

Safety data sheet

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BASF Safety data sheet according to Regulation (EC) No. 1907/2006

Date / Revised: 27.01.2011

Version: 6.0

Product: **ACRYLIC ACID GLACIAL**

(ID no. 30041211/SDS_GEN_EU/EN)

Date of print 17.02.2011

1. Identification of the substance/mixture and of the company/undertaking

Product identifier

ACRYLIC ACID GLACIAL

REACH registration number: 01-2119452449-31-0001

REACH registration number: 01-2119452449-31-0002

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

Relevant identified uses: Monomer.

Recommended use: for industrial use only

Not recommended use: cosmetics, Pharmaceutical

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

Details of the supplier of the safety data sheet

Company:

BASF SE

67056 Ludwigshafen

GERMANY

Operating Division Petrochemicals

Telephone: +49 621 60-45481

E-mail address: sds-petrochemicals@basf.com

Emergency telephone number

International emergency number:

Telephone: +49 180 2273-112

2. Hazards Identification

Label elements

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

Pictogram:



Signal Word:

Danger

Hazard Statement:

H226	Flammable liquid and vapour.
H314	Causes severe skin burns and eye damage.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H302	Harmful if swallowed.
H311	Toxic in contact with skin.
H400	Very toxic to aquatic life.

Precautionary Statements (Prevention):

P280	Wear protective gloves/protective clothing/eye protection/face protection.
P271	Use only outdoors or in a well-ventilated area.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P210	Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
P273	Avoid release to the environment.
P241	Use explosion-proof electrical/ventilating/lighting/equipment.
P233	Keep container tightly closed.
P270	Do not eat, drink or smoke when using this product.

Precautionary Statements (Response):

P337 + P313	If eye irritation persists: Get medical advice/attention.
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 to fresh air and keep at rest in a position comfortable for breathing.
P303 + P361 + P353	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.
P370 + P378.14	In case of fire: Use water spray, dry powder, foam or carbon dioxide for extinction.
P301 + P330 + P331	IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P391	Collect spillage.

Precautionary Statements (Storage):

P403 + P235	Store in a well-ventilated place. Keep cool.
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Precautionary Statements (Disposal):

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

According to Directive 67/548/EEC or 1999/45/EC

Regulation 1272/2008/EC on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation 1907/2006/EC

Hazard symbol(s)

C Corrosive.
N Dangerous for the environment.

R-phrases(s)

R10 Flammable.
R20/21/22 Harmful by inhalation, in contact with skin and if swallowed.
R35 Causes severe burns.
R50 Very toxic to aquatic organisms.

S-phrases(s)

S(1/2) Keep locked-up and out of reach of children.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S61 Avoid release to the environment. Refer to special instructions/safety data sheets.

Hazard determining component(s) for labelling: ACRYLIC ACID

Classification of the substance or mixture

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

Flammable liquids: Cat. 3
Acute toxicity: Cat. 4 (Inhalation - vapour)
Acute toxicity: Cat. 4 (oral)
Acute toxicity: Cat. 3 (dermal)
Skin corrosion/irritation: Cat. 1A
Specific target organ toxicity following single exposure: Cat. 3 (irritating to respiratory system)
Acute hazards to the aquatic environment: Cat. 1

According to Directive 67/548/EEC or 1999/45/EC

Possible Hazards:

Harmful by inhalation, in contact with skin and if swallowed.
Causes severe burns.
Very toxic to aquatic organisms.

Other hazards

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Assessment PBT / vPvB:

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.. Self classification

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 bioaccumulative) criteria.. Self classification

3. Composition/Information on Ingredients

Substances

Chemical nature

acrylic acid

CAS Number: 79-10-7

EC-Number: 201-177-9

INDEX-Number: 607-061-00-8

4. First-Aid Measures

Description of first aid measures

Immediately remove contaminated clothing. If danger of loss of consciousness, place patient in recovery position and transport accordingly. Apply artificial respiration if necessary. First aid personnel should pay attention to their own safety.

If inhaled:

Immediately inhale corticosteroid dose aerosol. Keep patient calm, remove to fresh air, seek medical attention.

On skin contact:

Flush with copious amounts of water for at least 15 minutes. Sterile protective dressing. Immediate medical attention required.

On contact with eyes:

Immediately 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 plenty of water, do not induce vomiting, seek medical attention.

Most important symptoms and effects, both acute and delayed

Symptoms: skin corrosion

Hazards: Risk of pulmonary edema. Symptoms can appear later.

Indication of any immediate medical attention and special treatment needed

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote, administer corticosteroid dose aerosol to prevent pulmonary edema.

5. Fire-Fighting Measures

Extinguishing media

Suitable extinguishing media:

carbon dioxide, dry powder, water spray, foam

Special hazards arising from the substance or mixture

Risk of violent self-polymerization if overheated in a container. Explosive-like polymerization.

Advice for fire-fighters

Further information:

Remove product from areas of fire, or otherwise cool containers with water in order to avoid pressure build up due to heat. The product or its combustible parts are soluble in water. Contaminated extinguishing water must be disposed of in accordance with official regulations.

In case of a fire in the vicinity a restabilization system should be used if the temperature in the storage container 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 storage container reaches 60°C.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

Use personal protective clothing.

Environmental precautions

Do not discharge into waterways or sewer systems without proper authorization. Contain contaminated water/firefighting water.

Methods and material for containment and cleaning up

For small amounts: Neutralize with lime.

For large amounts: Pump off product. Pick up with suitable absorbent material (e.g. acid binder).

Dispose of absorbed material in accordance with regulations.

For residues: Pick up with suitable absorbent material (e.g. acid binder). Dispose of absorbed material in accordance with regulations.

Clean contaminated floors and objects thoroughly with water and detergents, observing environmental regulations.

Reference to other sections

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

7. Handling and Storage

Precautions for safe handling

Handle in accordance with good industrial hygiene and safety practice. The substance/ product may be handled only by appropriately trained personnel.

Ensure thorough ventilation of stores and work areas. 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.

Protect contents from the effects of light. Protect from direct sunlight. Protect against heat. Do not open warm or swollen product containers. Remove persons to safety and alert fire brigade.

Ensure adequate inhibitor and dissolved oxygen level.

Because of the possible separation from the stabilizer the product should never be partially melted and taken. Ensure that there is no crystallized product in the container before use. Obtain Information from supplier/ manufacturer before dissolving totally or partially crystallized product. The ambient temperature of the container may not exceed the stated temperature limit when melting the product or keeping it at moderate temperature.

Protection against fire and explosion:

Ground all transfer equipment properly to prevent electrostatic discharge. Containers should be grounded against electrostatic charge. It is recommended that all conductive parts of the machinery are grounded. Vapours may form ignitable mixture with air. Avoid all sources of ignition: heat, sparks, open flame.

Heated containers should be cooled to prevent polymerization. If exposed to fire, keep containers cool by spraying with water.

Temperature class: T2 (Autoignition temperature >300 °C).

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. Avoid UV-light and other radiation with high energy.

Protect against contamination.

All storage containers should at least be equipped with two high temperature alert devices.

Do not store product below the indicated minimum temperature, because crystallization should be absolutely avoided.

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: 15 - 25 °C

Storage duration: 12 Months

The stated storage temperature should be noted.

Avoid prolonged storage.

This product should be processed as soon as possible.

During storage, an unavoidable dimerization takes place, which reaction rate can be reduced by a storage temperature as low as possible.

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.

Do not store with less than 10 % headspace above liquid.

Ensure adequate inhibitor and dissolved oxygen level.

Storage temperature: 45 °C

A restabilization system should be used if the temperature in the storage container reaches the indicated value.

Storage temperature: 60 °C

All personnel in a greater area should be evacuated if the temperature in the storage container reaches the indicated value.

8. Exposure Controls/Personal Protection

Control parameters

Components with workplace control parameters

79-10-7: acrylic acid

PNEC

freshwater: 0.003 mg/l

marine water: 0.0003 mg/l

intermittent release: 0.0013 mg/l

STP: 0.9 mg/l

sediment (freshwater): 0.0236 mg/kg

sediment (marine water): 0.00236 mg/kg

soil: 1 mg/kg

oral (secondary poisoning): 0.0023 mg/kg

DNEL

worker

Long- and short-term exposure - local effects, Inhalation: 30 mg/m³

worker

Short-term exposure - local effects, dermal: 1 mg/cm²

Exposure controls

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 374):

butyl rubber (butyl) - 0.7 mm coating thickness

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.

Manufacturer's directions for use should be observed because of great diversity of types.

Eye protection:

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Tightly fitting safety goggles (cage goggles) (e.g. EN 166) and face shield., Wear face shield if splashing hazard exists.

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), protection boots (f.e. according to EN 20346), antistatic

General safety and hygiene measures

Avoid contact with skin. Avoid inhalation of vapour.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Form:	liquid	
Colour:	colourless	
Odour:	pungent odour	
pH value:	2 (approx. 70 g/l, 20 °C)	
	Literature data.	
Melting point:	13 °C	
	Literature data.	
Boiling point:	141 °C (1,013 hPa)	
	Literature data.	
Flash point:	48.5 °C	(DIN 51755, closed cup)
Flammability:	Flammable.	
Lower explosion limit:	2.0 %(V) (47.5 °C)	
Upper explosion limit:	15.9 %(V) (88.5 °C)	
Ignition temperature:	438 °C	
Vapour pressure:	3.8 mbar (20 °C) 40 mbar (60 °C)	
Density:	1.05 g/cm ³ (20 °C) Literature data. 1.0161 g/cm ³ (50 °C)	
Relative density:	1.05 (20 °C) Literature data.	
Solubility in water:	miscible, Literature data. (25 °C)	
Solubility (qualitative) solvent(s):	organic solvents miscible	
Partitioning coefficient n-octanol/water (log Kow):	0.46 (25 °C)	(OECD Guideline 107)

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Self ignition: Based on its structural properties the product is not classified as self-igniting. Test type: Spontaneous self-ignition at room-temperature.

Thermal decomposition: No decomposition if stored and handled as prescribed/indicated.

Viscosity, dynamic: 1.149 mPa.s
(25 °C)
Literature data.

Explosion hazard: Based on the chemical structure there is no indicating of explosive properties.

Fire promoting properties: Based on its structural properties the product is not classified as oxidizing.

Other information

Self heating ability: It is not a substance capable of spontaneous heating.

pKA: 4.26
(25 °C)

adsorption/water - soil: KOC: approx. 42.8; log KOC: approx. 1.6 (OECD Guideline 106)

volatility/water - air:

Surface tension: 69.6 mN/m
(20 °C; 1 g/l) (Directive 92/69/EEC, A.5, OECD harmonized ring method)

Grain size distribution: Test substance The substance / product is marketed or used in a non solid or granular form.

Molar mass: 72.06 g/mol

10. Stability and Reactivity

Reactivity

Corrosion to metals: Corrodes metals in the presence of water or moisture.

Formation of flammable gases: Remarks: Forms no flammable gases in the presence of water.

Chemical stability

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

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.

Risk of spontaneous and violent self-polymerization if inhibitor is lost or product is exposed to excessive heat. Risk of spontaneous polymerization when heated or in the presence of UV radiation. With unstabilised product, spontaneous polymerisation may occur e.g. through ambient heat. Polymerization coupled with heat formation. Polymerization produces gases which may burst closed or confined containers. Reactions may cause ignition.

Risk of spontaneous polymerization by oxygen depletion of the liquid phase.

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Radical formation can cause exothermic polymerization. Reacts with peroxides and other radical components. Risk of spontaneous polymerization in the presence of starters for radical chain reactions (e.g. peroxides). Reacts with nitric acid. Polymerizes explosively in contact with strong 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.

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 temperatures below the crystallization range.

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

Hazardous decomposition products

Hazardous decomposition products:

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

11. Toxicological Information

Information on toxicological effects

Acute toxicity

Assessment of acute toxicity:

Of moderate toxicity after short-term inhalation. Of pronounced toxicity after short-term skin contact. Of moderate toxicity after single ingestion.

Experimental/calculated data:

LD50 rat (oral): 1,500 mg/kg (BASF-Test)

LC50 rat (by inhalation): > 5.1 mg/l 4 h (OECD Guideline 403)

The vapour was tested.

LD50 rat (dermal): approx. 640 mg/kg (BASF-Test)

Irritation

Assessment of irritating effects:

Corrosive! Damages skin and eyes.

Experimental/calculated data:

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Skin corrosion/irritation rabbit: Corrosive. (OECD Guideline 404)

Serious eye damage/irritation rabbit: irreversible damage (BASF-Test)

Respiratory/Skin sensitization

Assessment of sensitization:

Skin sensitizing effects were not observed in animal studies.

Experimental/calculated data:

Freund's complete adjuvant test (FCA) guinea pig: Non-sensitizing.

Germ cell mutagenicity

Assessment of mutagenicity:

In the majority of tests performed (bacteria/microorganisms/cell cultures) a mutagenic effect was not found. A mutagenic effect was also not observed in in-vivo assays.

Carcinogenicity

Assessment of carcinogenicity:

Results from a number of long-term carcinogenicity studies are available. Taking into account all of the information, there is no indication that the substance is carcinogenic.

Reproductive toxicity

Assessment of reproduction toxicity:

The results of animal studies gave no indication of a fertility impairing effect.

Developmental toxicity

Assessment of teratogenicity:

No indications of a developmental toxic / teratogenic effect were seen in animal studies.

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:

After repeated exposure the prominent effect is local irritation.

12. Ecological Information

Toxicity

Assessment of aquatic toxicity:

Very toxic (acute effect) to aquatic organisms. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.

Toxicity to fish:

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LC50 (96 h) 27 mg/l, *Salmo gairdneri*, syn. *O. mykiss* (EPA 72-1, Flow through.)

The statement of the toxic effect relates to the analytically determined concentration.

Aquatic invertebrates:

EC50 (48 h) 95 mg/l, *Daphnia magna* (*Daphnia test acute*, Flow through.)

The statement of the toxic effect relates to the analytically determined concentration.

Aquatic plants:

No observed effect concentration (72 h) 0.008 mg/l (growth rate), *Scenedesmus subspicatus* (Guideline 92/69/EEC, C.3, static)

The details of the toxic effect relate to the nominal concentration.

Microorganisms/Effect on activated sludge:

EC20 (0.5 h) 900 mg/l, activated sludge, domestic (DIN EN ISO 8192, aquatic)

Nominal concentration.

Chronic toxicity to fish:

Study not necessary due to exposure considerations.

Chronic toxicity to aquatic invertebrates:

No observed effect concentration (21 d), 3.8 mg/l, *Daphnia magna* (OPP 72-4 (EPA-Guideline), Flow through.)

The statement of the toxic effect relates to the analytically determined concentration.

Assessment of terrestrial toxicity:

Study scientifically not justified.

Soil living organisms:

No observed effect concentration (28 d) 100 ppm, other soil dwelling microorganisms (OECD 217, artificial soil)

LC50 (14 d) > 1,000 mg/kg, *Eisenia foetida* (Directive 88/302/EEC, part C, p. 95, artificial soil)

Persistence and degradability

Assessment biodegradation and elimination (H₂O):

Readily biodegradable (according to OECD criteria).

Elimination information:

90 - 100 % DOC reduction (9 d) (OECD 301 A (new version)) (aerobic, activated sludge, domestic, non-adapted)

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), (OECD Guideline 111, pH7)

Bioaccumulative potential

Assessment bioaccumulation potential:

Significant accumulation in organisms is not to be expected.

Bioaccumulation potential:

Bioconcentration factor: 3.16 (calculated)

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Mobility in soil (and other compartments if available)

Assessment transport between environmental compartments:

The substance will not evaporate into the atmosphere from the water surface.

Adsorption to solid soil phase is not expected.

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.. Self classification

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 bioaccumulative) criteria.. Self classification

Additional information

Other ecotoxicological advice:

Very toxic (acute effect) to aquatic organisms.

13. Disposal Considerations

Waste treatment methods

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

Contaminated packaging:

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

14. Transport Information

Land transport

ADR

Hazard class: 8

Packing group: II

ID number: UN 2218

Hazard label: 8, 3, EHSM

Proper shipping name: ACRYLIC ACID, STABILIZED

RID

Hazard class: 8

Packing group: II

ID number: UN 2218

Hazard label: 8, 3, EHSM

Proper shipping name: ACRYLIC ACID, STABILIZED

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Inland waterway transport

ADN

Hazard class: 8
Packing group: II
ID number: UN 2218
Hazard label: 8, 3, EHSM, N1
Proper shipping name: ACRYLIC ACID, STABILIZED

Sea transport

IMDG

Hazard class: 8
Packing group: II
ID number: UN 2218
Hazard label: 8, 3, EHSM
Marine pollutant: YES
Proper shipping name: ACRYLIC ACID, STABILIZED

Air transport

IATA/ICAO

Hazard class: 8
Packing group: II
ID number: UN 2218
Hazard label: 8, 3
Proper shipping name: ACRYLIC ACID, STABILIZED

15. Regulatory Information

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

16. Other Information

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Annex: Exposure Scenarios**Short title of exposure scenario**

Manufacture of substance, Distribution of substance

SU3; SU8, SU9; ERC1; PROC 1, PROC2, PROC 3, PROC8a, PROC8b, PROC9; PC19

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC1: Manufacture of substances
Operational conditions	
Annual amount per site	28,800,000 kg
Minimum emission days per year Continuous	300
Emission factor air	0.00 %
Emission factor water	0.30 %
Emission factor soil	0 %
Receive Surf. Water (Flow Rate).	18,000 m3/d
Dilution factor river	10
Dilution factor coast	100
Other Factors: Environment	Indoor use.
Risk Management Measures	
Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	2,000 m3/d
Exposure estimate and reference to its source	
Risk Characterization Ratio (RCR)	0.514
	Risk from environmental exposure is driven by marine water.
Maximum amount of safe use	1,869 kg/d
Risk from environmental exposure is driven by marine sediment.	

Contributing exposure scenario	
Use descriptors covered	ERC1: Manufacture of substances
Operational conditions	
Annual amount per site	28,800,000 kg
Minimum emission days per year Continuous	300
Emission factor air	0.001 %
Emission factor water	0.05 %

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Emission factor soil	0.01 %
Receive Surf. Water (Flow Rate).	18,000 m3/d
Dilution factor river	10
Dilution factor coast	100
Other Factors: Environment	Indoor use.
Risk Management Measures	
Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	2,000 m3/d
Exposure estimate and reference to its source	
Risk Characterization Ratio (RCR)	0.514
	Risk from environmental exposure is driven by marine water.
Maximum amount of safe use	1,869 kg/d
Risk from environmental exposure is driven by marine sediment.	

Contributing exposure scenario	
Use descriptors covered	SU3: Industrial uses PROC 1: Use in closed process, no likelihood of exposure.
Operational conditions	
Concentration of the substance	acrylic acid Content: $\geq 0\%$ - $\leq 100\%$
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of one hand (240 cm ²)
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker Worker - dermal, short-term - local
Exposure estimate	100 µg/cm ²
Risk Characterization Ratio (RCR)	0.3571
Assessment method	ECETOC TRA v2.0 Worker Worker - dermal, long-term - local
Exposure estimate	100 µg/cm ²
Risk Characterization Ratio (RCR)	0.1
Assessment method	ECETOC TRA v2.0 Worker Worker - inhalative, long-term - local
Exposure estimate	0.03 mg/m ³
Risk Characterization Ratio (RCR)	0.001

Contributing exposure scenario	
Use descriptors covered	SU3: Industrial uses PROC2: Use in closed, continuous process with occasional controlled exposure.
Operational conditions	

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(ID no. 30041211/SDS_GEN_EU/EN)

Date of print 17.02.2011

Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Provide extract ventilation to points where emissions occur (LEV).	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness .	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	40 µg/cm ²
Risk Characterization Ratio (RCR)	0.1429
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	40 µg/cm ²
Risk Characterization Ratio (RCR)	0.04
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	3.0042 mg/m ³
Risk Characterization Ratio (RCR)	0.1001
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	SU3: Industrial uses PROC2: Use in closed, continuous process with occasional controlled exposure.
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	240 min 5 days per week

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Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Use suitable chemically resistant gloves.	Effectiveness: 80 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	40 µg/cm ²
Risk Characterization Ratio (RCR)	0.1429
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	40 µg/cm ²
Risk Characterization Ratio (RCR)	0.04
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	18.0250 mg/m ³
Risk Characterization Ratio (RCR)	0.6008
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	SU3: Industrial uses PROC 3: Use in closed batch process (synthesis or formulation).
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of one hand (240 cm ²)
Risk Management Measures	
Provide extract ventilation to points where emissions occur (LEV).	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness .	
Exposure estimate and reference to its source	

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Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	20 µg/cm ²
Risk Characterization Ratio (RCR)	0.0714
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	20 µg/cm ²
Risk Characterization Ratio (RCR)	0.02
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	7.5104 mg/m ³
Risk Characterization Ratio (RCR)	0.2503
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	SU3: Industrial uses PROC 3: Use in closed batch process (synthesis or formulation).
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of one hand (240 cm ²)
Risk Management Measures	
Use suitable chemically resistant gloves.	Effectiveness: 80 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	20 µg/cm ²
Risk Characterization Ratio (RCR)	0.0714
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified

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	version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	20 µg/cm ²
Risk Characterization Ratio (RCR)	0.02
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	15.0208 mg/m ³
Risk Characterization Ratio (RCR)	0.5007
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	SU3: Industrial uses PROC8a: Transfer of substance or preparation (charging/discharging) from/to ves-sels/large containers at non-dedicated facilities
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Provide extract ventilation to points where emissions occur (LEV).	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness ., Alternatively:, Reduce duration of activity to less than 15 min	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.7143
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.02

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Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	15.0208 mg/m ³
Risk Characterization Ratio (RCR)	0.5007
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	SU3: Industrial uses PROC8b: Transfer of substance or preparation (charging/discharging) from/to ves-sels/large containers at dedicated facili-ties
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Provide extract ventilation to points where emissions occur (LEV).	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.7143
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.2
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	4.5063 mg/m ³
Risk Characterization Ratio (RCR)	0.1502
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

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Use descriptors covered	SU3: Industrial uses PROC8b: Transfer of substance or preparation (charging/discharging) from/to ves-sels/large containers at dedicated facili-ties
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Use suitable chemically resistant gloves.	Effectiveness: 80 %
Wear suitable respiratory protection.	Effectiveness: 90 %
In case no respiratory protection is used:, Reduce duration of activity to less than 15 min	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.7143
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.2
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	15.0208 mg/m ³
Risk Characterization Ratio (RCR)	0.5007
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	SU3: Industrial uses PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing).
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %

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Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Provide extract ventilation to points where emissions occur (LEV).	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness ., Alternatively:, Reduce duration of activity to less than 15 min	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.7143
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.2
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	15.0208 mg/m ³
Risk Characterization Ratio (RCR)	0.5007
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Short title of exposure scenario

Polymer production, Use as Monomer

SU3; SU8, SU9; ERC6c; PROC 1, PROC2, PROC 3, PROC 4, PROC 5, PROC8a, PROC8b, PROC9; PC19

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)

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Operational conditions	
Annual amount per site	64,318,000 kg
Minimum emission days per year Continuous	300
Emission factor air	0.001 %
Emission factor water	0.05 %
Emission factor soil	0.01 %
Receive Surf. Water (Flow Rate).	18,000 m3/d
Dilution factor river	10
Dilution factor coast	100
Other Factors: Environment	Indoor use.
Risk Management Measures	
Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	2,000 m3/d
Exposure estimate and reference to its source	
Risk Characterization Ratio (RCR)	0.514
	Risk from environmental exposure is driven by marine water.
Maximum amount of safe use	417,417 kg/d
Risk from environmental exposure is driven by marine sediment.	

Contributing exposure scenario	
Use descriptors covered	SU3: Industrial uses PROC 1: Use in closed process, no likelihood of exposure.
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of one hand (240 cm ²)
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker
	Worker - dermal, short-term - local
Exposure estimate	100 µg/cm ²
Risk Characterization Ratio (RCR)	0.3571
Assessment method	ECETOC TRA v2.0 Worker
	Worker - dermal, long-term - local
Exposure estimate	100 µg/cm ²
Risk Characterization Ratio (RCR)	0.1
Assessment method	ECETOC TRA v2.0 Worker
	Worker - inhalative, long-term - local

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Exposure estimate	0.03 mg/m ³
Risk Characterization Ratio (RCR)	0.001

Contributing exposure scenario	
Use descriptors covered	SU3: Industrial uses PROC2: Use in closed, continuous process with occasional controlled exposure.
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Provide extract ventilation to points where emissions occur (LEV).	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness .	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	40 µg/cm ²
Risk Characterization Ratio (RCR)	0.1429
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	40 µg/cm ²
Risk Characterization Ratio (RCR)	0.04
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	3.0042 mg/m ³
Risk Characterization Ratio (RCR)	0.1001
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	SU3: Industrial uses PROC2: Use in closed, continuous process with occasional

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	controlled exposure.
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	240 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Use suitable chemically resistant gloves.	Effectiveness: 80 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	40 µg/cm ²
Risk Characterization Ratio (RCR)	0.1429
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	40 µg/cm ²
Risk Characterization Ratio (RCR)	0.04
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	18.0250 mg/m ³
Risk Characterization Ratio (RCR)	0.6008
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	SU3: Industrial uses PROC 3: Use in closed batch process (synthesis or formulation).
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of one hand (240 cm ²)
Risk Management Measures	

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Provide extract ventilation to points where emissions occur (LEV).	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness .	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	20 µg/cm ²
Risk Characterization Ratio (RCR)	0.0714
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	20 µg/cm ²
Risk Characterization Ratio (RCR)	0.02
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	7.5104 mg/m ³
Risk Characterization Ratio (RCR)	0.2503
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	SU3: Industrial uses PROC 3: Use in closed batch process (synthesis or formulation).
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of one hand (240 cm ²)
Risk Management Measures	
Use suitable chemically resistant gloves.	Effectiveness: 80 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of

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	dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	20 µg/cm ²
Risk Characterization Ratio (RCR)	0.0714
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	20 µg/cm ²
Risk Characterization Ratio (RCR)	0.02
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	15.0208 mg/m ³
Risk Characterization Ratio (RCR)	0.5007
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	SU3: Industrial uses PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises.
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Provide extract ventilation to points where emissions occur (LEV).	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness .	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.7143
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC

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	TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.2
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	6.0083 mg/m ³
Risk Characterization Ratio (RCR)	0.2003
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	SU3: Industrial uses PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises.
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Use suitable chemically resistant gloves.	Effectiveness: 80 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.7143
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.2
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	12.0167 mg/m ³
Risk Characterization Ratio (RCR)	0.4006
Guidance to Downstream Users	

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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	SU3: Industrial uses PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact).
Operational conditions	
Concentration of the substance	acrylic acid Content: $\geq 0\%$ - $\leq 100\%$
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Provide extract ventilation to points where emissions occur (LEV).	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness ., Alternatively:, Reduce duration of activity to less than 15 min	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	400 µg/cm ²
Risk Characterization Ratio (RCR)	1.4286
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	400 µg/cm ²
Risk Characterization Ratio (RCR)	0.4
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	15.0208 mg/m ³
Risk Characterization Ratio (RCR)	0.5007
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

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Use descriptors covered	SU3: Industrial uses PROC8a: Transfer of substance or preparation (charging/discharging) from/to ves-sels/large containers at non-dedicated facilities
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Provide extract ventilation to points where emissions occur (LEV).	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness ., Alternatively:, Reduce duration of activity to less than 15 min	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.7143
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.02
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	15.0208 mg/m ³
Risk Characterization Ratio (RCR)	0.5007
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	SU3: Industrial uses PROC8b: Transfer of substance or preparation (charging/discharging) from/to ves-sels/large containers at dedicated facilities

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Operational conditions	
Concentration of the substance	acrylic acid Content: $\geq 0\%$ - $\leq 100\%$
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Provide extract ventilation to points where emissions occur (LEV).	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.7143
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.2
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	4.5063 mg/m ³
Risk Characterization Ratio (RCR)	0.1502
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	SU3: Industrial uses PROC8b: Transfer of substance or preparation (charging/discharging) from/to ves-sels/large containers at dedicated facili-ties
Operational conditions	
Concentration of the substance	acrylic acid Content: $\geq 0\%$ - $\leq 100\%$
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor

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Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Use suitable chemically resistant gloves.	Effectiveness: 80 %
Wear suitable respiratory protection.	Effectiveness: 90 %
In case no respiratory protection is used:, Reduce duration of activity to less than 15 min	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.7143
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.2
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	15.0208 mg/m ³
Risk Characterization Ratio (RCR)	0.5007
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	SU3: Industrial uses PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing).
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Provide extract ventilation to points where emissions occur (LEV).	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case no suitable local exhaust ventilation is present:, Wear a suitable	

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respiratory protection with adequate effectiveness ., Alternatively:., Reduce duration of activity to less than 15 min	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.7143
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.2
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	15.0208 mg/m ³
Risk Characterization Ratio (RCR)	0.5007
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Short title of exposure scenario

Polymer production, Use as Monomer

SU3; SU8, SU9, SU12; ERC6c, ERC6b; PROC 1, PROC2, PROC 3, PROC 4, PROC 5, PROC8a, PROC8b, PROC9; PC19, PC32

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC6c: Industrial use of monomers for manufacture of thermoplastics
Operational conditions	
Annual amount per site	16,250,000 kg
Minimum emission days per year Continuous	300
Emission factor air	0.01 %
Emission factor water	1 %
Emission factor soil	0 %
Receive Surf. Water (Flow Rate).	18,000 m ³ /d

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Other Factors: Environment	Indoor use.
Risk Management Measures	
Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	2,000 m3/d
Exposure estimate and reference to its source	
Risk Characterization Ratio (RCR)	0.514
	Risk from environmental exposure is driven by marine water.
Maximum amount of safe use	105,462 kg
Risk from environmental exposure is driven by marine sediment.	

Contributing exposure scenario	
Use descriptors covered	ERC6c: Industrial use of monomers for manufacture of thermoplastics
Operational conditions	
Annual amount per site	11,700,000 kg
Minimum emission days per year Continuous	300
Emission factor air	0.01 %
Emission factor water	1 %
Emission factor soil	0 %
Receive Surf. Water (Flow Rate).	18,000 m3/d
Other Factors: Environment	Indoor use.
Risk Management Measures	
Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	2,000 m3/d
Exposure estimate and reference to its source	
Risk Characterization Ratio (RCR)	0.514
	Risk from environmental exposure is driven by marine water.
Maximum amount of safe use	105,462 kg
Risk from environmental exposure is driven by marine sediment.	

Contributing exposure scenario	
Use descriptors covered	ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers
Operational conditions	
Annual amount per site	16,250,000 kg
Minimum emission days per year Continuous	300
Emission factor air	0.01 %
Emission factor water	1 %

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Emission factor soil	0 %
Receive Surf. Water (Flow Rate).	18,000 m3/d
Other Factors: Environment	Indoor use.
Risk Management Measures	
Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	2,000 m3/d
Exposure estimate and reference to its source	
Risk Characterization Ratio (RCR)	0.514
	Risk from environmental exposure is driven by marine water.
Maximum amount of safe use	105,462 kg
Risk from environmental exposure is driven by marine sediment.	

Contributing exposure scenario	
Use descriptors covered	ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers
Operational conditions	
Annual amount per site	11,700,000 kg
Minimum emission days per year Continuous	300
Emission factor air	0.01 %
Emission factor water	1 %
Emission factor soil	0 %
Receive Surf. Water (Flow Rate).	18,000 m3/d
Other Factors: Environment	Indoor use.
Risk Management Measures	
Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	2,000 m3/d
Exposure estimate and reference to its source	
Risk Characterization Ratio (RCR)	0.514
	Risk from environmental exposure is driven by marine water.
Maximum amount of safe use	105,462 kg
Risk from environmental exposure is driven by marine sediment.	

Contributing exposure scenario	
Use descriptors covered	ERC6c: Industrial use of monomers for manufacture of thermoplastics
Operational conditions	
Annual amount per site	3,250,000 kg

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Minimum emission days per year Continuous	300
Emission factor air	1 %
Emission factor water	1 %
Emission factor soil	0 %
Receive Surf. Water (Flow Rate).	18,000 m3/d
Other Factors: Environment	Indoor use.
Risk Management Measures	
Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	2,000 m3/d
Exposure estimate and reference to its source	
Risk Characterization Ratio (RCR)	0.514
	Risk from environmental exposure is driven by marine water.
Maximum amount of safe use	105,462 kg
Risk from environmental exposure is driven by marine sediment.	

Contributing exposure scenario	
Use descriptors covered	ERC6c: Industrial use of monomers for manufacture of thermoplastics
Operational conditions	
Annual amount per site	3,250,000 kg
Minimum emission days per year Continuous	300
Emission factor air	1 %
Emission factor water	1 %
Emission factor soil	0 %
Receive Surf. Water (Flow Rate).	18,000 m3/d
Other Factors: Environment	Indoor use.
Risk Management Measures	
Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	2,000 m3/d
Exposure estimate and reference to its source	
Risk Characterization Ratio (RCR)	0.514
	Risk from environmental exposure is driven by marine water.
Maximum amount of safe use	105,462 kg
Risk from environmental exposure is driven by marine sediment.	

Contributing exposure scenario	
Use descriptors covered	ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers,

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	polymers
Operational conditions	
Annual amount per site	3,250,000 kg
Minimum emission days per year Continuous	300
Emission factor air	1 %
Emission factor water	1 %
Emission factor soil	0 %
Receive Surf. Water (Flow Rate).	18,000 m3/d
Other Factors: Environment	Indoor use.
Risk Management Measures	
Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	2,000 m3/d
Exposure estimate and reference to its source	
Risk Characterization Ratio (RCR)	0.514
	Risk from environmental exposure is driven by marine water.
Maximum amount of safe use	105,462 kg
Risk from environmental exposure is driven by marine sediment.	

Contributing exposure scenario	
Use descriptors covered	ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers
Operational conditions	
Annual amount per site	3,250,000 kg
Minimum emission days per year Continuous	300
Emission factor air	1 %
Emission factor water	1 %
Emission factor soil	0 %
Receive Surf. Water (Flow Rate).	18,000 m3/d
Other Factors: Environment	Indoor use.
Risk Management Measures	
Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	2,000 m3/d
Exposure estimate and reference to its source	
Risk Characterization Ratio (RCR)	0.514
	Risk from environmental exposure is driven by marine water.
Maximum amount of safe use	105,462 kg

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Risk from environmental exposure is driven by marine sediment.

Contributing exposure scenario	
Use descriptors covered	SU3: Industrial uses PROC 1: Use in closed process, no likelihood of exposure.
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of one hand (240 cm ²)
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker
	Worker - dermal, short-term - local
Exposure estimate	100 µg/cm ²
Risk Characterization Ratio (RCR)	0.3571
Assessment method	ECETOC TRA v2.0 Worker
	Worker - dermal, long-term - local
Exposure estimate	100 µg/cm ²
Risk Characterization Ratio (RCR)	0.1
Assessment method	ECETOC TRA v2.0 Worker
	Worker - inhalative, long-term - local
Exposure estimate	0.03 mg/m ³
Risk Characterization Ratio (RCR)	0.001

Contributing exposure scenario	
Use descriptors covered	SU3: Industrial uses PROC2: Use in closed, continuous process with occasional controlled exposure.
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Provide extract ventilation to points where emissions occur (LEV).	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness .	
Exposure estimate and reference to its source	

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Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	40 µg/cm ²
Risk Characterization Ratio (RCR)	0.1429
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	40 µg/cm ²
Risk Characterization Ratio (RCR)	0.04
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	3.0042 mg/m ³
Risk Characterization Ratio (RCR)	0.1001
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	SU3: Industrial uses PROC2: Use in closed, continuous process with occasional controlled exposure.
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	240 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Use suitable chemically resistant gloves.	Effectiveness: 80 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	40 µg/cm ²
Risk Characterization Ratio (RCR)	0.1429
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified

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	version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	40 µg/cm ²
Risk Characterization Ratio (RCR)	0.04
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	18.0250 mg/m ³
Risk Characterization Ratio (RCR)	0.6008
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	SU3: Industrial uses PROC 3: Use in closed batch process (synthesis or formulation).
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of one hand (240 cm ²)
Risk Management Measures	
Provide extract ventilation to points where emissions occur (LEV).	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness .	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	20 µg/cm ²
Risk Characterization Ratio (RCR)	0.0714
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	20 µg/cm ²
Risk Characterization Ratio (RCR)	0.02
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local

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Exposure estimate	7.5104 mg/m ³
Risk Characterization Ratio (RCR)	0.2503
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	SU3: Industrial uses PROC 3: Use in closed batch process (synthesis or formulation).
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of one hand (240 cm ²)
Risk Management Measures	
Use suitable chemically resistant gloves.	Effectiveness: 80 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	20 µg/cm ²
Risk Characterization Ratio (RCR)	0.0714
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	20 µg/cm ²
Risk Characterization Ratio (RCR)	0.02
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	15.0208 mg/m ³
Risk Characterization Ratio (RCR)	0.5007
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	SU3: Industrial uses PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises.
Operational conditions	

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Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Provide extract ventilation to points where emissions occur (LEV).	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness .	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.7143
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.2
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	6.0083 mg/m ³
Risk Characterization Ratio (RCR)	0.2003
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	SU3: Industrial uses PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises.
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	60 min 5 days per week

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Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Use suitable chemically resistant gloves.	Effectiveness: 80 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.7143
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.2
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	12.0167 mg/m ³
Risk Characterization Ratio (RCR)	0.4006
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	SU3: Industrial uses PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact).
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Provide extract ventilation to points where emissions occur (LEV).	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness ., Alternatively:, Reduce	

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duration of activity to less than 15 min	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	400 µg/cm ²
Risk Characterization Ratio (RCR)	1.4286
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	400 µg/cm ²
Risk Characterization Ratio (RCR)	0.4
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	15.0208 mg/m ³
Risk Characterization Ratio (RCR)	0.5007
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	SU3: Industrial uses PROC8a: Transfer of substance or preparation (charging/discharging) from/to ves-sels/large containers at non-dedicated facilities
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Provide extract ventilation to points where emissions occur (LEV).	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness ., Alternatively:, Reduce duration of activity to less than 15 min	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust

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	ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.7143
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.02
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	15.0208 mg/m ³
Risk Characterization Ratio (RCR)	0.5007
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	SU3: Industrial uses PROC8b: Transfer of substance or preparation (charging/discharging) from/to ves-sels/large containers at dedicated facilities
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Provide extract ventilation to points where emissions occur (LEV).	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.7143
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of

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	dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.2
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	4.5063 mg/m ³
Risk Characterization Ratio (RCR)	0.1502
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	SU3: Industrial uses PROC8b: Transfer of substance or preparation (charging/discharging) from/to ves-sels/large containers at dedicated facili-ties
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Use suitable chemically resistant gloves.	Effectiveness: 80 %
Wear suitable respiratory protection.	Effectiveness: 90 %
In case no respiratory protection is used:, Reduce duration of activity to less than 15 min	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.7143
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.2
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local

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Exposure estimate	15.0208 mg/m ³
Risk Characterization Ratio (RCR)	0.5007
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	SU3: Industrial uses PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing).
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Provide extract ventilation to points where emissions occur (LEV).	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness ., Alternatively:, Reduce duration of activity to less than 15 min	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.7143
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.2
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	15.0208 mg/m ³
Risk Characterization Ratio (RCR)	0.5007
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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Short title of exposure scenario

Polymer production

SU3; SU8, SU9; ERC6a; PROC 1, PROC2, PROC 3, PROC 4, PROC 5, PROC8a, PROC8b, PROC9; PC19

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)
Operational conditions	
Annual amount per site	64,318,000 kg
Minimum emission days per year Continuous	300
Emission factor air	0.001 %
Emission factor water	0.05 %
Emission factor soil	0.01 %
Receive Surf. Water (Flow Rate).	18,000 m3/d
Dilution factor river	10
Dilution factor coast	100
Other Factors: Environment	Indoor use.
Risk Management Measures	
Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	2,000 m3/d
Exposure estimate and reference to its source	
Risk Characterization Ratio (RCR)	0.514
	Risk from environmental exposure is driven by marine water.
Maximum amount of safe use	417,417 kg/d
Risk from environmental exposure is driven by marine sediment.	

Contributing exposure scenario	
Use descriptors covered	SU3: Industrial uses PROC 1: Use in closed process, no likelihood of exposure.
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week

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Indoor/Outdoor	Indoor
Exposed skin area	Palm of one hand (240 cm ²)
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker
	Worker - dermal, short-term - local
Exposure estimate	100 µg/cm ²
Risk Characterization Ratio (RCR)	0.3571
Assessment method	ECETOC TRA v2.0 Worker
	Worker - dermal, long-term - local
Exposure estimate	100 µg/cm ²
Risk Characterization Ratio (RCR)	0.1
Assessment method	ECETOC TRA v2.0 Worker
	Worker - inhalative, long-term - local
Exposure estimate	0.03 mg/m ³
Risk Characterization Ratio (RCR)	0.001

Contributing exposure scenario	
Use descriptors covered	SU3: Industrial uses PROC2: Use in closed, continuous process with occasional controlled exposure.
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Provide extract ventilation to points where emissions occur (LEV).	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness .	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	40 µg/cm ²
Risk Characterization Ratio (RCR)	0.1429
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.

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	Worker - dermal, long-term - local
Exposure estimate	40 µg/cm ²
Risk Characterization Ratio (RCR)	0.04
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	3.0042 mg/m ³
Risk Characterization Ratio (RCR)	0.1001
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	SU3: Industrial uses PROC2: Use in closed, continuous process with occasional controlled exposure.
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	240 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Use suitable chemically resistant gloves.	Effectiveness: 80 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	40 µg/cm ²
Risk Characterization Ratio (RCR)	0.1429
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	40 µg/cm ²
Risk Characterization Ratio (RCR)	0.04
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	18.0250 mg/m ³
Risk Characterization Ratio (RCR)	0.6008
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

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Use descriptors covered	SU3: Industrial uses PROC 3: Use in closed batch process (synthesis or formulation).
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of one hand (240 cm ²)
Risk Management Measures	
Provide extract ventilation to points where emissions occur (LEV).	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness .	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	20 µg/cm ²
Risk Characterization Ratio (RCR)	0.0714
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	20 µg/cm ²
Risk Characterization Ratio (RCR)	0.02
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	7.5104 mg/m ³
Risk Characterization Ratio (RCR)	0.2503
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	SU3: Industrial uses PROC 3: Use in closed batch process (synthesis or formulation).
Operational conditions	
Concentration of the substance	acrylic acid

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	Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of one hand (240 cm ²)
Risk Management Measures	
Use suitable chemically resistant gloves.	Effectiveness: 80 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	20 µg/cm ²
Risk Characterization Ratio (RCR)	0.0714
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	20 µg/cm ²
Risk Characterization Ratio (RCR)	0.02
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	15.0208 mg/m ³
Risk Characterization Ratio (RCR)	0.5007
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	SU3: Industrial uses PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises.
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Provide extract ventilation to points where emissions occur (LEV).	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %

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In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness .	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.7143
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.2
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	6.0083 mg/m ³
Risk Characterization Ratio (RCR)	0.2003
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	SU3: Industrial uses PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises.
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Use suitable chemically resistant gloves.	Effectiveness: 80 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	200 µg/cm ²

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Risk Characterization Ratio (RCR)	0.7143
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.2
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	12.0167 mg/m ³
Risk Characterization Ratio (RCR)	0.4006
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	SU3: Industrial uses PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact).
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Provide extract ventilation to points where emissions occur (LEV).	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness ., Alternatively:, Reduce duration of activity to less than 15 min	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	400 µg/cm ²
Risk Characterization Ratio (RCR)	1.4286
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of

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	dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	400 µg/cm ²
Risk Characterization Ratio (RCR)	0.4
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	15.0208 mg/m ³
Risk Characterization Ratio (RCR)	0.5007
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	SU3: Industrial uses PROC8a: Transfer of substance or preparation (charging/discharging) from/to ves-sels/large containers at non-dedicated facilities
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Provide extract ventilation to points where emissions occur (LEV).	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness ., Alternatively:, Reduce duration of activity to less than 15 min	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.7143
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	200 µg/cm ²

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Product: **ACRYLIC ACID GLACIAL**

(ID no. 30041211/SDS_GEN_EU/EN)

Date of print 17.02.2011

Risk Characterization Ratio (RCR)	0.02
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	15.0208 mg/m ³
Risk Characterization Ratio (RCR)	0.5007
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	SU3: Industrial uses PROC8b: Transfer of substance or preparation (charging/discharging) from/to ves-sels/large containers at dedicated facili-ties
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Provide extract ventilation to points where emissions occur (LEV).	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.7143
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.2
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	4.5063 mg/m ³
Risk Characterization Ratio (RCR)	0.1502
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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Product: **ACRYLIC ACID GLACIAL**

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Date of print 17.02.2011

Contributing exposure scenario	
Use descriptors covered	SU3: Industrial uses PROC8b: Transfer of substance or preparation (charging/discharging) from/to ves-sels/large containers at dedicated facili-ties
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Use suitable chemically resistant gloves.	Effectiveness: 80 %
Wear suitable respiratory protection.	Effectiveness: 90 %
In case no respiratory protection is used:, Reduce duration of activity to less than 15 min	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.7143
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.2
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	15.0208 mg/m ³
Risk Characterization Ratio (RCR)	0.5007
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	SU3: Industrial uses PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing).
Operational conditions	
Concentration of the substance	acrylic acid

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	Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of both hands (480 cm ²)
Risk Management Measures	
Provide extract ventilation to points where emissions occur (LEV).	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness ., Alternatively:, Reduce duration of activity to less than 15 min	
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.7143
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	200 µg/cm ²
Risk Characterization Ratio (RCR)	0.2
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	15.0208 mg/m ³
Risk Characterization Ratio (RCR)	0.5007
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Short title of exposure scenario

Use in laboratories

SU22; SU8, SU9, SU24; ERC1; PROC15; PC19, PC21

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC1: Manufacture of substances
Operational conditions	

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Annual amount per site	28,800,000 kg	
Minimum emission days per year	300	
Continuous		
Emission factor air	0.00 %	
Emission factor water	0.30 %	
Emission factor soil	0 %	
Receive Surf. Water (Flow Rate).	18,000 m3/d	
Dilution factor river	10	
Dilution factor coast	100	
Other Factors: Environment	Indoor use.	
Risk Management Measures		
Type of STP	Municipal STP	
Assumed sewage treatment plant flow (m3/d)	2,000 m3/d	
Exposure estimate and reference to its source		
Risk Characterization Ratio (RCR)	0.514	
	Risk from environmental exposure is driven by marine water.	
Maximum amount of safe use	1,869 kg/d	
Risk from environmental exposure is driven by marine sediment.		

Contributing exposure scenario		
Use descriptors covered	SU3: Industrial uses PROC15: Use a laboratory reagent.	
Operational conditions		
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %	
Physical state	liquid	
Duration and Frequency of activity	480 min 5 days per week	
Indoor/Outdoor	Indoor	
Exposed skin area	Palm of one hand (240 cm ²)	
Risk Management Measures		
Provide extract ventilation to points where emissions occur (LEV).	Effectiveness: 90 %	
Use suitable chemically resistant gloves.	Effectiveness: 80 %	
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness .		
Exposure estimate and reference to its source		
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust	

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	ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	20 µg/cm ²
Risk Characterization Ratio (RCR)	0.0714
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	20 µg/cm ²
Risk Characterization Ratio (RCR)	0.02
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	3.0042 mg/m ³
Risk Characterization Ratio (RCR)	0.1001
Guidance to Downstream Users	
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Contributing exposure scenario	
Use descriptors covered	SU3: Industrial uses PROC15: Use a laboratory reagent.
Operational conditions	
Concentration of the substance	acrylic acid Content: >= 0 % - <= 100 %
Physical state	liquid
Duration and Frequency of activity	240 min 5 days per week
Indoor/Outdoor	Indoor
Exposed skin area	Palm of one hand (240 cm ²)
Risk Management Measures	
Use suitable chemically resistant gloves.	Effectiveness: 80 %
Exposure estimate and reference to its source	
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, short-term - local
Exposure estimate	20 µg/cm ²
Risk Characterization Ratio (RCR)	0.0714
Assessment method	ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally.
	Worker - dermal, long-term - local
Exposure estimate	20 µg/cm ²

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Risk Characterization Ratio (RCR)	0.02
Assessment method	ECETOC TRA v2.0 Worker; modified version
	Worker - inhalative, long-term - local
Exposure estimate	18.0250 mg/m ³
Risk Characterization Ratio (RCR)	0.6008
Guidance to Downstream Users	
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Vertical lines in the left hand margin indicate an amendment from the previous version.

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