

Hand protection:
Suitable materials also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN ISO 374-1):
fluoroelastomer (FKM) - 0.7 mm coating thickness
nitrile rubber (NBR) - 0.4 mm coating thickness
Manufacturer's directions for use should be observed because of great diversity of types.
Supplementary note: The specifications are based on tests, literature data and information of glove manufacturers or are derived from similar substances by analogy. Due to many conditions (e.g. temperature) it must be considered, that the practical usage of a chemical-protective glove in practice may be much shorter than the permeation time determined through testing.

Eye protection:
Safety glasses with side-shields (frame goggles) (e.g. EN 166)

Body protection:
Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).

General safety and hygiene measures
Avoid contact with the skin, eyes and clothing. Avoid inhalation of vapour. Wearing of closed work clothing is required additionally to the stated personal protection equipment. Handle in accordance with good industrial hygiene and safety practice.

Environmental exposure controls
All appropriate measures must be taken to prevent the release of this product to the environment and to limit the dispersion of any release when it occurs. Suitable risk management measures should be in place.

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Form:	liquid	
Colour:	colourless	
Odour:	acrylic-like	
Odour threshold:	not determined	
pH value:	not applicable, of low solubility	
Melting temperature:	-40 °C Literature data.	
boiling temperature:	80.9 °C (0.705 hPa)	(measured)
Flash point:	125.5 °C	(ISO 2719, closed cup)
Evaporation rate:	Value can be approximated from Henry's Law Constant or vapor pressure.	
Flammability:	not readily ignited	(derived from flash point)
Lower explosion limit:	For liquids not relevant for classification and labelling., The lower explosion point may be 5 - 15 °C below the flash point.	
Upper explosion limit:	For liquids not relevant for classification and labelling.	
Ignition temperature:	440 °C	(DIN 51794)
Vapour pressure:	0.0088 hPa (20 °C) Extrapolated value	(OECD Guideline 104)
Density:	1.0488 g/cm3 (50 °C)	(OECD Guideline 109)
	1.0748 g/cm3 (20 °C)	(ISO 2811-3)
Relative density:	1.0748 (20 °C)	
Relative vapour density (air):	7.04 (20 °C) Heavier than air.	(calculated)
Solubility in water:	0.04 g/l (20 °C)	(internal method)
Solubility (qualitative) solvent(s):	organic solvents miscible	
Partitioning coefficient n-octanol/water (log Kow):	4.4 (23 °C)	(OECD Guideline 117)
Self ignition:	Temperature: 20 °C not self-igniting	Test type: Spontaneous self-ignition at room-temperature.

Thermal decomposition: 155 °C, > 300 kJ/kg, (DSC (OECD 113))

Viscosity, dynamic:	14.4 mPa.s (20 °C) The value was determined by calculation from the detected kinematic viscosity.	(OECD Guideline 114)
Viscosity, kinematic:	No applicable information available.	
Explosion hazard:	not explosive	
Fire promoting properties:	not fire-propagating	

9.2. Other information

SADT:	Not a substance/mixture liable to self-decomposition according to GHS.
pKA:	The substance does not dissociate.
Volatility/water - air:	The substance will slowly evaporate into the atmosphere from the water surface.
Surface tension:	Based on chemical structure, surface activity is not to be expected.
Grain size distribution:	The substance / product is marketed or used in a non solid or granular form.
Molar mass:	204.27 g/mol

SECTION 10: Stability and Reactivity

10.1. Reactivity
No hazardous reactions if stored and handled as prescribed/indicated.

Corrosion to metals:	No corrosive effect on metal.	
Formation of flammable gases:	Remarks:	Forms no flammable gases in the presence of water.

10.2. Chemical stability
The product is stable if stored and handled as prescribed/indicated.

10.3. Possibility of hazardous reactions
Explosion and fire hazard exists under confined conditions. Ignitable air mixtures can form when the product is heated above the flash point and/or when sprayed or atomized. Formation of explosive gas/air mixtures.

Polymerization coupled with heat formation.

Risk of spontaneous polymerization by oxygen depletion of the liquid phase. Risk of spontaneous polymerization when heated or in the presence of UV radiation. Risk of

spontaneous and violent self-polymerization if inhibitor is lost or product is exposed to excessive heat. Polymerization produces gases which may burst closed or confined containers. Reactions may cause ignition.

Risk of spontaneous polymerization in the presence of starters for radical chain reactions (e.g. peroxides). Reacts with nitric acid. Risk of spontaneous polymerization in the presence of oxidizing agents.

Hazardous reactions in presence of mentioned substances to avoid.

The product is stabilized against spontaneous polymerization prior to despatch. The product is stable if stored and handled as prescribed/indicated.

10.4. Conditions to avoid

Avoid heat. Avoid oxygen content above the product of less than 5 %. Avoid UV-light and other radiation with high energy. Avoid direct sunlight. Avoid prolonged storage. Avoid inhibitor loss. Avoid excessive temperatures. Avoid all sources of ignition: heat, sparks, open flame. Avoid freezing. Avoid moisture.

10.5. Incompatible materials

Substances to avoid:
radical formers, free radical initiators, peroxides, mercaptans, nitro-compounds, perborates, azides, ether, ketones, aldehydes, amines, nitrates, nitrites, oxidizing agents, reducing agents, strong bases, alkaline reactive substances, acid anhydrides, acid chlorides, concentrated mineral acids, metal salts
Inert gas

10.6. Hazardous decomposition products

Hazardous decomposition products:
No hazardous decomposition products if stored and handled as prescribed/indicated.

SECTION 11: Toxicological Information

11.1. Information on toxicological effects

Acute toxicity

Assessment of acute toxicity:
Virtually nontoxic after a single ingestion. The inhalation of a highly enriched/saturated vapor-air-mixture represents an unlikely acute hazard. Of low toxicity after short-term skin contact.

Experimental/calculated data:
LD50 rat (oral): approx. 10,000 mg/kg (OECD Guideline 401)

LC0 rat (by inhalation): >= 1 mg/l 7 h (IRT)
No mortality within the stated exposition time as shown in animal studies.

LD50 rabbit (dermal): 4,881 mg/kg (other)

Irritation

Assessment of irritating effects:
Skin contact causes irritation. Not irritating to the eyes. The European Union (EU) has classified the substance as "irritating to skin and eyes".

Experimental/calculated data:
Skin corrosion/irritation
rabbit: Irritant. (BASF-Test)

Serious eye damage/irritation
rabbit: non-irritant (similar to OECD guideline 405)

Respiratory/Skin sensitization

Assessment of sensitization:
Sensitization after skin contact possible.

Experimental/calculated data:
In vitro assay: skin sensitizing (In vitro skin sensitization test battery)

Germ cell mutagenicity

Assessment of mutagenicity:
No mutagenic effect was found in various tests with bacteria and mammalian cell culture.

Carcinogenicity

Assessment of carcinogenicity:
The chemical structure does not suggest a specific alert for such an effect.

Reproductive toxicity

Assessment of reproduction toxicity:
The results of animal studies gave no indication of a fertility impairing effect. The results were determined in a Screening test (OECD 421/422).

Developmental toxicity

Assessment of teratogenicity:
No indications of a developmental toxic / teratogenic effect were seen in animal studies. The results were determined in a Screening test (OECD 421/422).

Specific target organ toxicity (single exposure)

Assessment of STOT single:
Causes temporary irritation of the respiratory tract.

Repeated dose toxicity and Specific target organ toxicity (repeated exposure)

Assessment of repeated dose toxicity:
No substance-specific organtoxicity was observed after repeated administration to animals.

Aspiration hazard

not applicable

SECTION 12: Ecological Information

12.1. Toxicity

Assessment of aquatic toxicity:
Acutely toxic for aquatic organisms. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.
Toxic to aquatic organisms based on long-term (chronic) toxicity study data.

Toxicity to fish:
LC50 (96 h) 2.06 mg/l, Brachydanio rerio (OECD 203; ISO 7346; 92/69/EWG, C.1, semistatic)

Aquatic invertebrates:
EC50 (48 h) 6.93 mg/l, Daphnia magna (OECD Guideline 202, part 1, static)

Aquatic plants:
EC50 (72 h) 2.99 mg/l (growth rate), Pseudokirchneriella subcapitata (OECD Guideline 201, static)

Microorganisms/Effect on activated sludge:
EC50 (180 min) > 1,000 mg/l, activated sludge, domestic (OECD Guideline 209, aerobic)

Chronic toxicity to fish:
Study does not need to be conducted.

Chronic toxicity to aquatic invertebrates:
EC10 (21 d) 0.551 mg/l, Daphnia magna (OECD Guideline 211, semistatic)

Assessment of terrestrial toxicity:
No data available.

12.2. Persistence and degradability

Assessment biodegradation and elimination (H2O):
Moderately/partially biodegradable.

Elimination information:
50 - 60 % CO2 formation relative to the theoretical value (60 d) (OECD 301B; ISO 9439; 92/69/EWG, C.4-C) (aerobic, activated sludge) Moderately/partially biodegradable.

Assessment of stability in water:
In contact with water the substance will hydrolyse slowly.
Information on Stability in Water (Hydrolysis):
$t_{1/2}$ > 365 d (25 °C, pH value 7), (calculated, pH 7)

12.3. Bioaccumulative potential

Assessment bioaccumulation potential:
Significant accumulation in organisms is not to be expected.

Bioaccumulation potential:

Bioconcentration factor (BCF): 60.18 (calculated)
Significant accumulation in organisms is not to be expected.

12.4. Mobility in soil

Assessment transport between environmental compartments:
Volatility: The substance will slowly evaporate into the atmosphere from the water surface.
Adsorption in soil: Adsorption to solid soil phase is possible.

12.5. Results of PBT and vPvB assessment

According to Annex XIII of Regulation (EC) No.1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH): Not fulfilling PBT (persistent/bioaccumulative/toxic) criteria.

According to Annex XIII of Regulation (EC) No.1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH): Not fulfilling vPvB (very persistent/very bioaccummulative) criteria.

12.6. Other adverse effects

The substance is not listed in Regulation (EC) 1005/2009 on substances that deplete the ozone layer.

12.7. Additional information

Adsorbable organically-bound halogen (AOX):
This product contains no organically-bound halogen.

Other ecotoxicological advice:
Do not release untreated into natural waters.

SECTION 13: Disposal Considerations

13.1. Waste treatment methods

Must be sent to a suitable incineration plant, observing local regulations.

The UK Environmental Protection (Duty of Care) Regulations (EP) and amendments should be noted (United Kingdom).
This product and any uncleaned containers must be disposed of as hazardous waste in accordance with the 2005 Hazardous Waste Regulations and amendments (United Kingdom)

Contaminated packaging:
Uncleaned empties should be disposed of in the same manner as the contents.

SECTION 14: Transport Information

Land transport

ADR

UN number or ID number:	UN3082
UN proper shipping name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains HEXAHYDRO-4,7-METHANO-1H-INDENYL ACRYLATE, STABILIZED)
Transport hazard class(es):	9, EHSM
Packing group:	III
Environmental hazards:	yes
Special precautions for user:	None known

RID

UN number or ID number:	UN3082
UN proper shipping name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains HEXAHYDRO-4,7-METHANO-1H-INDENYL ACRYLATE, STABILIZED)
Transport hazard class(es):	9, EHSM
Packing group:	III
Environmental hazards:	yes
Special precautions for user:	None known

Inland waterway transport

ADN

UN number or ID number:	UN3082
UN proper shipping name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

	N.O.S. (contains HEXAHYDRO-4,7-METHANO-1H-INDENYL ACRYLATE, STABILIZED)
Transport hazard class(es):	9, EHSM
Packing group:	III
Environmental hazards:	yes
Special precautions for user:	None known

Transport in inland waterway vessel
Not evaluated

Sea transport

IMDG

UN number or ID number:	UN 3082
UN proper shipping name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains HEXAHYDRO-4,7-METHANO-1H-INDENYL ACRYLATE, STABILIZED)
Transport hazard class(es):	9, EHSM
Packing group:	III
Environmental hazards:	yes Marine pollutant: YES
Special precautions for user:	

Air transport

IATA/ICAO

UN number or ID number:	UN 3082
UN proper shipping name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains HEXAHYDRO-4,7-METHANO-1H-INDENYL ACRYLATE, STABILIZED)
Transport hazard class(es):	9, EHSM
Packing group:	III
Environmental hazards:	yes
Special precautions for user:	None known

14.1. UN number or ID number
See corresponding entries for “UN number or ID number” for the respective regulations in the tables above.

14.2. UN proper shipping name

See corresponding entries for “UN proper shipping name” for the respective regulations in the tables above.

14.3. Transport hazard class(es)
See corresponding entries for “Transport hazard class(es)” for the respective regulations in the tables above.

14.4. Packing group
See corresponding entries for “Packing group” for the respective regulations in the tables above.

14.5. Environmental hazards
See corresponding entries for “Environmental hazards” for the respective regulations in the tables above.

14.6. Special precautions for user
See corresponding entries for “Special precautions for user” for the respective regulations in the tables above.

14.7. Maritime transport in bulk according to IMO instruments
Maritime transport in bulk is not intended.

Further information
This product is subject to the most recent edition of "The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations" and their amendments (United Kingdom).

SECTION 15: Regulatory Information

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

Prohibitions, Restrictions and Authorizations

UK REACH SI, Annex XVII, Marketing and Use Restrictions
Number on List: 3

2015 No. 483 The Control of Major Accident Hazards Regulation.:
List entry in regulation: E2
Classification applies for standard conditions of temperature and pressure.

Directive 2012/18/EU - Control of Major Accident Hazards involving dangerous substances (EU):
List entry in regulation: E2
Classification applies for standard conditions of temperature and pressure.

The data should be considered when making any assessment under the Control of Substances Hazardous to Health Regulations (COSHH), and related guidance, for example, 'COSHH Essentials' (United Kingdom).

This product may be subject to the Control of Major Accident Hazards Regulations (COMAH), and amendments if specific threshold tonnages are exceeded (United Kingdom).

If other regulatory information applies that is not already provided elsewhere in this safety data sheet, then it is described in this subsection.

15.2. Chemical Safety Assessment

Chemical Safety Assessment performed

SECTION 16: Other Information

Assessment of the hazard classes according to UN GHS criteria (most recent version)

Skin Irrit. 2
STOT SE 3 (irritating to respiratory system)
Aquatic Acute 2
Aquatic Chronic 2
Skin Sens. 1
Acute Tox. 5 (dermal)

This product is of industrial quality and unless otherwise specified or agreed intended exclusively for industrial use. Any other intended applications should be discussed with the manufacturer. Safe Handling and Storage aspects are covered in a brochure which is available on request.

Full text of the classifications, including the hazard classes and the hazard statements, if mentioned in section 2 or 3:

Skin Corr./Irrit.	Skin corrosion/irritation
Eye Dam./Irrit.	Serious eye damage/eye irritation
Skin Sens.	Skin sensitization
STOT SE	Specific target organ toxicity — single exposure
Aquatic Chronic	Hazardous to the aquatic environment - chronic
Skin Irrit.	Skin irritation
Eye Irrit.	Eye irritation
Acute Tox.	Acute toxicity
Aquatic Acute	Hazardous to the aquatic environment - acute
Flam. Liq.	Flammable liquids
Eye Dam.	Serious eye damage
Skin Corr.	Skin corrosion
Asp. Tox.	Aspiration hazard
Repr.	Reproductive toxicity
STOT RE	Specific target organ toxicity — repeated exposure
H319	Causes serious eye irritation.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H335	May cause respiratory irritation.
H411	Toxic to aquatic life with long lasting effects.

H226	Flammable liquid and vapour.
H314	Causes severe skin burns and eye damage.
H302 + H312 + H332	Harmful if swallowed, in contact with skin or if inhaled.
H400	Very toxic to aquatic life.
H225	Highly flammable liquid and vapour.
H330	Fatal if inhaled.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H361d	Suspected of damaging the unborn child.
H373	May cause damage to organs (Central nervous system) through prolonged or repeated exposure.

Abbreviations
ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road. ADN = The European Agreement concerning the International Carriage of Dangerous Goods by Inland waterways. ATE = Acute Toxicity Estimates. CAO = Cargo Aircraft Only. CAS = Chemical Abstract Service. CLP = Classification, Labelling and Packaging of substances and mixtures. DIN = German national organization for standardization. DNEL = Derived No Effect Level. EC50 = Effective concentration median for 50% of the population. EC = European Community. EN = European Standards. IARC = International Agency for Research on Cancer. IATA = International Air Transport Association. IBC-Code = Intermediate Bulk Container code. IMDG = International Maritime Dangerous Goods Code. ISO = International Organization for Standardization. STEL = Short-Term Exposure Limit. LC50 = Lethal concentration median for 50% of the population. LD50 = Lethal dose median for 50% of the population. TLV = Threshold Limit Value. MARPOL = The International Convention for the Prevention of Pollution from Ships. NEN = Dutch Norm. NOEC = No Observed Effect Concentration. OEL = Occupational Exposure Limit. OECD = Organization for Economic Cooperation and Development. PBT = Persistent, Bioaccumulative and Toxic. PNEC = Predicted No Effect Level. PPM = Parts per million. RID = The European Agreement concerning the International Carriage of Dangerous Goods by Rail. TWA = Time Weight Average. UN-number = UN number at transport. vPvB = very Persistent and very Bioaccumulative.

The data contained in this safety data sheet are based on our current knowledge and experience and describe the product only with regard to safety requirements. This safety data sheet is neither a Certificate of Analysis (CoA) nor technical data sheet and shall not be mistaken for a specification agreement. Identified uses in this safety data sheet do neither represent an agreement on the corresponding contractual quality of the substance/mixture nor a contractually designated use. It is the responsibility of the recipient of the product to ensure any proprietary rights and existing laws and legislation are observed.

Annex: Exposure Scenarios

Index

1. Use in/as Formulation, Use in Coatings, Industrial use of pigment preparations resulting in inclusion into a matrix (including ink and paint), (use in industrial settings)
ERC2; PROC1, PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC9

2. Polymer production, (use in industrial settings)
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3. Use in Coatings, Use in Printing inks, (use in professional settings)
ERC8c; PROC2, PROC3, PROC5, PROC8a, PROC10

4. Use as laboratory reagent/agent, (use in industrial settings)
ERC1; PROC15

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1. Short title of exposure scenario

Use in/as Formulation, Use in Coatings, Industrial use of pigment preparations resulting in inclusion into a matrix (including ink and paint), (use in industrial settings)
ERC2; PROC1, PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC9

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC2: Formulation into mixture
Operational conditions	
Annual amount used in the EU	80,000 kg
Minimum emission days per year	300
Emission factor air	0.001 %
Emission factor water	0.002 %
Emission factor soil	0.01 %
Receive Surf. Water (Flow Rate).	18,000 m3/d
Dilution factor river	10
Dilution factor coast	100
Risk Management Measures	
Soil treatment measures considered suitable are, e.g.	No application of sludge to soil
Type of STP	Municipal STP

Assumed sewage treatment plant flow (m3/d)	2,000 m3/d
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Environment
Risk Characterization Ratio (RCR)	0.005462
	Risk from environmental exposure is driven by freshwater.
Maximum amount of safe use	4,882.4 kg/d
Risk from environmental exposure is driven by freshwater.	

Contributing exposure scenario	
Use descriptors covered	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions. Use domain: industrial
Operational conditions	
Concentration of the substance	Hexahydro-4,7-methano-1H-indenyl acrylate Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.88 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Avoid skin contact.	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.0034 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.000025
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.0851 mg/m³
Risk Characterization Ratio (RCR)	0.000869
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

	Use domain: industrial
Operational conditions	
Concentration of the substance	Hexahydro-4,7-methano-1H-indenyl acrylate Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.88 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Avoid skin contact.	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.1371 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.000987
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	8.5113 mg/m³
Risk Characterization Ratio (RCR)	0.086938
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition Use domain: industrial
Operational conditions	
Concentration of the substance	Hexahydro-4,7-methano-1H-indenyl acrylate Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.88 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week

Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Avoid skin contact.	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.0686 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.000494
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	25.5338 mg/m³
Risk Characterization Ratio (RCR)	0.260815
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC5: Mixing or blending in batch processes Use domain: industrial
Operational conditions	
Concentration of the substance	Hexahydro-4,7-methano-1H-indenyl acrylate Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.88 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Avoid skin contact.	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	1.3714 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.009873
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	42.5563 mg/m³
Risk Characterization Ratio (RCR)	0.434691

Guidance to Downstream Users
For scaling see: http://www.ecetoc.org/tra

Contributing exposure scenario	
Use descriptors covered	PROC8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Use domain: industrial
Operational conditions	
Concentration of the substance	Hexahydro-4,7-methano-1H-indenyl acrylate Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.88 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Avoid skin contact.	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	1.3714 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.009873
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	85.1125 mg/m³
Risk Characterization Ratio (RCR)	0.869382
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities Use domain: industrial
Operational conditions	
Concentration of the substance	Hexahydro-4,7-methano-1H-indenyl acrylate Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.88 Pa

Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Avoid skin contact.	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	1.3714 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.009873
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	42.5563 mg/m³
Risk Characterization Ratio (RCR)	0.434691
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Use domain: industrial
Operational conditions	
Concentration of the substance	Hexahydro-4,7-methano-1H-indenyl acrylate Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.88 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Avoid skin contact.	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.6857 mg/kg bw/day

Risk Characterization Ratio (RCR)	0.004937
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	42.5563 mg/m³
Risk Characterization Ratio (RCR)	0.434691
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

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2. Short title of exposure scenario

Polymer production, (use in industrial settings)
SU8, SU9; ERC6c; PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10

Control of exposure and risk management measures

Contributing exposure scenario		
Use descriptors covered	ERC6c: Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)	
Operational conditions		
Annual amount used in the EU	800,000 kg	
Minimum emission days per year	60	
Emission factor air	0.01 %	
Emission factor water	0.001 %	
Emission factor soil	0 %	
Receive Surf. Water (Flow Rate).	18,000 m3/d	
Dilution factor river	10	
Dilution factor coast	100	
Risk Management Measures		
Soil treatment measures considered suitable are, e.g.		No application of sludge to soil
Type of STP		Municipal STP
Assumed sewage treatment plant flow (m3/d)		2,000 m3/d
Exposure estimate and reference to its source		
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Environment	
Risk Characterization Ratio (RCR)	0.064324	
	Risk from environmental exposure is driven by freshwater.	
Maximum amount of safe use	20,728.4 kg/d	
Risk from environmental exposure is driven by freshwater.		

Contributing exposure scenario	
Use descriptors covered	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions. Use domain: industrial
Operational conditions	
Concentration of the substance	Hexahydro-4,7-methano-1H-indenyl acrylate Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.88 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Avoid skin contact.	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, worker, modified version, ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - systemic
Exposure estimate	0.0034 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.000025
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.0851 mg/m³
Risk Characterization Ratio (RCR)	0.000869
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions Use domain: industrial
Operational conditions	
Concentration of the substance	Hexahydro-4,7-methano-1H-indenyl acrylate Content: >= 0 % - <= 100 %

Physical state	liquid
Vapour pressure of the substance during use	0.88 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Avoid skin contact.	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.1371 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.000987
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	8.5113 mg/m³
Risk Characterization Ratio (RCR)	0.086938
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition Use domain: industrial
Operational conditions	
Concentration of the substance	Hexahydro-4,7-methano-1H-indenyl acrylate Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.88 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %

Avoid skin contact.	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.0686 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.000494
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	25.5338 mg/m³
Risk Characterization Ratio (RCR)	0.260815
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC4: Chemical production where opportunity for exposure arises Use domain: industrial
Operational conditions	
Concentration of the substance	Hexahydro-4,7-methano-1H-indenyl acrylate Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.88 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Avoid skin contact.	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.6857 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.004937
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	42.5563 mg/m³
Risk Characterization Ratio (RCR)	0.434691
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC5: Mixing or blending in batch processes Use domain: industrial
Operational conditions	
Concentration of the substance	Hexahydro-4,7-methano-1H-indenyl acrylate Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.88 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Avoid skin contact.	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	1.3714 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.009873
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	42.5563 mg/m³
Risk Characterization Ratio (RCR)	0.434691
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC7: Industrial spraying Use domain: industrial
Operational conditions	
Concentration of the substance	Hexahydro-4,7-methano-1H-indenyl acrylate Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.88 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week

Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 95 %
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Avoid skin contact.	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	4.2857 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.030855
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	42.5563 mg/m³
Risk Characterization Ratio (RCR)	0.434691
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Use domain: industrial
Operational conditions	
Concentration of the substance	Hexahydro-4,7-methano-1H-indenyl acrylate Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.88 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Avoid skin contact.	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	1.3714 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.009873
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker

	Worker - inhalation, long-term - systemic
Exposure estimate	85.1125 mg/m³
Risk Characterization Ratio (RCR)	0.869382
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities Use domain: industrial
Operational conditions	
Concentration of the substance	Hexahydro-4,7-methano-1H-indenyl acrylate Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.88 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Avoid skin contact.	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	1.3714 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.009873
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	42.5563 mg/m³
Risk Characterization Ratio (RCR)	0.434691
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Use domain: industrial
Operational conditions	
Concentration of the substance	Hexahydro-4,7-methano-1H-indenyl acrylate

	Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.88 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Avoid skin contact.	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, worker, modified version, ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - systemic
Exposure estimate	0.6857 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.004937
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	42.5563 mg/m³
Risk Characterization Ratio (RCR)	0.434691
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC10: Roller application or brushing Use domain: industrial
Operational conditions	
Concentration of the substance	Hexahydro-4,7-methano-1H-indenyl acrylate Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.88 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with 'basic' employee	Effectiveness: 90 %

training.	
Avoid skin contact.	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	2.7429 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.019747
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	85.1125 mg/m³
Risk Characterization Ratio (RCR)	0.869382
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

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3. Short title of exposure scenario

Use in Coatings, Use in Printing inks, (use in professional settings)
ERC8c; PROC2, PROC3, PROC5, PROC8a, PROC10

Control of exposure and risk management measures

Contributing exposure scenario		
Use descriptors covered	ERC8c: Widespread use leading to inclusion into/onto article (indoor)	
Operational conditions		
Annual amount used in the EU	80,000 kg	
Minimum emission days per year	365	
Emission factor air	15 %	
Emission factor water	1 %	
Emission factor soil	0 %	
Receive Surf. Water (Flow Rate).	18,000 m3/d	
Dilution factor river	10	
Dilution factor coast	100	
Risk Management Measures		
Soil treatment measures considered suitable are, e.g.		No application of sludge to soil
Type of STP		Municipal STP
Assumed sewage treatment plant flow (m3/d)		2,000 m3/d
Exposure estimate and reference to its source		
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Environment	

Risk Characterization Ratio (RCR)	0.00502
	Risk from environmental exposure is driven by freshwater.
Maximum amount of safe use	8.7 kg/d
Risk from environmental exposure is driven by freshwater.	

Contributing exposure scenario	
Use descriptors covered	PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions Use domain: professional
Operational conditions	
Concentration of the substance	Hexahydro-4,7-methano-1H-indenyl acrylate Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.88 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Avoid skin contact.	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.1371 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.000987
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	42.5563 mg/m³
Risk Characterization Ratio (RCR)	0.434691
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition Use domain: professional

Operational conditions	
Concentration of the substance	Hexahydro-4,7-methano-1H-indenyl acrylate Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.88 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Avoid skin contact.	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.0686 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.000494
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	25.5338 mg/m³
Risk Characterization Ratio (RCR)	0.260815
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC5: Mixing or blending in batch processes Use domain: professional
Operational conditions	
Concentration of the substance	Hexahydro-4,7-methano-1H-indenyl acrylate Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.88 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %

Avoid skin contact.	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	1.3714 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.009873
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	85.1125 mg/m³
Risk Characterization Ratio (RCR)	0.869382
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Use domain: professional
Operational conditions	
Concentration of the substance	Hexahydro-4,7-methano-1H-indenyl acrylate Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.88 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 80 %
Wear chemically resistant gloves in combination with ‘basic’ employee training.	Effectiveness: 90 %
Avoid skin contact.	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	1.3714 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.009873
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	42.5563 mg/m³
Risk Characterization Ratio (RCR)	0.434691
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC10: Roller application or brushing Use domain: professional
Operational conditions	
Concentration of the substance	Hexahydro-4,7-methano-1H-indenyl acrylate Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.88 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 80 %
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Avoid skin contact.	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	2.7429 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.019747
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	42.5563 mg/m³
Risk Characterization Ratio (RCR)	0.434691
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

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4. Short title of exposure scenario

Use as laboratory reagent/agent, (use in industrial settings)
ERC1; PROC15

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC1: Manufacture of the substance
Operational conditions	
Annual amount used in the EU	10,000 kg
Minimum emission days per year	20

Emission factor air	5 %
Emission factor water	6 %
Emission factor soil	0.01 %
Receive Surf. Water (Flow Rate).	43,541 m3/min
Dilution factor river	187.67
Dilution factor coast	100

Risk Management Measures	
Soil treatment measures considered suitable are, e.g.	No application of sludge to soil
Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	335,890 m3/d

Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Environment
Risk Characterization Ratio (RCR)	0.046808
	Risk from environmental exposure is driven by freshwater.
Maximum amount of safe use	10,682 kg/d

Risk from environmental exposure is driven by freshwater.

Contributing exposure scenario	
Use descriptors covered	PROC15: Use a laboratory reagent. Use domain: industrial
Operational conditions	
Concentration of the substance	Hexahydro-4,7-methano-1H-indenyl acrylate Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.88 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with ‘basic’ employee training.	Effectiveness: 90 %
Avoid skin contact.	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker

	Worker - dermal, long-term - systemic
Exposure estimate	0.0343 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.000247
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	42.5563 mg/m³
Risk Characterization Ratio (RCR)	0.434691
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

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