

# SAFETY DATA SHEET

# 1. SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

#### 1.1 Product identifier

Product Name METHYL METHACRYLATE

Product Description This product contains Methyl methacrylate and low levels of stabiliser.

Alternative names Stabilized Methyl methacrylate monomer; 2-Propenoic acid, 2-methyl-, methyl ester; MMA; MMM.

REACH Registration No. 01-2119452498-28-0006/7/8/9/10

01-2119452498-28-XXXX

CAS No. 000080-62-6 EC No. 201-297-1

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

Identified use(s) Industrial: Intermediate for production of methacrylate esters, acrylic polymers and mixtures.

Professional: End use of mixtures containing methacrylates.

Consumer: Use of mixtures with low levels of methacrylate monomer.

Uses advised against Mixtures containing unreacted liquid monomer intended to come into contact with skin or nails

Refer to Exposure Scenarios Annex for further details (i-xii)

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

Lucite International, Cassel, PO Box 8, Billingham, TS23 1LE, United Kingdom

Tel: +44 (0)1642 735042 msdsinfo@lucite.com

## 1.4 Emergency telephone number

+44 (0) 1642 452461

# 2. SECTION 2: HAZARDS IDENTIFICATION

## 2.1 Classification of the substance or mixture

Classification in accordance with Regulation (EC) No 1272/2008 [CLP]

Flammable Liquid Category 2 H225 STOT-single exposure Category 3 H335 Skin corrosion / irritation Category 2. H315 Skin sensitization Category 1. H317

Classification in accordance with 67/548/EEC or 1999/45/EC

F, Xi R11 R37/38 R43

For full text of H/P phrases see section 16. For full text of R phrases see section 16.

## 2.2 Label elements





Signal word Da

Hazard statement(s)

Highly flammable liquid and vapour.

Causes skin irritation.

May cause an allergic skin reaction. May cause respiratory irritation.

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Precautionary statement(s) Keep away from heat, sparks, open flame, hot surfaces - No smoking

Avoid breathing vapours.

Wear protective gloves/protective clothing/eye protection/face protection.

IF ON SKIN: Wash with plenty of soap and water.

Dispose of contents/container to hazardous waste in accordance with local, state or national legislation. Incinerate under approved controlled conditions, using incinerator

suitable for disposal of flammable organics.

#### 2.3 Other hazards

Not classified as PBT or vPvB.

# 3. SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

#### 3.1 Substances

Substances in the product which may present a health or environmental hazard, or which have been assigned occupational exposure limits, are detailed below.

#### (EC) No 1272/2008 Classification

Hazardous ingredient(s)	%W/W	EC No.	REACH No.	Hazard Class	Hazard
				and Category	statement
				Code(s)	Code(s)
Methyl methacrylate	>99	201-297-1	01-2119452498-28-XXXX	Flam. Liq. 2	H225
			01-2119452498-28-0006	STOT SE 3	H335
			01-2119452498-28-0010	Skin Irrit. 2	H315
			01-2119452498-28-0007	Skin Sens. 1	H317
			01-2119452498-28-0008		
			01-2119452498-28-0009		

# 4. SECTION 4: FIRST AID MEASURES

# 4.1 Description of first aid measures

Inhalation IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. Call a

POISON CENTRE or doctor if you feel unwell.

Skin Contact IF ON SKIN (or hair): Wash with plenty of soap and water. If skin irritation or rash occurs: Get

medical attention. Take off contaminated clothing and wash before reuse.

Eye Contact IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and

easy to do. Continue rinsing. Obtain immediate medical attention.

Ingestion Do not induce vomiting. Rinse mouth. Obtain immediate medical attention.

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

Causes skin irritation. May cause respiratory irritation. May cause an allergic skin reaction.

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

None necessary.

# 5. SECTION 5: FIRE-FIGHTING MEASURES

# 5.1 Extinguishing media

Suitable extinguishing media In case of fire, use water spray, foam, dry powder or CO<sub>2</sub> for extinction. Keep containers cool by

spraying with water if exposed to fire.

Unsuitable Extinguishing Media None.

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

Highly flammable liquid and vapour. May polymerise on heating. Sealed containers may rupture explosively if hot.

## 5.3 Advice for fire-fighters

A self contained breathing apparatus and suitable protective clothing should be worn in fire conditions.

# 6. SECTION 6: ACCIDENTAL RELEASE MEASURES

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

Eliminate sources of ignition. Wear protective gloves and eye/face protection. Avoid breathing vapours. See Section: 8

#### 6.2 Environmental precautions

Avoid release to the environment. Spillages or uncontrolled discharges into watercourses must be alerted to the appropriate regulatory body.

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

Collect spillage. Do not adsorb onto sawdust or other combustible materials. Transfer to a lidded container for disposal or recovery. Use only non-sparking tools.

#### 6.4 Reference to other sections

See Section: 8, 13

# 7. SECTION 7: HANDLING AND STORAGE

#### 7.1 Precautions for safe handling

Do not eat, drink or smoke at the work place. Wash thoroughly after handling.

Avoid breathing vapours. Use only outdoors or in a well-ventilated area. The vapour is heavier than air; beware of pits and confined spaces.

Ground container and receiving equipment. Use explosion proof electrical equipment. Use only non-sparking tools. Take precautionary measures against static discharges.

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

Keep container tightly closed. Store in a well-ventilated place. Keep cool. Store locked up. Keep away from heat, sparks, open flame, hot surfaces - No smoking Protect from sunlight.

IMPORTANT: Methacrylates stored in bulk must be kept in contact with air (oxygen). Monomer vapours are uninhibited and may form polymers in vent or flame arresters, resulting in blockage of vents.

Storage Temperature Preferably not exceeding 25°C.

Storage Life Provided proper storage and handling procedures are followed (see the Methacrylate Esters Safe

Handling Manual) the product may be stored for up to 6 months from the date of receipt. Product stabilised with Topanol A at less than 25 ppm should be used within 3 months. Product stabilised

with Topanol A at less than 2 ppm should be used within 1 week.

Incompatible materials: Polymerisation catalysts, such as peroxy or azo compounds, strong acids, alkalis and oxidising

agents. Oxides and salts of transition metals. Organic Nitrogen containing compounds.

Cyclohexanone/Cyclohexenol tautomer.

# 7.3 Specific end use(s)

IU1: Manufacture and use as intermediate.

IU2: Use in production of formulations.

IU3: Industrial end use as monomer, intermediate or formulation.

IU4: Professional end use in formulations.IU5: Consumer end use in formulations.

IU6: Service life in articles

Refer to Exposure Scenario Annex for further details

# 8. SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

# 8.1 Control parameters

Substance	CAS No.	LTEL ppm (8Hr TWA)	LTEL mg/m3 (8Hr TWA)	STEL ppm	STEL mg/m3	Notes
Methyl methacrylate	000080-62-6	50	208	100	416	IOELV

DNEL	Oral	Inhalation	Dermal
Worker - long term - local effects	1	210 mg/m <sup>3</sup>	1.5 mg/cm <sup>2</sup>
Worker - long term - systemic effects	1	210 mg/m <sup>3</sup>	13.67 mg/Kg bw/day
Worker - short term - local effects	1	2	1.5 mg/cm <sup>2</sup>
Worker - short term - systemic effects	1	2	
Consumer - long term - local effects	1	105 mg/m³	1.5 mg/m <sup>2</sup>
Consumer - long term - systemic effects	1	74.3 mg/m³	8.2 mg/Kg bw/day
Consumer - short term - local effects	1	2	1.5 mg/cm <sup>2</sup>
Consumer - short term - systemic effects	1	2	

	PNEC
Aquatic Compartment	0.94 mg/l ( Fresh water )
	0.094 mg/l ( Sea water )
	5.74 mg/Kg dw (Sediment)
Terrestrial Compartment	1.47 mg/Kg dw
Atmospheric Compartment	

<sup>&</sup>lt;sup>1</sup> Low oral toxicity: DNEL not established.

## 8.2 Exposure controls

## Appropriate engineering controls

Do not eat, drink or smoke at the work place. Use in closed systems or provide adequate LEV if natural ventilation is insufficient, to ensure that the DNEL/OEL is not exceeded. The maximum duration for safe use is dependant upon concentration, operating conditions and Risk Management Measures. Refer to section 4.3 of each GES. Consideration should be given to the work procedures involved and the potential extent of exposure as they may determine whether a higher level of protection is required.

#### Individual protection measures, such as personal protective equipment (PPE)

Worker: Wear protective equipment to comply with good occupational hygiene practice and as specified in section 6.1.1 of each GES. Consumer: No PPE or Risk Management Measures are required when working within the boundaries as specified in section 4.3 of the Generic Exposure Scenarios (GES).

Eye/face protection



Wear eye/face protection.

Safety spectacles/goggles/full face shield.

#### Skin protection



Wear suitable gloves.

For splash protection: Butyl; EN 374.

For immersion protection: Butyl; 0.7 mm or greater; EN 374.

Suitability of gloves should be confirmed with glove manufacturer. Change gloves, if contamination occurs or duration of activity exceeds break through time. Breakthrough time of the glove material: refer to the information provided by the gloves' producer.

## Respiratory protection



Wear suitable respiratory protective equipment if engineering controls are insufficient, or not present, and exposure to levels above the DNEL is likely. A suitable mask with filter type A (EN141 or EN405) may be appropriate. In the event of formation of particularly high levels of vapour a self contained breathing apparatus may be appropriate.

Refer to Exposure Scenario Annex for further details.

## **Environmental Exposure Controls**

Ensure effective control measures when working within the boundaries as specified in section 6.2 of each GES.

# 9. SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

<sup>&</sup>lt;sup>2</sup> DNEL long term is protective of effects resulting from short term exposure.

#### 9.1 Information on basic physical and chemical properties

Form Liquid

Colour Clear/colourless.

Odour Characteristic strong and acrid.

Odour Threshold (ppm) 0.5 - 1.0 PH (Value) Not applicable.

Melting Point (°C) -48
Boiling Point (°C) 100.5

Flash Point (°C)

Relative Evaporation Rate (Ether = 1)

Flammability (solid, gas)

10 [Closed cup]

Not available.

Not applicable.

Flammable Limits (Lower) (%v/v) 2.1
Flammable Limits (Upper) (%v/v) 12.5

Vapour Pressure (Pascal) 3600 at 20°C

Vapour Density (Air=1) 3.5

Solubility (Water)
Solubility (Other)
Slightly soluble. 1.6% at 20°C
Miscible with most organic solvents.

Partition Coefficient (n-Octanol/water) 1.38 Auto Ignition Temperature (°C) 421

Decomposition Temperature (°C)

Viscosity (mPa.s)

Explosive Properties

Oxidising Properties

Density (g/ml)

Not applicable.

Not applicable.

0.949 at 15.5°C

9.2 Other information

Minimum Ignition Energy (mJ) 0.89 - 0.97 at 23°C

# 10. SECTION 10: STABILITY AND REACTIVITY

# 10.1 Reactivity

Will exothermically polymerise in the presence of initiators.

#### 10.2 Chemical stability

Stable in the presence of inhibitor.

# 10.3 Possibility of hazardous reactions

Susceptible to polymerisation initiated by prolonged heating or the presence of catalyst.

## 10.4 Conditions to avoid

Heat and direct sunlight.

## 10.5 Incompatible materials

Polymerisation catalysts, such as peroxy or azo compounds, strong acids, alkalis and oxidising agents. Oxides and salts of transition metals. Organic Nitrogen containing compounds. Cyclohexanone/Cyclohexenol tautomer.

## 10.6 Hazardous Decomposition Product(s)

Does not decompose up to auto-ignition temperature.

# 11. SECTION 11: TOXICOLOGICAL INFORMATION

## 11.1 Information on toxicological effects

Acute toxicity

Ingestion Low oral toxicity, but ingestion may cause irritation of the gastrointestinal tract.

Ingestion toxicity data LD50 (oral) > 5000 mg/Kg

Ingestion STOT-single Not applicable.

exposure

Inhalation May cause respiratory irritation. May cause drowsiness or dizziness.

Inhalation toxicity data LC50 (vapour) 7093 ppm (29.8 mg/l)(4 hr)

Inhalation STOT-single Exposure to high concentrations may produce adverse effects on the nasal epithelium.

exposure

Skin Contact May cause an allergic skin reaction. Causes skin irritation. Repeated and/or prolonged contact

may cause dermatitis.

Skin contact toxicity data LD50 (dermal) > 5000 mg/Kg

Skin contact STOT-single

exposure

Not applicable.

Eye Contact Eye contact toxicity data

High vapour concentration will cause irritation. Slight irritant to rabbit eyes. (OECD 405)

Eye STOT-single exposure

Not applicable.

Aspiration hazard data

Not an aspiration hazard.

Sensitisation

Skin sensitization data

Skin sensitisation has been reported in studies with guinea pigs. (OECD 406)

Evidence of contact sensitization in man.

Respiratory sensitization data

Not a respiratory sensitizer. Irritant to the respiratory system and high concentrations may

aggravate pre-existing conditions.

CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction).

Carcinogenicity data

No evidence of carcinogenicity. (OECD 451)

Germ cell mutagenicity data Reproductive toxicity data Salmonella typhimurium [TA1535, 1537, 97, 98, 100] negative (OECD 471) Teratogenic and fetotoxic effects only observed in presence of maternal toxicity.

NOAEC (mouse) = 9000 ppm NOAEC (rat) > 2028 ppm

Repeated exposure toxicity

Chronic exposure

Repeated exposure to high levels produces adverse effects on the heart, lungs, liver and kidneys. Repeated exposure of animals by inhalation to levels at or above the occupational exposure level produces adverse effects on the nasal epithelium (levels of 100 and 400ppm). There is no reason to believe that Methyl methacrylate represents a carcinogenic or mutagenic hazard to man based upon evidence from well conducted animal studies, relevant mutagenicity studies and adequate epidemiology studies in relevant cohorts. Recent studies in animals have shown that high exposures do not produce embryo or foetotoxic nor teratogenic effects in the presence of maternal

toxicity.

STOT - repeated exposure data

NOEL (oral) (rat) (104 weeks) > 2000 ppm

NOAEC (inhalation) (rat) (104 weeks) 100 ppm (OECD 453) NOAEC (inhalation) (mouse) (14 weeks) 1000 ppm (OECD 412)

Other information None.

# 12. SECTION 12: ECOLOGICAL INFORMATION

## 12.1 Toxicity

Low toxicity to fish.

LC50 (fish) (typically) >100 mg/l

LC50 (fathead minnow) (96 hour) (static) 130 mg/l

Harmful to aquatic invertebrates.

EC50 (Daphnia magna) (48 hour) 69 mg/l

Low toxicity to algae.

EC50 (Selenastrum capricornutum) (96 hour) 170 mg/l NOEC (zebra fish) (35 days) (flow through) 8.4 mg/l

The product is substantially removed in biological treatment processes.

## 12.2 Persistence and degradability

Readily biodegradable.

Chemical Oxygen Demand (COD): 88% (28 days)

Inherent Biodegradation:

Dissolved Organic Carbon Removal (DOC removal): >95% (28 days)

## 12.3 Bioaccumulative potential

The product has low potential for bioaccumulation.

## 12.4 Mobility in soil

The product is predicted to have high mobility in soil.

#### 12.5 Results of PBT and vPvB assessment

Not classified as PBT or vPvB.

#### 12.6 Other adverse effects

Not subject to international restrictions.

# 13. SECTION 13: DISPOSAL CONSIDERATIONS

Avoid release to the environment. Decontaminate empty drums before recycling.

#### 13.1 Waste treatment methods

Dispose of contents/container to hazardous waste in accordance with local, state or national legislation. Incinerate under approved controlled conditions, using incinerator suitable for disposal of flammable organics.

## 14. SECTION 14: TRANSPORT INFORMATION

#### 14.1 UN number

1247

#### 14.2 UN proper shipping name

METHYL METHACRYLATE MONOMER, STABILIZED

## 14.3 Transport hazard class(es)

Class 3
ADR Classification Code F1
ADR HIN 339
ADR Transport Category 2
Tunnel Restriction Code D/E
UK CDG Road: Emergency 3YE

Action Code

# 14.4 Packing Group

П

# 14.5 Environmental hazards

Marine Pollutant Not classified as a Marine Pollutant.

#### 14.6 Special precautions for user

None

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

Not applicable.

# 15. SECTION 15: REGULATORY INFORMATION

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

Safety, health and environmental regulations

Regulation (EC) No 1272/2008 (Classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and

1999/45/EC, and amending Regulation (EC) No 1907/2006).

Directive 2009/161/EU (third list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC and amending Commission Directive 2000/39/EC).

## 15.2 Chemical Safety Assessment

A Chemical Safety Assessment has been carried out for this substance/mixture.

# 16. SECTION 16: OTHER INFORMATION

This Safety Data Sheet was prepared in accordance with EC Regulation (EC) No. 453/2010.

Date of preparation: 1 -December- 2010

The following sections contain revisions or new statements: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16

Import to the EU is regulated under REACH. Confirmation from Lucite International UK Ltd acting as Only Representative and registrant is required to confirm that the volume of material imported has been confirmed as within the Only Representative supply chain.

Label elements in accordance with 1999/45/EC





Risk Phrases



R11: Highly flammable.

R37/38: Irritating to respiratory system and skin. R43: May cause sensitization by skin contact.

Safety Phrases S24: Avoid contact with skin.

S37: Wear suitable gloves.

S46: If swallowed, seek medical advice immediately and show this container or label.

Inventory Status

European Union (EINECS/ELINCS) Listed in EINECS United States (TSCA) Listed in TSCA Canada (DSL/NDSL) Listed in DSL Japan (ENCS) Listed in ENCS Philippines (PICCS) Listed in PICCS Australia (AICS) Listed in AICS South Korea (KECI) Listed in KECI China (IECSC) Listed in IECSC

## **LEGEND**

Note: Not all of the following are necessarily contained in this Safety Data Sheet:

IOELV: Indicative Occupational Exposure Limit Value WEL: Workplace Exposure Limit (UK HSE EH40) Bmgv: Biological Monitoring Guidance Value Sen: Capable of causing respiratory sensitisation

Sk: Can be absorbed through skin

Carc: Capable of causing cancer and/or heritable genetic damage

CHAN: Chemical Hazard Alert Notice

COM: The company aims to control exposure in its workplace to this limit

LTEL: Long Term Exposure Limit STEL: Short Term Exposure Limit TWA: Time Weighted Average

STOT SE: Specific Target Organ Toxicity - Single Exposure

Repr.: Reproductive toxicity

Aquatic acute/chronic: Hazardous to the aquatic environment

References REACH Registration Chemical Safety Report 30 June 2010

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Full text of R/H/P phrases

H225: Highly flammable liquid and vapour.

H315: Causes skin irritation.

H335: May cause respiratory irritation. H317: May cause an allergic skin reaction.

P210: Keep away from heat, sparks, open flame, hot surfaces - No smoking

P233: Keep container tightly closed.

P240: Ground/bond container and receiving equipment.

P241: Use explosion-proof electrical/ventilating/lighting/.../ equipment.

P242: Use only non-sparking tools.

P243: Take precautionary measures against static discharge.

P261: Avoid breathing vapours.

P264: Wash (hands and exposed skin) thoroughly after handling.

P271: Use only outdoors or in a well-ventilated area.

P272: Contaminated work clothing should not be allowed out of the workplace.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

P302 + P352: IF ON SKIN: Wash with plenty of soap and water.

P303 + P361 + P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P304 + P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P312: Call a POISON CENTRE or doctor if you feel unwell.

P321: Specific treatment (see on this label).

P332 + P313: If skin irritation occurs: Get medical advice/attention.

P333 + P313: If skin irritation or rash occurs: Get medical advice/attention.

P362: Take off contaminated clothing and wash before reuse.

P363: Wash contaminated clothing before reuse.

P403 + P233: Store in a well-ventilated place. Keep container tightly closed.

P403 + P235: Store in a well-ventilated place. Keep cool.

P405: Store locked up.

P501: Dispose of contents/container to hazardous waste in accordance with local, state or national legislation. Incinerate under approved controlled conditions, using incinerator suitable for disposal of flammable organics.

R11: Highly flammable.

R37/38: Irritating to respiratory system and skin.

R43: May cause sensitization by skin contact.

Methacrylate monomers are used safely in a wide variety of applications including some areas of personal hygiene. We are aware of some reports suggesting that use of methacrylate monomers in fingernail extension applications may result in loosening or shedding of the nails of the user as well as respiratory or other effects in those exposed to high levels of the vapors. Lucite International has performed no technical or clinical testing and has no data to support the use of methacrylate monomers in this application. Under no circumstances should methacrylate monomers be used in this or similar applications.

MEDICAL USE: CAUTION: DO NOT USE IN MEDICAL APPLICATIONS INVOLVING IMPLANTATION IN THE HUMAN BODY. Lucite International has performed no clinical testing on the use of this product in any medical application. Lucite International has no data to support the use of this product in any medical application. This product was not designed or manufactured for use in implantation in the human body or in contact with internal body fluids or tissues. Lucite International has neither sought, nor received, approval from any regulatory agency for the use of this product in implantation in the human body or in contact with internal body fluids or tissues.

For further information on the properties and uses, or storage and handling, of Methyl Methacrylate refer to Product data sheet; Methyl Methacrylate (TS/C/2108/4), or the Methacrylate Esters Safe Handling Manual.

It is the responsibility of the end-product manufacturer to identify all market and use-specific regulations and to ensure compliance with these regulations.

Information contained in this publication or as otherwise supplied to Users is believed to be accurate and is given in good faith, but it is for the Users to satisfy themselves of the suitability of the product for their own particular purpose. Lucite International gives no warranty as to the fitness of the product for any particular purpose and any implied warranty or condition (statutory or otherwise) is excluded except to the extent that exclusion is prevented by law. Lucite International accepts no liability for loss or damage (other than that arising from death or personal injury caused by defective product, if proved), resulting from reliance on this information. Freedom under Patents, Copyright and Designs cannot be assumed.

## **Annex: Exposure Scenarios**

- GES1 Use in closed systems with low risk of exposure
- **GES2** No identified scenarios
- **GES3** No identified scenarios
- GES4 Industrial and Professional use in systems with engineered ventilation and low risk of exposure
- GES5 Industrial or professional use with engineered ventilation where opportunity for exposure requires use of gloves
- GES6 Industrial or professional use with engineered ventilation where opportunity for exposure requires use of gloves and respiratory protection
- GES7 Industrial and Professional use outdoors with low risk of exposure
- GES8 Industrial or professional use outdoors where opportunity for exposure requires use of gloves
- GES9 Industrial or professional use outdoors where opportunity for exposure requires use of gloves and respiratory protection
- GES10 Industrial and Professional use indoors with low risk of exposure
- GES11 Industrial or professional use indoors where opportunity for exposure requires use of gloves
- GES12 Industrial or professional use indoors where opportunity for exposure requires use of gloves and respiratory protection
- **GES13** Consumer

#### **Abbreviations**

IU1: Manufacture and use as intermediate; IU2: Use in production of formulations; IU3: Industrial end use as monomer, intermediate or formulation; IU4: Professional end use in formulations; IU5: Consumer end use in formulations; IU6: Service life in articles

SU3: Industrial Manufacturing (all); SU2a: Mining, (without offshore industries); SU2b: Offshore industries; SU6a: Manufacture of wood and wood products; SU6b: Manufacture of pulp, paper and paper products; SU8: Manufacture of bulk, large scale chemicals (including petroleum products); SU9: Manufacture of fine chemicals; SU10: Chemical formulation and packaging; SU12: Manufacture of plastic products, including compounding and conversion; SU13: Manufacture of other non-metallic mineral products; SU14: Manufacture of basic metals; SU15: Manufacture of fabricated metal products, except machinery and equipment; SU16: Manufacture of computer, electronic and optical products, electrical equipment; SU17: General manufacturing; SU19: Building and construction work; SU20: Health services; SU23: Recycling.

PROC1: Use in closed process, no likelihood of exposure; PROC2: Use in closed, continuous process with occasional controlled exposure; PROC3: Use in closed batch process (synthesis or formulation); PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises; PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact); PROC6: Calendaring operations; PROC7: Industrial spraying; PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities; PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities; PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC10: Roller application or brushing; PROC11: Non industrial spraying; PROC12: Use of blow agents in manufacture of foam; PROC13: Treatment of articles by dipping and pouring; PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation; PROC15: Use as laboratory reagent; PROC17: Lubrication at high energy conditions and in partly open process; PROC18: Greasing at high energy conditions; PROC19: Handmixing with intimate contact and only PPE available; PROC21: Low energy manipulation of substances bound in form of massive metal or bound in other materials and/or articles; PROC22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting; PROC23: Open processing and transfer operations with minerals/metals at elevated temperature; PROC24: High (mechanical) energy workup of massive metal or substances bound in materials and/or articles

PC1: Adhesives, sealants; PC2: Adsorbents; PC3: Air care products; PC7: Base metals and alloys; PC8: Biocidal Products (e.g. Disinfectants, pest control); PC9a: Coatings and paints, thinners, paint removers; PC9b: Fillers and putty; PC9c: Finger paints; PC14: Metal surface treatment products, including galvanic and electroplating products; PC15: Non-metal-surface treatment products; PC18: Ink and Toners; PC19: Intermediate; PC20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents, other unspecific uses; PC21: Laboratory Chemicals; PC23: Leather tanning, dye, finishing, impregnation and care products; PC24: Lubricants, Greases and Release products; PC26: Paper and Board dye, finishing and impregnation products: including bleaches and other processing aids; PC31: Polishes and Wax Blends; PC32: Polymer Preparations and Compounds; PC33: Semiconductor; PC34: Textile dyes, finishing and impregnating products: including bleaches and other processing aids; PC35: Washing and Cleaning Products (including solvent based products); PC37: Water treatment chemicals: PC39: Cosmetics, personal care

AC1-1: Passenger cars and motor cycles; AC1-2: Other vehicles: Railway, aircraft, vessels, boats, trucks, and associated transport equipment; AC2: Machinery, mechanical appliances, electrical/electronic articles; AC3: Electrical batteries and accumulators; AC4: Stone, plaster, cement, glass and ceramic articles; AC5-1: Fabrics, textiles and apparel: bedding and clothing; AC5-2: Fabrics, textiles and apparel: curtains, upholstery, carpeting/flooring, rugs; AC6: Leather products: apparel and upholstery; AC7: Metal articles; AC8-1: Paper products: tissue, towels, disposable dinnerware, nappies, feminine hygiene products, adult incontinence products, writing paper; AC10-2: Rubber products: flooring; AC10-5: Other general rubber products; AC11: Wood articles; AC13-1: Commercial and consumer plastic products like disposable dinner ware, food storage, food packaging, baby bottles; AC13-2: Plastic products: Flooring; AC13-3: Plastic products: Toys; AC13\*: Plastic, small articles.

ERC1: Manufacture of substances; ERC2: Formulation of preparations; ERC3: Formulation in materials; ERC4: Industrial use of processing aids in processes and products, not becoming part of articles; ERC5: Industrial use resulting in inclusion into or onto a matrix; ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates); ERC6b: Industrial use of reactive processing aids; ERC6c: Industrial use of monomers for polymerisation; ERC6d: Industrial use of auxiliaries for polymerisation processes in production of resins, rubbers, polymers; ERC7: Industrial use of substances in closed systems; ERC8d: Wide dispersive outdoor use of processing aids in open systems; ERC8e: Wide dispersive outdoor use of reactive substances in open systems; ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix; ERC10a: Wide dispersive outdoor use of long-life articles and materials with low release

				GES1	
1	Short title				
	Use in closed syste				
2	Description of act				
	Industrial or profess	sional activities invo	olving the hai	ndling of prepar	ations containing monomers. IU1, IU2, IU3, IU4. SU14, SU15, SU16, SU17, SU19, SU23, SU20, SU22
	PROC1, PROC2, P		, 509, 5010	, 5012, 5013, 3	5014, 5015, 5016, 5017, 5019, 5023, 5020, 5022
			RC6a, FRC6	b FRC6c FRC	C6d, ERC7: ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f
3	Operational condi		roou, Erroo	,, <u> </u>	Joseph Erroda,
3.1	Duration and freque	ency of use			
	Duration				ndent upon concentration and activity, see section 4.3.
				Consumer: N/	
	Frequency of expos Emission days per			300 d/yr	Consumer: N/A
4	Other operational	conditions related	to physica		d boundary conditions
4.1	Physical form of pro			Liquid	a boundary conditions
	contained				
4.2	Concentration of su	bstance in prepara	tion or	≤ 100%	
	article				
4.3	Maximum used amo			Worker: N/A,	closed systems; Consumer: N/A.
	in preparation) per s Amount used per til			Me oneuro contr	ol of risk
	Industrial PROC: 1,	2 3. Professional	PROC: 2 3:	Concentration/I	Duration: 0-100% 0-24hrs
	Operational condition				material produced in contained systems.
	Annual amount use			≤ 260 kte/yr	, , , , , , , , , , , , , , , , , , ,
5	Other operational		nining expo	sure	
	Room size			N/A	
	Ventilation rate			N/A	
	Waste water treatm	ient			ould be checked to ensure they comply with the requirements of
6	Risk Management	Measures:		local environin	nental protection legislation.
6.1	Human health meas				
6.1.1	Occupational relate				
	Oral			Do not eat, dr	nk or smoke at the work place.
	Dermal				quired. If opportunity for skin contact with liquid monomer occurs
					outyl; EN 374) for splash protection when handling liquids and
					ood occupational hygiene practice. Change gloves, if contamination
	Inhalation			occurs. N/A – Contain	ed system
	Eyes			Eve protection	not required. If opportunity for contact with liquid monomer occurs
	,				eye protection, goggles.
6.1.2	Consumer related r			Not Applicable	
6.2	Environment related	d measures		_	
	Air				process control to ensure releases to air are within local permits.
	Water Soil				ollect spillages for incineration. se before landfill
7	Waste related mea	sures		r ully polyffleff	Se before failuill
	Avoid release to the				
			ycle where p	ossible or incin	erate under approved controlled conditions using a facility suitable for
					control authorities before discharging to waste water treatment
_	plants. Only dispose				A shares
<b>8</b> 8.1	Prediction of expo Human exposure es		m the cond	itions describe	d above
8.1.1			Characterisa	tion Ratio base	d on DNEL and exposure calculated by ECETOC-TRA.
0.1.1	Dermal	Concentration		/kg bw/day	RCR ≤ 0.10
	Inhalative	Concentration	≤ 25 ppm	3 ,	RCR ≤ 0.50
			Combined	<u> </u>	RCR ≤ 0.53
8.1.2	Consumer				
0.0	Not applicable	nouno octionati			
8.2 8.2.1	Environmental expo	Characterisation	Patio based	on DNEC and E	EC calculated by EUSUS local compartments.
0.2.1	Air	Concentration		mg/m <sup>3</sup>	RCR ≤ 1.5e-02
	Aquatic	Concentration	≤ 7.1e-02		RCR ≤ 9.2e-02
	Aquatic Sediment			mg/kg ww	RCR ≤ 9.2e-02
	Soil	Concentration		mg/kg ww	RCR ≤ 2.3e-02
9	Other information				
	Risk adequately con		uban bandii-	a liquido Cher	an alouge if duration of activity expends break through time
					ge gloves, if duration of activity exceeds break through time.  In the boundaries of the exposure scenario.
					r confirmation that you work inside to boundaries set by the GES
	(RCR<1 and PEC/F			200010	22
	+ -				

		GES4				
1	Short title					
	Industrial and Professional use in systems with er					
2	Description of activities/process(es) covered in	n the Exposure Scenario				
	Industrial or professional activities involving the handling of preparations containing monomers. IU1, IU2, IU3, IU4. SU3, SU2a, SU2b, SU6, SU8, SU9, SU10, SU12, SU13, SU14, SU15, SU16, SU17, SU19, SU20, SU23, SU22					
	PROC4, PROC8b, PROC9, PROC12, PROC14, PROC15					
		C6b, ERC6c, ERC6d, ERC7, ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f				
3	Operational conditions					
3.1	Duration and frequency of use					
	Duration	Worker: dependent upon concentration and activity, see section 4.3.				
	Frequency of exposure at workplace	Consumer: N/A. Daily				
	Emission days per site	300 d/yr				
4	Other operational conditions related to physica					
4.1	Physical form of product in which substance is	Liquid				
	contained					
4.2	Concentration of substance in preparation or article	≤ 100%				
4.3	Maximum used amount of substance (as such or	Industrial/Professional: <1000 kg/d; Consumer: N/A				
4.0	in preparation) per worker/workplace per day	See below for detail individual PROCs.				
	Amount used per time or per activity for which RM	IMs ensure control of risk				
	Industrial PROC: 4, 8b, 9, 12, 14, 15; Professional	I PROC: 4, 8b, 9, 12, 14, 15; Concentration/Duration: 0-100% / 0-8hrs.				
	Operational conditions related to environment	Processing and handling with engineering control, indoor and outdoor.				
-	Annual amount used per site	≤ 260 kte/yr				
5	Other operational conditions determining expo	osure N/A.				
	Ventilation rate	≥ 90% ECETOC default for industrial worker; ≥ 80% ECETOC default for				
		professional worker (for details see ECETOC default table).				
	Waste water treatment	Discharges should be checked to ensure they comply with the requirements of				
	Di Lu	local environmental protection legislation.				
<b>6</b> 6.1	Risk Management Measures: Human health measures					
6.1.1	Occupational related measures					
•	Oral	Do not eat, drink or smoke at the work place.				
	Dermal	Gloves not required. If opportunity for skin contact occurs wear gloves (butyl; EN				
		374) for splash protection when handling liquids and comply with good				
	lab defice	occupational hygiene practice. Change gloves, if contamination occurs.				
	Inhalation	Use local exhaust ventilation (LEV) or engineering equipment implying comparable efficiency.				
	Eyes	Eye protection not required. If opportunity for contact with liquid monomer occurs				
	_,;;	wear suitable eye protection, goggles.				
6.1.2	Consumer related measures	Not applicable				
6.2	Environment related measures					
	Air	Ensure proper process control to ensure releases to air are within local permits.				
	Water	Monitor and regularly maintain ventilation equipment to ensure performance.  Contain and collect spillages for incineration.				
	Soil	Fully polymerise before landfill				
7	Waste related measures					
	Avoid release to the environment.					
	Contain and collect any spillages. Recycle where possible or incinerate under approved controlled conditions using a facility suitable for					
	plants. Only dispose of polymerised material to lar	nsent of pollution control authorities before discharging to waste water treatment				
8	Prediction of exposure resulting from the cond					
8.1	Human exposure estimation					
8.1.1	Worker. Predicted exposure and Risk Characteris	ation Ratio based on DNEL and exposure calculated by ECETOC-TRA				
		g/kg bw/day RCR ≤ 0.41				
	Inhalative Concentration ≤ 20 mg/n					
8.1.2	Combined	d RCR ≤ 0.81				
J. 1.2	Not Applicable					
8.2	Environmental exposure estimation					
8.2.1		on PNEC and PEC calculated by EUSUS local compartments				
	Air Concentration ≤ 1.92	$mg/m^3$ RCR $\leq 1.5e-02$				
	Aquatic Concentration ≤ 7.1e-02					
		mg/kg ww RCR ≤ 9.2e-02				
9	Soil Concentration ≤ 1.49  Other information	mg/kg ww RCR ≤ 2.3e-02				
3	Risk adequately controlled.					
		ng liquids. If potential for contact with liquid is present refer to GES5.				
	Measured data could be used to confirm exposure	e levels are within the boundaries of the exposure scenario.				
		A and EUSUS for confirmation that you work inside to boundaries set by the GES				
	(RCR<1 and PEC/PNEC<1)					

2		sional use with and						
2			neered vent	ilation where or	portunity for exposure requires use of gloves			
_	Description of act							
	Description of activities/process(es) covered in the Exposure Scenario Industrial or professional activities involving the handling of preparations containing monomers: IU1, IU2, IU3, IU4. SU3, SU2a, SU2b, SU6a, SU6b, SU8, SU9, SU10, SU12, SU13, SU14, SU15, SU16, SU17, SU19,SU20, SU22, SU23. PROC5, PROC6, PROC7, PROC8a,PROC10, PROC11, PROC13, PROC17,PROC18, PROC19.							
					C6d, ERC7, ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f.			
3	Operational cond		toou, Lito	, E11000, E11	20a, 21(0), 21(00a, 20			
3.1	Duration and frequency of use							
	Duration	01103 01 400		Worker dene	ndent upon concentration and activity, see section 4.3.			
	Baration			Consumer: N				
	Frequency of expo	sure at workplace		Daily	71.			
	Emission days per			300 d/yr				
1			to physica		nd boundary conditions			
I.1		oduct in which subs		Liquid				
	contained			4.				
4.2		ubstance in prepara	tion or	≤ 100%				
	article							
4.3	Maximum used am	ount of substance (	as such or	Worker: <100	0 kg/d; Consumer: N/A.			
	in preparation) per				detail individual PROCs.			
	Amount used per ti			Ms ensure cont	ol of risk			
	Industrial PROC: 5	, 6, 7, 8a, 10, 13, 17	7, 18, 19; Pr	ofessional PRO	C: 5, 6, 8a, 10, 13, 17, 18, 19; Concentration/Duration:			
	0-100% / 0-8hrs.	, , -, -, -,	. , -, -, -					
	Professional PROC	: 11; Concentration	/Duration: 0	5% / 0-8hrs. 5	100% / 0-1hr.			
	Operational conditi			Processing a	nd handling with engineering control, indoor and outdoor.			
	Annual amount use			≤ 260 kte/yr				
5		conditions determ	nining expo					
	Room size		5	N/A.				
	Ventilation rate				OC default for industrial worker; ≥ 80% ECETOC default for			
				professional	vorker (for details see ECETOC default table).			
	Waste water treatn	nent			nould be checked to ensure they comply with the requirements of			
					nental protection legislation.			
<u> </u>	Risk Management	Measures:			- · · · · · · · · · · · · · · · · · · ·			
3.1	Human health mea							
3.1.1	Occupational relate							
	Oral			Do not eat, d	ink or smoke at the work place.			
	Dermal				(butyl; 0.7 mm; EN 374) for immersion protection when handling			
				imply with good occupational hygiene practice. Change gloves, if				
				contamination occurs or duration of activity exceeds break through time.				
	Inhalation			Use local exh	aust ventilation (LEV) or engineering equipment implying comparable			
				efficiency.				
	Eyes			Wear suitable eye protection, goggles, to protect against liquid splash.				
6.1.2	Consumer related	measures		N/A				
5.2	Environment relate	d measures						
	Air				r process control to ensure releases to air are within local permits.			
				Monitor and regularly maintain ventilation equipment to ensure performance.				
	Water			Contain and collect spillages for incineration.				
	Soil				ise before landfill			
7	Waste related mea	asures						
	Avoid release to the	e environment.						
	Contain and collect any spillages. Recycle where possible or incinerate under approved controlled conditions using a facility suitable for							
	the disposal of flammable organics. Obtain the consent of pollution control authorities before discharging to waste water treatment							
		e of polymerised m						
3		sure resulting fro	m the cond	itions describe	ed above			
3.1	Human exposure e							
3.1.1			Characterisa	ation Ratio base	d on DNEL and exposure calculated by ECETOC-TRA.			
	Dermal	Concentration		/kg bw/day	RCR ≤ 1.03 (see section 9)			
	Inhalative	Concentration	≤ 25 ppm	•	RCR ≤ 0.50 `			
			Combined	I	RCR ≤ 1.28 (see section 9)			
8.1.2	Consumer			<del></del>				
	Not applicable							
3.2	Environmental exp	osure estimation						
3.2.1			Ratio based	on PNEC and I	PEC calculated by EUSUS local compartments			
	Air	Concentration		mg/m <sup>3</sup>	RCR ≤ 1.5e-02			
	Aquatic	Concentration	≤ 7.1e-02		RCR ≤ 9.2e-02			
	Aquatic Sediment			mg/kg ww	RCR ≤ 9.2e-02			
	Soil	Concentration		mg/kg ww	RCR ≤ 2.3e-02			
9	Other information							
	Risk adequately co							
			on when ha	ndling liquids. C	hange gloves, if duration of activity exceeds break through time.			
					1, 19) is ensured and RCR(dermal) is assumed to be below 0.5. All			
					ed boundaries. Measured data could be used to confirm exposure			
	levels are within the				3,000,00			
					or confirmation that you work inside to boundaries set by the GES			

			GES6			
1	Short title					
		neered ventil	ation where opp	ortunity for exposure requires use of gloves and respiratory		
_	protection					
2	Description of activities/process(es) Industrial or professional activities invol	covered in	the Exposure S	ione containing monomore. ILIA		
	SU22	iving the han	diling of prepara	ions containing monomers. 104.		
	PROC11					
	ERC8c, ERC8f					
3	Operational conditions					
3.1	Duration and frequency of use					
	Duration		Worker: dependent upon concentration and activity, see section 4.3.			
	Francisco et avecano et martinos		Consumer: N/A			
	Frequency of exposure at workplace Emission days per site		Daily 300 d/yr			
4	Other operational conditions related	to physical		houndary conditions		
4.1	Physical form of product in which subst		Liquid	boundary conditions		
	contained		1			
4.2	Concentration of substance in preparat article	ion or	≤ 100%			
4.3	Maximum used amount of substance (a			g/d; Consumer: N/A.		
	in preparation) per worker/workplace pe			etail individual PROCs.		
	Amount used per time or per activity for		ls ensure contro	of risk		
	RMM: RPE protection factor 10 (see se Professional PROC: 11; Concentration		100% / 0 9bro			
	Operational conditions related to enviro			handling with engineering control, indoor and outdoor.		
	Annual amount used per site (relevance for		≤ 2.2 kte/yr	manamy with engineering control, indoor and outdoor.		
	regional scenario)		,			
5	Other operational conditions determ	ining expos	ure			
	Room size		N/A.			
	Ventilation rate		80% ECETOC	default for professional worker.		
	Waste water treatment			uld be checked to ensure they comply with the requirements of		
6	Risk Management Measures:		local environme	ental protection legislation.		
6.1	Human health measures					
6.1.1	Occupational related measures					
	Oral		Do not eat, drink or smoke at the work place.			
	Dermal			utyl; 0.7 mm; EN 374) for immersion protection when handling		
				ply with good occupational hygiene practice. Change gloves, if		
	lub alatia s		contamination of	occurs or duration of activity exceeds break through time.		
	Inhalation			ust ventilation (LEV) or engineering equipment implying comparable protection factor 10.		
	Eyes			ye protection, face shield or goggles, to protect against liquid		
	2,00		splash.	yo protoction, rado omora or goggioo, to protoct against inquita		
6.1.2	Consumer related measures		Not applicable			
6.2	Environment related measures					
	Air			process control to ensure releases to air are within local permits.		
	Motor		Monitor and regularly maintain ventilation equipment to ensure performance.  Contain and collect spillages for incineration.			
	Water Soil		Fully polymerise before landfill			
7	Waste related measures		r ully polyffieris	e before farium		
•	Avoid release to the environment.					
	Contain and collect any spillages. Recy	cle where po	ossible or incine	ate under approved controlled conditions using a facility suitable for		
	the disposal of flammable organics. Obtain the consent of pollution control authorities before discharging to waste water treatment					
•	plants. Only dispose of polymerised ma			al. a.u.		
8 0 1	Prediction of exposure resulting from Human exposure estimation	m the condi	ions described	above		
8.1 8.1.1		Characterisat	ion Ratio based	on DNEL and exposure calculated by ECETOC-TRA.		
J. 1. 1	Dermal Concentration	10.7 mg/k		RCR ≤ 0.78 (see section 9)		
	Inhalative Concentration	≤ 10 ppm	J,	RCR ≤ 0.20 `		
		Combined		RCR ≤ 0.98		
8.1.2	Consumer					
	Not applicable					
8.2	Environmental exposure estimation	N-41- 1 1	- DNEO : 5-	O selected by EUOHOLe		
8.2.1		Ratio based c ≤ 2.1e-04 m		C calculated by EUSUS local compartments  RCR ≤ 5.5e-06		
	Air Concentration Aquatic Concentration	≤ 2.1e-04 m ≤ 4.1e-14 m		RCR ≤ 5.5e-06 RCR ≤ 4.3e-14		
	Aquatic Sediment Concentration	≤ 7.9e-14 m		RCR ≤ 4.3e-14		
	Soil Concentration	≤ 1.3e-06 m		RCR ≤ 1.9e-09		
9	Other information					
-	Risk adequately controlled.					
				ange gloves, if duration of activity exceeds break through time.		
				is ensured and RCR(dermal) is assumed to be below 0.5. Ensure		
	duration of wearing respiratory protection			ents of legislation. the boundaries of the exposure scenario.		
				confirmation that you work inside to boundaries set by the GES		
	(RCR<1 and PEC/PNEC<1)			The state of the s		
	,					

	Short title		GES7				
1	Industrial and Professional use outdoors with low risk of exposure						
2	Description of activities/process(es) covered in the Exposure Scenario						
	Industrial or professional activities involving the handling of preparations containing monomers. IU1, IU2, IU3, IU4.						
	SU3, SU2a, SU2b, SU6a, SU6b, SU8, SU9, SU10, SU12, SU13, SU14, SU15, SU16, SU17, SU19, SU20, SU23.  PROC4, PROC8b, PROC9, PROC12, PROC14, PROC21, PROC22, PROC23, PROC24,						
	PC34, PC35, PC37, PC8, PC9a, PC9b, PC34, PC35, PC37, PC39.	PC90, PC	14, PC15, PC18	, PC19, PC21, PC20, PC23, PC24, PC26, PC31, PC32, PC33,			
		AC5-2 AC6	S AC7 AC8-1 A	AC10-2, AC10-5, AC11, AC13-1, AC13-2, AC13-3, AC13*			
				d, ERC7, ERC8d, ERC8e, ERC8f, ERC10a			
3	Operational conditions		,	, , ,			
3.1	Duration and frequency of use						
	Duration			ent upon concentration and activity, see section 4.3.			
	Frequency of exposure at workplace		Consumer: Not Daily	арріісаріе.			
	Emission days per site		300 d/yr				
4	Other operational conditions related to			boundary conditions			
1.1	Physical form of product in which substan		Liquid				
	contained			er preparations with limited monomer volumes (see 4.3)			
1.2	Concentration of substance in preparation		≤ 100% containe				
1.0	article			onomer in polymer component sional: <1000kg/d			
1.3	Maximum used amount of substance (as in preparation) per worker/workplace per of			sionai: <1000kg/d etail individual PROCs, PCs.			
	Amount used per time or per activity for w						
	Industrial PROC: 4, 12; Concentration/Du	ration: 0-10	00% / 0-8hrs.				
				n/Duration: 0-25% / 0-8hrs, 25-100% / 0-4hrs.			
	Professional PROC:12, 14; Concentration						
	Professional PROC: 9; Concentration/Dur						
	No ECETOC model for volatiles available Professional PROC: 21, 23, 24; Concentration			ymer demonstrated as save use. Industrial PROC: 21, 22, 23, 24;			
	Operational conditions related to environm			ing and handling.			
	Annual amount used per site		≤ 260 kte/yr	ing and nanding.			
5	Other operational conditions determini						
	Room size		N/A – Outdoor s	cenario.			
	Ventilation rate		70% ECETOC default for outdoor worker.				
	Waste water treatment			ald be checked to ensure they comply with the requirements of			
•	Risk Management Measures:		iocai environmer	ntal protection legislation.			
<b>6</b> 3.1	Human health measures						
3.1.1	Occupational related measures						
	Oral		Do not eat, drink	or smoke at the work place.			
	Dermal			red. If opportunity for skin contact with liquid monomer occurs			
				yl; EN 374) for splash protection when handling liquids and			
			comply with good occupational hygiene practice. Change gloves, if contamination occurs.  Use outdoor.				
	Inhalation						
	Eyes		Eye protection not required. If opportunity for contact with liquid monomer occurs wear suitable eye protection, goggles.				
	•	,					
3.1.2	Consumer related measures		Not applicable				
5.2	Environment related measures						
	Air Water		Not required	not apillages for inciparation			
	Soil		Contain and collect spillages for incineration.  Fully polymerise before landfill				
7	Waste related measures		Tully polymense before familia				
	Avoid release to the environment.						
	Contain and collect any spillages. Recycle where possible or incinerate under approved controlled conditions using a facility suitable for						
				ontrol authorities before discharging to waste water treatment			
	plants. Only dispose of polymerised mate			-b			
<b>3</b> 3.1	Prediction of exposure resulting from to Human exposure estimation	ne conaiti	ons described	above			
3.1.1		aracterisatio	on Ratio hased o	on DNEL and exposure calculated by ECETOC-TRA			
		6.86 mg/kg		RCR ≤ 0.50			
	Dermal Concentration ≤	25 ppm	,	RCR ≤ 0.50			
	Inhalative Concentration ≤			RCR ≤ 0.92			
	Inhalative Concentration ≤ C	ombined					
3.1.2	Inhalative Concentration ≤ Consumer						
	Inhalative Concentration ≤ Consumer Not applicable						
3.2	Inhalative Concentration ≤ Consumer Not applicable Environmental exposure estimation	combined	DNEC and DEC	Coolculated by EUCLIC local compartments			
3.2	Inhalative Concentration ≤ Consumer Not applicable Environmental exposure estimation Environmental. Risk Characterisation Rat	combined io based or		C calculated by EUSUS local compartments			
3.2	Inhalative Concentration ≤ Consumer Not applicable Environmental exposure estimation Environmental. Risk Characterisation Rat Air Concentration ≤	io based or	g/m³	RCR ≤ 1.5e-02			
3.2	Inhalative Concentration ≤ Consumer Not applicable Environmental exposure estimation Environmental. Risk Characterisation Rat Air Concentration ≤ Aquatic Concentration ≤	io based or 1.92 mg 7.1e-02 mg	g/m³ g/ml				
3.2	Inhalative Concentration ≤ C  Consumer  Not applicable  Environmental exposure estimation  Environmental. Risk Characterisation Rati  Air Concentration ≤ Aquatic Concentration ≤ Aquatic Sediment Concentration ≤ Soil Concentration ≤	io based or 1.92 mg 7.1e-02 mg 1.7e-01 mg	g/m³ g/ml	RCR ≤ 1.5e-02 RCR ≤ 9.2e-02			
3.2 3.2.1	Inhalative Concentration ≤ Consumer  Not applicable Environmental exposure estimation Environmental. Risk Characterisation Rati Air Concentration ≤ Aquatic Concentration ≤ Aquatic Sediment Concentration ≤ Soil Concentration ≤ Other information	io based or 1.92 mg 7.1e-02 mg 1.7e-01 mg	g/m³ g/ml g/kg ww	RCR ≤ 1.5e-02 RCR ≤ 9.2e-02 RCR ≤ 9.2e-02			
3.2 3.2.1	Inhalative Concentration ≤ Consumer  Not applicable Environmental exposure estimation Environmental. Risk Characterisation Rati Air Concentration ≤ Aquatic Concentration ≤ Aquatic Sediment Concentration ≤ Soil Concentration ≤ Other information Risk adequately controlled.	io based or 1.92 mg 7.1e-02 mg 1.7e-01 mg 1.49 mg	g/m³ g/ml g/kg ww g/kg ww	RCR ≤ 1.5e-02 RCR ≤ 9.2e-02 RCR ≤ 9.2e-02 RCR ≤ 2.3e-02			
3.2 3.2.1	Inhalative Concentration ≤ Consumer Not applicable Environmental exposure estimation Environmental. Risk Characterisation Rate Air Concentration ≤ Aquatic Sediment Concentration ≤ Soil Concentration ≤ Other information Risk adequately controlled. Gloves required for splash protection whee	io based or 1.92 mg 7.1e-02 mg 1.7e-01 mg 1.49 mg	g/m³ g/ml g/kg ww g/kg ww liquids. If potent	RCR ≤ 1.5e-02 RCR ≤ 9.2e-02 RCR ≤ 9.2e-02 RCR ≤ 2.3e-02  ial for contact with liquid is present refer to GES8.			
3.2 3.2.1	Inhalative Concentration ≤ Consumer Not applicable Environmental exposure estimation Environmental. Risk Characterisation Rate Air Concentration ≤ Aquatic Sediment Concentration ≤ Soil Concentration ≤ Other information Risk adequately controlled. Gloves required for splash protection whee Measured data could be used to confirm the consumer of the	io based or 1.92 mg 7.1e-02 mg 1.7e-01 mg 1.49 mg en handling	g/m³ g/ml g/kg ww g/kg ww liquids. If potent evels are within the	RCR ≤ 1.5e-02 RCR ≤ 9.2e-02 RCR ≤ 9.2e-02 RCR ≤ 2.3e-02  aial for contact with liquid is present refer to GES8. the boundaries of the exposure scenario.			
8.1.2 8.2 8.2.1	Inhalative Concentration ≤ Consumer Not applicable Environmental exposure estimation Environmental. Risk Characterisation Rate Air Concentration ≤ Aquatic Concentration ≤ Aquatic Sediment Concentration ≤ Soil Concentration ≤ Other information Risk adequately controlled. Gloves required for splash protection whee Measured data could be used to confirm 6 PCs and PROCS (polymer applications) 6	io based or 1.92 mg 7.1e-02 mg 1.7e-01 mg 1.49 mg en handling exposure leevaluated a	g/m³ g/ml g/kg ww g/kg ww liquids. If potent evels are within the s safe for up to 5	RCR ≤ 1.5e-02 RCR ≤ 9.2e-02 RCR ≤ 9.2e-02 RCR ≤ 2.3e-02  ial for contact with liquid is present refer to GES8.			

		GES8				
1	Short title					
	Industrial or professional use outdoors where opp					
2	Description of activities/process(es) covered i					
	Industrial or professional activities involving the h	andling of preparations	containing monomers. IU1, IU2, IU3, IU4.			
	SU3, SU2a, SU2b, SU6a, SU6b, SU8, SU9, SU1 PROC5, PROC6, PROC7, PROC8a, PROC10, P					
	ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC					
3	Operational conditions	ob, ENCOC, ENCOU, E	NO7, LINGOU, LINGOE, LINGOI.			
3.1	Duration and frequency of use					
	Duration	Worker: dependent	upon concentration and activity, see section 4.3.			
		Consumer: N/A.	•			
	Frequency of exposure at workplace	Daily				
	Emission days per site	300 d/yr				
4.1	Other operational conditions related to physical Physical form of product in which substance is	al properties and bou Liquid	ndary conditions			
4.2	contained Concentration of substance in preparation or	≤ 100%				
	article					
4.3	Maximum used amount of substance (as such or	Worker: <1000kg/d				
	in preparation) per worker/workplace per day	Consumer: N/A.	individual PDOCs			
	Amount used per time or per activity for which PA	See below for detail				
	Amount used per time or per activity for which RN Industrial PROC: 5, 6, 8a, 10, 13, 17, 18, 19; Con					
	Professional PROC: 5, 6, 8a, 10, 13, 17, 18, 19, Concent					
	Professional PROC: 11; Concentration/Duration:					
	Industrial PROC: 7; Professional PROC: 17. 18: 0	Concentration/Duration:	0-1% / 0-8hrs, 1-5% / 0-4hrs, 5-25% / 0-1hr, 25-100% / 0-			
	15min.					
	Operational conditions related to environment	Outdoor processing	and handling.			
	Annual amount used per site	≤ 260 kte/yr				
5	Other operational conditions determining exp					
	Room size	N/A – Outdoor scena				
	Ventilation rate		ult for outdoor worker.			
	Waste water treatment		be checked to ensure they comply with the requirements of protection legislation.			
6	Risk Management Measures:	local environmental	protection registation.			
6.1	Human health measures					
6.1.1	Occupational related measures					
	Oral	Do not eat, drink or	smoke at the work place.			
	Dermal	Wear gloves (butyl;	0.7 mm; EN 374) for immersion protection when handling			
		liquids and comply v	vith good occupational hygiene practice. Change gloves, if			
			contamination occurs or duration of activity exceeds break through time.			
	Inhalation	Use outdoor.				
6.1.2	Eyes	N/A – Industrial / Pro	rotection, goggles, to protect against liquid splash.			
6.2	Consumer related measures Environment related measures	N/A – muusmai / Pro	Diessional Scenario.			
0.2	Air	Not required				
	Water		spillages for incineration.			
	Soil	Fully polymerise bef				
7	Waste related measures	· · · · · ·   p · · · · · · · · · · ·				
	Avoid release to the environment.					
	Contain and collect any spillages. Recycle where possible or incinerate under approved controlled conditions using a facility suitable for					
			ol authorities before discharging to waste water treatment			
	plants. Only dispose of polymerised material to la					
8	Prediction of exposure resulting from the con-	attions described abo	ve			
8.1 8.1.1	Human exposure estimation  Worker. Predicted exposure and Risk Characteris	ation Ratio based on D	NEL and exposure calculated by ECETOC-TRA			
J. 1. 1			CR ≤ 1.03 (see section 9)			
	Inhalative Concentration ≤ 25 ppm		CR ≤ 0.50			
	Combine	d RO	CR ≤ 1.54 (see section 9)			
8.1.2	Consumer					
	N/A					
8.2	Environmental exposure estimation					
8.2.1	Environmental. Risk Characterisation Ratio based					
	Air Concentration ≤ 1.92		CR ≤ 1.5e-02			
	Aquatic Concentration ≤ 7.1e-02 Aquatic Sediment Concentration ≤ 1.7e-01		CR ≤ 9.2e-02 CR ≤ 9.2e-02			
	Soil Concentration ≤ 1.7e-01		CR ≤ 2.3e-02			
9	Other information	ing/ing www inc	DIX = 2.00 02			
	Risk adequately controlled.					
		indling liquids. Change	gloves, if duration of activity exceeds break through time.			
	Then safe handling of high exposure dermal appl	cations (PROC11, 19)	is ensured and RCR(dermal) is assumed to be below 0.5. All			
	other PROCs indicate a dermal RCR below 0.5 w	thin the assessed bour	ndaries. Measured data could be used to confirm exposure			
	levels are within the boundaries of the exposure s	cenario.				
		A and EUSUS for confi	irmation that you work inside to boundaries set by the GES			
	(RCR<1 and PEC/PNEC<1)					

	- Object City	GES9					
1	Short title Industrial or professional use outdoors where opportunity	ortunity for exposure requires use of gloves and respiratory protection					
2	Description of activities/process(es) covered in						
	Industrial or professional activities involving the ha	Industrial or professional activities involving the handling of preparations containing monomers. IU1, IU2, IU3, IU4.					
	SU3, SU2a, SU2b, SU6a, SU6b, SU8, SU9, SU10, SU12, SU13, SU14, SU15, SU16, SU17, SU19, SU20, SU22, SU23.  PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC12, PROC13, PROC14, PROC17,						
	PROC18, PROC19.	5C6B, FROC9, FROC10, FROC11, FROC12, FROC13, FROC14, FROC17,					
	ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6	6b, ERC6c, ERC6d, ERC7, ERC8d, ERC8e, ERC8f					
3	Operational conditions						
3.1	Duration and frequency of use  Duration	Worker: dependent upon concentration and activity, see section 4.3.					
	Duration	Consumer: N/A.					
	Frequency of exposure at workplace	Daily					
_	Emission days per site	300 d/yr					
4.1	Other operational conditions related to physical Physical form of product in which substance is	Liquid Conditions					
4.2	contained Concentration of substance in preparation or	≤ 100%					
7.2	article	2 100 /0					
4.3	Maximum used amount of substance (as such or	Worker: <1000kg/d					
	in preparation) per worker/workplace per day	Consumer: N/A.					
	Amount used per time or per activity for which RMI	See below for detail individual PROCs.  Ms ensure control of risk					
	RMM: RPE protection factor 10 (see section 9).	NO CHOCK CONTROL OF TICK					
	Industrial PROC: 5, 6, 7, 8a, 8b, 9, 10, 13, 14, 17,	18, 19; Professional PROC: 4, 5, 6, 8a, 8b, 9, 10, 12, 13, 14, 17, 18, 19;					
	Concentration/Duration: 0-100% / 0-8hrs.						
	RMM: RPE protection factor 10 (see section 9). Professional PROC: 11; Concentration/Duration: 0	-25% / 0-8hrs. 25-100% / 0-4hrs.					
	RMM: RPE protection factor 20 (see section 9).						
	Above scenarios plus: Professional PROC: 11; Co						
	Operational conditions related to environment  Annual amount used per site	Outdoor processing and handling. ≤ 260 kte/yr					
5	Other operational conditions determining expo						
	Room size	N/A – Outdoor scenario.					
	Ventilation rate	70% ECETOC default for outdoor worker.					
	Waste water treatment	Discharges should be checked to ensure they comply with the requirements of local environmental protection legislation.					
6	Risk Management Measures:	local environmental protection registation.					
6.1	Human health measures						
6.1.1	Occupational related measures Oral	De not out divint on analys of the county place					
	Dermal	Do not eat, drink or smoke at the work place.  Wear gloves (butyl; 0.7 mm; EN 374) for immersion protection when handling					
		liquids and comply with good occupational hygiene practice. Change gloves, if					
		contamination occurs or duration of activity exceeds break through time.					
	Inhalation Eyes	Use outdoor. RPE protection factor 20 or 10 dependent upon PROC and duration.  Wear suitable eye protection, face shield or goggles, to protect against liquid					
	Lycs	splash.					
6.1.2	Consumer related measures	N/A					
6.2	Environment related measures	Not required					
	Air Water	Not required  Contain and collect spillages for incineration.					
	Soil	Fully polymerise before landfill					
7	Waste related measures						
	Avoid release to the environment.	possible or incinerate under approved controlled conditions using a facility suitable for					
		nsent of pollution control authorities before discharging to waste water treatment					
	plants. Only dispose of polymerised material to lan	dfill.					
8	Prediction of exposure resulting from the cond	itions described above					
8.1 8.1.1	Human exposure estimation  Worker Predicted exposure and Risk Characterisa	ation Ratio based on DNEL and exposure calculated by ECETOC-TRA.					
0		/kg bw/day RCR ≤ 1.03 (see section 9)					
	Inhalative Concentration ≤ 21 ppm	RCR ≤ 0.42					
8.1.2	Combined Consumer	RCR ≤ 1.20 (see section 9)					
0.1.2	N/A – Industrial / Professional Scenario.						
8.2	Environmental exposure estimation						
8.2.1		on PNEC and PEC calculated by EUSUS local compartments					
		$mg/m^3$ RCR ≤ 1.5e-02 mg/ml RCR ≤ 9.2e-02					
	Aquatic Concentration ≤ 7.1e-02 Aquatic Sediment Concentration ≤ 1.7e-01						
	· ·	mg/kg ww RCR ≤ 2.3e-02					
9	Other information						
	Risk adequately controlled.	ndling liquids. Change gloves, if duration of activity exceeds break through time.					
		cations (PROC11, 19) is ensured and RCR(dermal) is assumed to be below 0.5. All					
	other PROCs indicate a dermal RCR below 0.5 wit	thin the assessed boundaries. Ensure duration of wearing respiratory protection					
		ared data could be used to confirm exposure levels are within the boundaries of the					
	exposure scenario. Use the exposure assessment set by the GES (RCR<1 and PEC/PNEC<1)	tools ECETOC-TRA and EUSUS for confirmation that you work inside to boundaries					
	1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1						

	Short title	GES10					
	Industrial and Professional use indoors with low risk of exposure						
	Description of activities/process(es) cover	Description of activities/process(es) covered in the Exposure Scenario					
			ations containing monomers. IU1, IU2, IU3, IU4				
	SU3, SU2a, SU2b, SU6a, SU6b, SU8, SU9, SU10, SU12, SU13, SU14, SU15, SU16, SU17, SU19, SU20, SU23						
	PROC4, PROC8b, PROC9, PROC12, PROC14, PROC15, PROC21, PROC22, PROC23, PROC24.  PC1, PC2, PC3, PC7, PC8, PC9a, PC9b, PC9c, PC14, PC15, PC18, PC19, PC21, PC20, PC23, PC24, PC26, PC31, PC32, PC33,						
		<sup>2</sup> C9c, PC14, PC15, PC	C18, PC19, PC21, PC20, PC23, PC24, PC26, PC31, PC32, PC33,				
	PC34, PC35, PC37, PC39	CE 2 ACE AC7 AC9	1, AC10-2, AC10-5, AC11, AC13-1, AC13-2, AC13-, AC13*:				
			1, AC10-2, AC10-3, AC11, AC13-1, AC13-2, AC13-, AC13 6d, ERC7, ERC8a, ERC8b, ERC8c, ERC11a				
	Operational conditions	, ENGOD, ENGOG, ENG	ou, ERCI, ERCOS, ERCOS, ERCOTA				
.1	Duration and frequency of use						
	Duration	Worker: deper	ident upon concentration and activity, see section 4.3.				
		Consumer: No					
	Frequency of exposure at workplace	Daily					
	Emission days per site	300 d/yr					
	Other operational conditions related to p		d boundary conditions				
.1	Physical form of product in which substance		(' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '				
2	contained		mer preparations with limited monomer volumes (see 4.3)				
.2	Concentration of substance in preparation o article		nea IIquia monomer in polymer component				
.3	Maximum used amount of substance (as su		essional: <1000kg/d				
.0	in preparation) per worker/workplace per da		detail individual PROCs, PCs.				
	Amount used per time or per activity for which						
	Industrial PROC: 4, 12, 15; Professional PR						
	Industrial PROC: 8b, 9, 14; Professional PF	ROC: 4, 8b; Concentrat	ion/Duration: 0-5% / 0-8hrs, 5-25% / 0-4hrs, 25-100% / 0-1hr.				
	Professional PROC: 9, 12, 14; Concentratio						
			polymer demonstrated as save use. Industrial PROC: 21, 22, 23, 24				
	Professional PROC: 21, 23, 24; Concentration						
	Operational conditions related to environme		sing and handling.				
	Annual amount used per site	≤ 260 kte/yr					
	Other operational conditions determining						
	Room size Ventilation rate	> 20 m³ (ECET	ation of workplaces. 5 - 15 air changes per hour recommended for				
	ventilation rate		general application.				
	Waste water treatment	ould be checked to ensure they comply with the requirements of					
	local environmental protection legislation.						
	Risk Management Measures:						
.1	Human health measures						
.1.1	Occupational related measures						
	Oral		Do not eat, drink or smoke at the work place.				
	Dermal		uired. If opportunity for skin contact with liquid monomer occurs				
			wear gloves (butyl; EN 374) for splash protection when handling liquids and comply with good occupational hygiene practice. Change gloves, if contamination occurs.				
		. , .					
	Inhalation		Use indoor.  Eye protection not required. If opportunity for contact with liquid monomer occurs				
	Eyes						
			wear suitable eye protection, goggles.				
.1.2	Consumer related measures	Not applicable					
.2	Environment related measures						
	Air	Not required					
	Water		Contain and collect spillages for incineration.				
	Soil	Fully polymeris	Fully polymerise before landfill				
	Waste related measures						
	Avoid release to the environment.  Contain and collect any spillages. Recycle where possible or incinerate under approved controlled conditions using a facility suitable for						
	Contain and collect any spillages. Recycle where possible or incinerate under approved controlled conditions using a facility suitable for the disposal of flammable organics. Obtain the consent of pollution control authorities before discharging to waste water treatment						
	plants. Only dispose of polymerised materia		Some of determined policies disorial ging to waste water treatment				
	Prediction of exposure resulting from the		d above				
.1	Human exposure estimation						
.1.1		cterisation Ratio based	on DNEL and exposure calculated by ECETOC-TRA				
	Dermal Concentration ≤ 6.	86 mg/kg bw/day	RCR ≤ 0.50				
		) ppm	RCR ≤ 0.40				
		nbined	RCR ≤ 0.90				
.1.2	Consumer						
_	Not applicable						
.2	Environmental exposure estimation	hand or DNEO 15	FO coloridated by FUOLIC to and a second of				
2 4			EC calculated by EUSUS local compartments  RCR ≤ 1.5e-02				
.2.1		92 mg/m³ 1e-02 mg/ml	RCR ≤ 1.5e-02 RCR ≤ 9.2e-02				
.2.1	Aquatic Concentration <7		RCR ≤ 9.2e-02 RCR ≤ 9.2e-02				
.2.1		/ E-U   Ma/ka w/w/	RCR ≤ 2.3e-02				
.2.1	Aquatic Sediment Concentration ≤ 1.	7e-01 mg/kg ww 49 ma/ka ww					
	Aquatic SedimentConcentration≤ 1.SoilConcentration≤ 1.		NON = 2.00-02				
.2.1	Aquatic Sediment Concentration ≤ 1.  Soil Concentration ≤ 1.  Other information		1011 - 2.00-02				
	Aquatic Sediment Concentration ≤ 1.  Soil Concentration ≤ 1.  Other information  Risk adequately controlled.	49 mg/kg ww	ntial for contact with liquid is present refer to GES11.				
	Aquatic Sediment Concentration ≤ 1.  Soil Concentration ≤ 1.  Other information  Risk adequately controlled.	49 mg/kg ww handling liquids. If pote	ntial for contact with liquid is present refer to GES11.				
	Aquatic Sediment Concentration ≤ 1.  Soil Concentration ≤ 1.  Other information  Risk adequately controlled. Gloves required for splash protection when I Measured data could be used to confirm exp PCs and PROCS (polymer applications) evaluations	49 mg/kg ww handling liquids. If pote posure levels are within	ntial for contact with liquid is present refer to GES11.				

	GES11 Short title			
	Industrial or professional use indoors where opportunity for exposure requires use of gloves			
2	Description of activities/process(es) covered in the Exposure Scenario			
	Industrial or professional activities involving the handling of preparations containing monomers. IU1, IU2, IU3, IU4			
	SU3, SU2a, SU2b, SU6a, SU6b, SU8, SU9, SU10, SU12, SU13, SU14, SU15, SU16, SU17, SU19, SU20, SU22, SU23.  PROC5, PROC6, PROC7, PROC8a, PROC10, PROC11, PROC13, PROC17, PROC18, PROC19			
	ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC8a, ERC8b, ERC8c			
3	Operational conditions			
3.1	Duration and frequency of use			
	Duration	Worker: dependent upon concentration and activity, see section 4.3.		
		Consumer: N/A.		
	Frequency of exposure at workplace Emission days per site	Daily		
4	Other operational conditions related to physica	300 d/yr		
<del>4</del> .1	Physical form of product in which substance is contained	Liquid		
4.2	Concentration of substance in preparation or article	≤ 100%		
4.3	Maximum used amount of substance (as such or	Worker: <1000kg/d		
	in preparation) per worker/workplace per day	Consumer: N/A.		
		See below for detail individual PROCs.		
	Amount used per time or per activity for which RM			
	Industrial PROC: 5, 6, 8a, 10, 13, 17, 18, 19; Conc Industrial PROC: 7; Concentration/Duration: 0-1%	centration/Duration: 0-5% / 0-8hrs, 5-25% / 0-4hrs, 25-100% / 0-1hr.		
	Professional PROC: 7; Concentration/Duration: 0-1%	/ บ-oriis, 1-5% / บ-1111, 5-100% / บ-15MM. ation/Duration: 0-5% / 0-8hrs -5-100% / 0-1hr		
	Professional PROC: 11; Concentration/Duration: 0			
		in: 0-1% / 0-8hrs, 1-5% / 0-4hrs, 5-25% / 0-1hr, 25-100% / 0-15min.		
	Operational conditions related to environment	Indoor processing and handling.		
	Annual amount used per site	≤ 260 kte/yr		
5	Other operational conditions determining expo			
	Room size Ventilation rate	> 20 m³ (ECETOC default).		
	ventuation rate	General ventilation of workplaces. 5 - 15 air changes per hour recommended for general application.		
	Waste water treatment	Discharges should be checked to ensure they comply with the requirements of		
		local environmental protection legislation.		
6	Risk Management Measures:			
6.1 6.1.1	Human health measures Occupational related measures			
0.1.1	Oral	Do not eat, drink or smoke at the work place.		
	Dermal	Wear gloves (butyl; 0.7 mm; EN 374) for immersion protection when handling		
		liquids and comply with good occupational hygiene practice. Change gloves, if		
		contamination occurs or duration of activity exceeds break through time.		
	Inhalation	Use indoor.		
	_	M. The state of th		
6.1.2	Eyes Consumer related measures	Wear suitable eye protection, goggles, to protect against liquid splash.  N/A – Industrial / Professional Scenario.		
6.2	Environment related measures	N/A - Illustral / Floressional Scenario.		
0.2	Air	Not required		
	Water	Contain and collect spillages for incineration.		
	Soil	Fully polymerise before landfill		
7	Waste related measures			
	Avoid release to the environment.			
		possible or insingrate under approved controlled conditions welfare a feetile of the feetile		
	Contain and collect any spillages. Recycle where			
	Contain and collect any spillages. Recycle where put the disposal of flammable organics. Obtain the cor	nsent of pollution control authorities before discharging to waste water treatment		
8	Contain and collect any spillages. Recycle where	nsent of pollution control authorities before discharging to waste water treatment		
8.1	Contain and collect any spillages. Recycle where part the disposal of flammable organics. Obtain the corplants. Only dispose of polymerised material to lar Prediction of exposure resulting from the cond Human exposure estimation	nsent of pollution control authorities before discharging to waste water treatment adfill.		
8.1	Contain and collect any spillages. Recycle where part the disposal of flammable organics. Obtain the conplants. Only dispose of polymerised material to lar Prediction of exposure resulting from the cond Human exposure estimation  Worker. Predicted exposure and Risk Characterists	nsent of pollution control authorities before discharging to waste water treatment adfill.  litions described above  ation Ratio based on DNEL and exposure calculated by ECETOC-TRA.		
8.1	Contain and collect any spillages. Recycle where purchased the disposal of flammable organics. Obtain the complants. Only dispose of polymerised material to lar Prediction of exposure resulting from the conditional Human exposure estimation  Worker. Predicted exposure and Risk Characterists. Dermal Concentration ≤ 14.1 mg	adfill.  litions described above  ation Ratio based on DNEL and exposure calculated by ECETOC-TRA.  /kg bw/day RCR ≤ 1.03 (see section 9)		
3.1	Contain and collect any spillages. Recycle where purchased the disposal of flammable organics. Obtain the complants. Only dispose of polymerised material to lar Prediction of exposure resulting from the conditional Human exposure estimation  Worker. Predicted exposure and Risk Characterists Dermal Concentration ≤ 14.1 mg Inhalative Concentration ≤ 25 ppm	nsent of pollution control authorities before discharging to waste water treatment adfill.    Itions described above		
8.1 8.1.1	Contain and collect any spillages. Recycle where purchased the disposal of flammable organics. Obtain the complants. Only dispose of polymerised material to lar Prediction of exposure resulting from the conditional Human exposure estimation  Worker. Predicted exposure and Risk Characterists. Dermal Concentration ≤ 14.1 mg	nsent of pollution control authorities before discharging to waste water treatment adfill.    Itions described above		
8.1 8.1.1	Contain and collect any spillages. Recycle where purchased the disposal of flammable organics. Obtain the complants. Only dispose of polymerised material to lar Prediction of exposure resulting from the conditional Human exposure estimation  Worker. Predicted exposure and Risk Characterists Dermal Concentration ≤ 14.1 mg Inhalative Concentration ≤ 25 ppm Combined	nsent of pollution control authorities before discharging to waste water treatment adfill.    Itions described above		
8.1 8.1.1 8.1.2	Contain and collect any spillages. Recycle where purchased the disposal of flammable organics. Obtain the complants. Only dispose of polymerised material to lar Prediction of exposure resulting from the conditional Human exposure estimation  Worker. Predicted exposure and Risk Characterists. Dermal Concentration ≤ 14.1 mg Inhalative Concentration ≤ 25 ppm Combined Consumer  N/A	nsent of pollution control authorities before discharging to waste water treatment adfill.    Itions described above		
8.1 8.1.1 8.1.2 8.2	Contain and collect any spillages. Recycle where purched the disposal of flammable organics. Obtain the complants. Only dispose of polymerised material to lar Prediction of exposure resulting from the condition Human exposure estimation  Worker. Predicted exposure and Risk Characterist Dermal Concentration ≤ 14.1 mg Inhalative Concentration ≤ 25 ppm Combined Consumer  N/A  Environmental exposure estimation  Environmental. Risk Characterisation Ratio based	nsent of pollution control authorities before discharging to waste water treatment adfill.    itions described above		
8.1 8.1.1 8.1.2 8.2	Contain and collect any spillages. Recycle where purched the disposal of flammable organics. Obtain the complants. Only dispose of polymerised material to lar Prediction of exposure resulting from the conditional Human exposure estimation  Worker. Predicted exposure and Risk Characterists. Dermal Concentration ≤ 14.1 mg Inhalative Concentration ≤ 25 ppm Combined Consumer  N/A  Environmental exposure estimation  Environmental. Risk Characterisation Ratio based Air Concentration ≤ 1.92	nsent of pollution control authorities before discharging to waste water treatment adfill.    itions described above		
8.1 8.1.1 8.1.2 8.2	Contain and collect any spillages. Recycle where pure the disposal of flammable organics. Obtain the complants. Only dispose of polymerised material to lar Prediction of exposure resulting from the cond Human exposure estimation  Worker. Predicted exposure and Risk Characterists. Dermal Concentration ≤ 14.1 mg Inhalative Concentration ≤ 25 ppm Combined Consumer  N/A  Environmental exposure estimation  Environmental. Risk Characterisation Ratio based Air Concentration ≤ 1.92  Aquatic Concentration ≤ 7.1e-02	nsent of pollution control authorities before discharging to waste water treatment adfill.    itions described above		
8.1 8.1.1 8.1.2 8.2	Contain and collect any spillages. Recycle where pure the disposal of flammable organics. Obtain the complants. Only dispose of polymerised material to lar Prediction of exposure resulting from the cond Human exposure estimation  Worker. Predicted exposure and Risk Characterists. Dermal Concentration ≤ 14.1 mg Inhalative Concentration ≤ 25 ppm Combined Consumer  N/A  Environmental exposure estimation  Environmental. Risk Characterisation Ratio based Air Concentration ≤ 1.92  Aquatic Concentration ≤ 7.1e-02  Aquatic Sediment Concentration ≤ 1.7e-01	nsent of pollution control authorities before discharging to waste water treatment adfill.    Itions described above		
8.1 8.1.1 8.1.2 8.2 8.2.1	Contain and collect any spillages. Recycle where pure the disposal of flammable organics. Obtain the complants. Only dispose of polymerised material to lar Prediction of exposure resulting from the cond Human exposure estimation  Worker. Predicted exposure and Risk Characterists. Dermal Concentration ≤ 14.1 mg Inhalative Concentration ≤ 25 ppm Combined Consumer  N/A  Environmental exposure estimation  Environmental. Risk Characterisation Ratio based Air Concentration ≤ 1.92  Aquatic Concentration ≤ 7.1e-02  Aquatic Sediment Concentration ≤ 1.7e-01  Soil Concentration ≤ 1.49	nsent of pollution control authorities before discharging to waste water treatment adfill.    itions described above		
8.1.2 8.1.2 8.2 8.2.1	Contain and collect any spillages. Recycle where pure the disposal of flammable organics. Obtain the complants. Only dispose of polymerised material to lar Prediction of exposure resulting from the conditional Human exposure estimation  Worker. Predicted exposure and Risk Characterists. Dermal Concentration ≤ 14.1 mg Inhalative Concentration ≤ 25 ppm Combined Consumer  N/A  Environmental exposure estimation  Environmental. Risk Characterisation Ratio based Air Concentration ≤ 1.92  Aquatic Concentration ≤ 7.1e-02  Aquatic Sediment Concentration ≤ 1.7e-01  Soil Concentration ≤ 1.49  Other information	nsent of pollution control authorities before discharging to waste water treatment adfill.    Itions described above		
8.1.2 8.1.2 8.2 8.2.1	Contain and collect any spillages. Recycle where pure the disposal of flammable organics. Obtain the complants. Only dispose of polymerised material to lar Prediction of exposure resulting from the conditional Human exposure estimation  Worker. Predicted exposure and Risk Characterists. Dermal Concentration ≤ 14.1 mg Inhalative Concentration ≤ 25 ppm Combined Consumer  N/A  Environmental exposure estimation  Environmental. Risk Characterisation Ratio based Air Concentration ≤ 1.92  Aquatic Concentration ≤ 7.1e-02  Aquatic Sediment Concentration ≤ 1.7e-01  Soil Concentration ≤ 1.49  Other information  Risk adequately controlled.	nsent of pollution control authorities before discharging to waste water treatment adfill.    Itions described above		
8.1.2 8.1.2 8.2 8.2.1	Contain and collect any spillages. Recycle where pure the disposal of flammable organics. Obtain the complants. Only dispose of polymerised material to lar Prediction of exposure resulting from the condition Human exposure estimation  Worker. Predicted exposure and Risk Characterists. Dermal Concentration ≤ 14.1 mg Inhalative Concentration ≤ 25 ppm Combined Consumer  N/A  Environmental exposure estimation  Environmental. Risk Characterisation Ratio based Air Concentration ≤ 1.92  Aquatic Concentration ≤ 7.1e-02  Aquatic Sediment Concentration ≤ 1.7e-01  Soil Concentration ≤ 1.49  Other information  Risk adequately controlled.  Gloves required for immersion protection when ha	nsent of pollution control authorities before discharging to waste water treatment adfill.    Itions described above		
8.1.2 8.1.2 8.2 8.2.1	Contain and collect any spillages. Recycle where pure the disposal of flammable organics. Obtain the complants. Only dispose of polymerised material to lar Prediction of exposure resulting from the conditional Human exposure estimation  Worker. Predicted exposure and Risk Characterist Dermal Concentration ≤ 14.1 mg Inhalative Concentration ≤ 25 ppm Combined Consumer  N/A  Environmental exposure estimation  Environmental. Risk Characterisation Ratio based Air Concentration ≤ 1.92  Aquatic Concentration ≤ 7.1e-02  Aquatic Sediment Concentration ≤ 1.7e-01  Soil Concentration ≤ 1.49  Other information  Risk adequately controlled.  Gloves required for immersion protection when ha Then safe handling of high exposure dermal applic Measured data could be used to confirm exposure	nsent of pollution control authorities before discharging to waste water treatment adfill.    Itions described above		
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4	GES12			
1	Short title Industrial or professional use indoors where opportunity for exposure requires use of gloves and respiratory protection			
2	Description of activities/process(es) covered in the Exposure Scenario			
-	Industrial or professional activities involving the handling of preparations containing monomers. Includes: IU1, IU2, IU3, IU4			
	SU3, SU2a, SU2b, SU6a, SU6, SU8, SU9, SU10, SU12, SU13, SU14, SU15, SU16, SU17, SU19, SU20, SU23, SU 21, SU22			
	PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC12, PROC13, PROC17, PROC18, PROC19.			
	ERC1, ERC2, ERC3, ERC4, ERC, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ERC8a, ERC8b, ERC8c			
3	Operational conditions			
3.1	Duration and frequency of use			
	Duration	Worker: dependent upon concentration and activity, see section 4.3. Consumer: N/A.		
	Frequency of exposure at workplace Emission days per site	Daily 300 d/yr		
4	Other operational conditions related to physica			
4.1	Physical form of product in which substance is contained	Liquid		
4.2	Concentration of substance in preparation or article	≤ 100%		
4.3	Maximum used amount of substance (as such or	Worker: <1000kg/d		
	in preparation) per worker/workplace per day	Consumer: N/A. See below for detail individual PROCs.		
	Amount used per time or per activity for which RMI			
	RMM: RPE protection factor 10 (see section 9).			
	Industrial PROC: 5, 6, 7, 8a, 8b, 9, 10, 13, 14, 17, 18, 19; Professional PROC: 4, 5, 6, 8a, 8b, 9, 10, 12, 13, 14, 17, 18, 19; Concentration/Duration: 0-100% / 0-8hrs.			
	RMM: RPE protection factor 10 (see section 9).			
	Professional PROC: 11; Concentration/Duration: 0	-5% / 0-8hrs, 5-25% / 0-4hrs, 25-100% / 0-1hr.		
	RMM: RPE protection factor 20 (see section 9).	0.4000/ IC 01		
	Above scenarios plus: Professional PROC: 11; Co Operational conditions related to environment			
	Annual amount used per site	Indoor processing and handling. ≤ 260 kte/yr		
5	Other operational conditions determining expo			
	Room size	> 20 m³ (ECETOC default).		
	Ventilation rate	General ventilation of workplaces. 5 - 15 air changes per hour recommended for		
	Waste water treatment	general application.  Discharges should be checked to ensure they comply with the requirements of		
6	Risk Management Measures:	local environmental protection legislation.		
6.1	Human health measures			
6.1.1	Occupational related measures			
	Oral	Do not eat, drink or smoke at the work place.		
	Dermal	Wear gloves (butyl; 0.7 mm; EN 374) for immersion protection when handling liquids and comply with good occupational hygiene practice. Change gloves, if contamination occurs or duration of activity exceeds break through time.		
	Inhalation	Use indoor. RPE protection factor 20 or 10 dependent upon PROC and duration.		
	Eyes	Wear suitable eye protection, face shield or goggles, to protect against liquid		
6.1.2	Consumer related measures	splash. N/A		
6.2	Environment related measures			
	Air	Not required		
	Water	Contain and collect spillages for incineration.		
	Soil	Fully polymerise before landfill		
7	Waste related measures			
	Avoid release to the environment.  Contain and collect any spillages. Recycle where possible or incinerate under approved controlled conditions using a facility suitable for			
	the disposal of flammable organics. Obtain the consent of pollution control authorities before discharging to waste water treatment plants. Only dispose of polymerised material to landfill.			
8	Prediction of exposure resulting from the cond			
8.1	Human exposure estimation			
8.1.1 Worker. Predicted exposure and Risk Characterisation Ratio based on DNEL and exposure calculation				
	Dermal Concentration ≤ 14.1 mg/	/kg bw/day RCR ≤ 1.03 (see section 9)		
	Inhalative Concentration ≤ 25 ppm	RCR ≤ 0.50		
8.1.2	Combined Consumer	RCR ≤ 1.28 (see section 9)		
8.2	N/A Environmental exposure estimation			
8.2.1		on PNEC and PEC calculated by EUSUS local compartments		
	Air Concentration ≤ 1.92	$mg/m^3$ RCR $\leq 1.5e-02$		
	Aquatic Concentration ≤ 7.1e-02 Aquatic Sediment Concentration ≤ 1.7e-01			
		mg/kg ww RCR ≤ 2.3e-02		
9	Other information			
	Risk adequately controlled.			
	Gloves required for immersion protection when handling liquids. Change gloves, if duration of activity exceeds break through time. Then safe handling of high exposure dermal applications (PROC11, 19) is ensured and RCR(dermal) is assumed to be below 0.5. All other PROCs indicate a dermal RCR below 0.5 within the assessed boundaries. Ensure duration of wearing respiratory protection comply with the requirements of legislation. Measured data could be used to confirm exposure levels are within the boundaries of the			
		tools ECETOC-TRA and EUSUS for confirmation that you work inside to boundaries		

		GES 13		
1	Short title Consumer use			
2	Description of activities/process(es) covered in the Exposure Scenario			
	IU5, IU6			
	SU19, SU20, SU21, SU22, SU23 PROCs not applicable			
	PC1, PC2, PC3, PC7, PC8, PC9a, PC9b, PC9c, PC14, PC15, PC18, PC19, PC21, PC20, PC23, PC24, PC26, PC31, PC32, PC33, PC34, PC35, PC37, PC39  AC1-1, AC1-2, AC2, AC3, AC4, AC5-1, AC5-2, AC6, AC7, AC8-1, AC10-2, AC10-5, AC11, AC13-1, AC13-2, AC13-3, AC13*  ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f, ERC10a, ERC11a			
3	Operational conditions	iva, Litorra		
3.1	Duration and frequency of use			
	Duration State of Supersure of Augustus Local	Dependent upon concentration and activity, see section 4.3.		
	Frequency of exposure at workplace Emission days per site	Daily 365 d/yr		
4	Other operational conditions related to physical prop	perties and boundary conditions		
4.1	Physical form of product in which substance is contained			
4.2	Concentration of substance in proporation or article	4.3) ≤ 5% residual monomer in polymer component		
4.3	Concentration of substance in preparation or article  Maximum used amount of substance (as such or in	Consumer: 9g, duration up to 4 hrs (PC1); product ingredient up to 0.3		
	preparation) per worker/workplace per day	g/g product (PC1); defaults ECETOC.		
	Assessment and the second second side for which DMM	See below for detail individual PCs.		
	Amount used per time or per activity for which RMMs ensure control of risk  RMM: No RMMs identified.			
	Consumer PC: 1; Concentration/Duration/Amount used: 0-70% / 0-8hrs / 21g; maximum for specific parameter using default values for			
	other boundaries. See section 9.			
	RMM: No RMMs identified.  Consumer PC: 1, 2, 3, 7, 8, 9a, 9b, 9c, 14, 15, 18, 19, 20, 21, 23, 24, 26, 31, 32, 33, 34, 35, 37, 39; Consumer AC: 1-1, 1-2, 2, 3, 4, 5-			
	1, 5-2, 6, 7, 8-1, 10-2, 10-5, 11, 13-1, 13-2, 13-3, 13*; Co	oncentration/Duration: 0-5% / 0-8hrs, 5-100% / Not covered. See section 9.		
	Operational conditions related to environment	General processing and handling.		
5	Annual amount used	≤ 2.5 te/yr		
5	Other operational conditions determining exposure Room size	> 20 m³ (ECETOC default).		
	Ventilation rate	General ventilation of workplaces. 5 - 15 air changes per hour		
		recommended for general application.		
	Waste water treatment	Not applicable.		
<b>6</b> 6.1	Risk Management Measures:  Human health measures			
6.1.1	Occupational related measures	None required.		
6.1.2	Consumer related measures	1 2 2 3 44 2 3		
	Oral	Do not eat, drink or smoke at the work place.		
	Dermal	None required. If potential for contact with liquid occurs or duration and concentration exceeds safe use refer to industrial / professional use		
		scenarios. Size and design of application container is to be adapted to		
		avoid significant dermal exposure during duration of use.		
	Inhalation	None required. Size of application container is to be adapted to avoid significant exposure by inhalation during duration of use.		
	Eyes	None required		
6.2	Environment related measures			
	Air	None required.		
	Water Soil	Do not empty into drains.  Only dispose of polymerised material with household waste.		
7	Waste related measures	Only dispose of polymensed material war nedection waste.		
	Only dispose of polymerised material with household was			
<b>8</b> 8.1	Prediction of exposure resulting from the conditions  Human exposure estimation	described above		
8.1.1	Worker.			
0	Not applicable			
8.1.2	-	n Ratio based on DNEL and exposure calculated by ECETOC-TRA.		
	Dermal Concentration ≤ 1.79 mg/kg bw			
	Inhalative Concentration ≤ 6.75 mg/m <sup>3</sup> Combined	RCR ≤ 0.18 RCR ≤ 0.40		
8.2	Environmental exposure estimation			
8.2.1	Environmental. Risk Characterisation Ratio based on PNEC and PEC calculated by EUSUS local compartments			
	Air Concentration ≤ 5.0e-06 mg/m³ Aquatic Concentration ≤ 4.1e-14 mg/ml			
	Aquatic Concentration ≤ 4.1e-14 mg/mi Aquatic Sediment Concentration ≤ 7.9e-14 mg/kg			
	Soil Concentration ≤ 1.5e-08 mg/kg			
9	Other information			
	Risk adequately controlled.  Consumer scenario only. If concentration or duration exceeds amount covered by this scenario refer to appropriate industrial /			
	professional scenario.	2000 amount covered by this scenario refer to appropriate industrial?		
	Consumer scenarios predominantly polymer preparations	s. PC1 evaluated for higher residual monomer according to ECETOC		
		standard defaults. For changing specific defaults of the model equation [0.5 ≥ RCR(dermal/inhalation) * (amount used / default		
	ECETOC) * (duration / default ECETOC) * product ingredient / default ECETOC)] has to be satisfied. Other PCs and ACs (polymer applications) evaluated as safe for up to 5% residual MMA related to used amount of MMA.			
	Use the exposure assessment tools ECETOC-TRA and EUSUS for confirmation that you work inside to boundaries set by the GES			
	(RCR<1 and PEC/PNEC<1).			