We create chemistry

Safety data sheet

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

1.1. Product identifier

Laromin® C 260

Chemical name: 2,2'-dimethyl-4,4'methylenebis(cyclohexylamine)
CAS Number: 6864-37-5

REACH registration number: 01-2119497829-12-0000

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

Relevant identified uses: Hardener for coating materials or adhesives for industrial or professional use

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

1.3. Details of the supplier of the safety data sheet

Company:
BASF SE
67056 Ludwigshafen
GERMANY

Contact address:
BASF plc
PO Box 4, Earl Road, Cheadle Hulme,
Cheadle, Cheshire
SK8 6QG, UNITED KINGDOM

Telephone: +44 161 485-6222
E-mail address: product-safety-north@basf.com

1.4. Emergency telephone number

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

SECTION 2: Hazards Identification

2.1. Classification of the substance or mixture

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

Acute Tox. 4 (oral)
Acute Tox. 2 (Inhalation - mist)
Acute Tox. 3 (dermal)
Skin Corr./Irrit. 1A
Eye Dam./Irrit. 1
STOT RE (Liver, Kidney, Adrenal gland, Heart, Blood) 2
Aquatic Chronic 2

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

Possible Hazards:
Toxic by inhalation and in contact with skin.
Harmful if swallowed.
Causes severe burns.
Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

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

2.2. Label elements

Globally Harmonized System, EU (GHS)

Pictogram:

Signal Word:
Danger

Hazard Statement:

H330	Fatal if inhaled.
H314	Causes severe skin burns and eye damage.
H311	Toxic in contact with skin.
H373	May cause damage to organs (Liver, Kidney, Adrenal gland, Heart, Blood) through prolonged or repeated exposure.
H302	Harmful if swallowed.
H411	Toxic to aquatic life with long lasting effects.

Precautionary Statements (Prevention):

P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P260	Do not breathe mist or vapour.
P273	Avoid release to the environment.
P284	[In case of inadequate ventilation] wear respiratory protection.
P260	Do not breathe dust or mist.
P264	Wash with plenty of water and soap thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.

Precautionary Statements (Response):

P310	Immediately call a POISON CENTER or doctor/physician.
P312	Call a POISON CENTER or doctor/physician if you feel unwell.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P303 + P361 + P352	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Wash with plenty of soap and water.
P361	Take off immediately all contaminated clothing.
P301 + P330	IF SWALLOWED: rinse mouth.
P391	Collect spillage.

Precautionary Statements (Storage):

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

Precautionary Statements (Disposal):

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

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

Hazard determining component(s) for labelling: 2,2-DIMETHYL-4,4-METHYLENBIS(CYCLOHEXYLAMINE)

<u>According to Directive 67/548/EEC or 1999/45/EC</u>

as in Annex VI REGULATION (EC) No 1272/2008 and Annex VI of Directive 67/548/EEC

Hazard symbol(s)

T	Toxic.	
C	Corrosive.	
N	Dangerous for the environment.	

R-phrase(s)

R22	Harmful if swallowed.
R23/24	Toxic by inhalation and in contact with skin.
R35	Causes severe burns.
R48/22	Harmful: danger of serious damage to health by prolonged exposure if swallowed.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S-phrase(s)

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

Hazard determining component(s) for labelling: 2,2-DIMETHYL-4,4-METHYLENBIS(CYCLOHEXYLAMINE)

2.3. Other hazards

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

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

SECTION 3: Composition/Information on Ingredients

3.1. Substances

Chemical nature

Contains: amine

Hazardous ingredients (GHS)
according to Regulation (EC) No. 1272/2008

2,2'-dimethyl-4,4'methylenebis(cyclohexylamine)

Content (W/W): >= 99.6 % - <= 99.9 % CAS Number: 6864-37-5 EC-Number: 229-962-1 INDEX-Number: 612-110-00-1	Acute Tox. 4 (oral) Acute Tox. 2 (Inhalation - mist) Acute Tox. 3 (dermal) Skin Corr./Irrit. 1A Eye Dam./Irrit. 1 STOT RE (Liver, Kidney, Adrenal gland, Heart, Blood) 2 Aquatic Chronic 2 H311, H330, H302, H373, H314, H411

4,4'-Methylenebis(cyclohexylamine)

Content (W/W): <= 0.1 % CAS Number: 1761-71-3 EC-Number: 217-168-8	Acute Tox. 4 (oral) Skin Corr./Irrit. 1B Eye Dam./Irrit. 1 Skin Sens. 1B STOT RE (Liver, Skeletal muscle) 2 H302, H317, H373, H314

Hazardous ingredients
according to Directive 1999/45/EC

2,2'-dimethyl-4,4'methylenebis(cyclohexylamine)
Content (W/W): >= 99.6 % - <= 99.9 %
CAS Number: 6864-37-5
EC-Number: 229-962-1
INDEX-Number: 612-110-00-1
Hazard symbol(s): T, C, N
R-phrase(s): 22, 23/24, 35, 48/22, 51/53

4,4'-Methylenebis(cyclohexylamine)
Content (W/W): <= 0.1 %
CAS Number: 1761-71-3
EC-Number: 217-168-8
Hazard symbol(s): C, N
R-phrase(s): 22, 35, 43, 48/22, 51/53

For the classifications not written out in full in this section, including the indication of danger, the hazard symbols, the R phrases, and the hazard statements, the full text is listed in section 16.

3.2. Mixtures

Not applicable

SECTION 4: First-Aid Measures

4.1. Description of first aid measures

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

If inhaled:
Keep patient calm, remove to fresh air, seek medical attention. Immediately administer a corticosteroid from a controlled/metered dose inhaler.

On skin contact:
Immediately wash thoroughly with plenty of water, apply sterile dressings, consult a skin specialist.

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

On ingestion:
Do not induce vomiting. Immediately rinse mouth and then drink 200-300 ml of water, seek medical attention.

4.2. Most important symptoms and effects, both acute and delayed
Symptoms: skin corrosion, irritation of the mucous membranes, irritates the eyes and respiratory tract, Further symptoms are possible

4.3. Indication of any immediate medical attention and special treatment needed
Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote. Pulmonary odema prophylaxis. Medical monitoring for at least 24 hours.

SECTION 5: Fire-Fighting Measures

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

5.2. Special hazards arising from the substance or mixture
carbon monoxide, Carbon dioxide, nitrous gases
The substances/groups of substances mentioned can be released in case of fire.

5.3. Advice for fire-fighters
Special protective equipment:
Wear self-contained breathing apparatus and chemical-protective clothing.

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

SECTION 6: Accidental Release Measures

6.1. Personal precautions, protective equipment and emergency procedures
Breathing protection required. Avoid contact with the skin, eyes and clothing.

6.2. Environmental precautions
Do not discharge into drains/surface waters/groundwater.

6.3. Methods and material for containment and cleaning up
For small amounts: Pick up with suitable appliance and dispose of. Pick up with absorbent material (e.g. sand, sawdust, general-purpose binder).
For large amounts: Pump off product.
Cleaning operations should be carried out only while wearing breathing apparatus. Clean contaminated floors and objects thoroughly with water and detergents, observing environmental regulations. Collect waste in suitable containers, which can be labeled and sealed. Incinerate or take to a special waste disposal site in accordance with local authority regulations.

6.4. Reference to other sections
Information regarding exposure controls/personal protection and disposal considerations can be found in section 8 and 13.

SECTION 7: Handling and Storage

7.1. Precautions for safe handling
Ensure thorough ventilation of stores and work areas. Avoid aerosol formation.

Protection against fire and explosion:
The product is combustible. Prevent electrostatic charge - sources of ignition should be kept well clear - fire extinguishers should be kept handy.

7.2. Conditions for safe storage, including any incompatibilities
Segregate from acids and acid forming substances.
Further information on storage conditions: Containers should be stored tightly sealed in a dry place.

Storage stability:
Storage duration: 24 Months
From the data on storage duration in this safety data sheet no agreed statement regarding the warrantee of application properties can be deduced.

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

SECTION 8: Exposure Controls/Personal Protection

8.1. Control parameters

Components with occupational exposure limits

No occupational exposure limits known.

PNEC
freshwater: 0.125 mg/l

marine water: 0.0125 mg/l

intermittent release: 0.046 mg/l

sediment (freshwater): 36.4 mg/kg

sediment (marine water): 3.64 mg/kg

soil: 7.18 mg/kg

STP: 1.6 mg/l

oral (secondary poisoning): 0.556 mg/kg

DNEL
worker:
Long-term exposure- systemic effects, Inhalation: 0.6 mg/m3

worker:
Long-term exposure- systemic effects, dermal: 0.06 mg/m3

8.2. Exposure controls

Personal protective equipment

Respiratory protection:
Respiratory protection in case of vapour/aerosol release. Combination filter for gases/vapours of organic compounds and solid and liquid particles (f.e. EN 14387 Type A-P2)

Consider the risk management measures as outlined in the exposure scenario.

Hand protection:
Suitable materials also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN 374):
nitrile rubber (NBR) - 0.4 mm coating thickness
butyl rubber (butyl) - 0.7 mm coating thickness
polyvinylchloride (PVC) - 0.7 mm coating thickness
chloroprene rubber (CR) - 0.5 mm coating thickness
fluoroelastomer (FKM) - 0.7 mm coating thickness
Suitable materials for short-term contact (recommended: At least protective index 2, corresponding > 30 minutes of permeation time according to EN 374)
natural rubber/natural latex (NR) - 0.5 mm coating thickness
Supplementary note: The specifications are based on tests, literature data and information of glove manufacturers or are derived from similar substances by analogy. Due to many conditions (e.g.

temperature) it must be considered, that the practical usage of a chemical-protective glove in practice may be much shorter than the permeation time determined through testing. Manufacturer's directions for use should be observed because of great diversity of types.

Eye protection:
Tightly fitting safety goggles (cage goggles) (e.g. EN 166) and face shield.

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

General safety and hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wearing of closed work clothing is required additionally to the stated personal protection equipment. Avoid contact with the skin, eyes and clothing. Do not breathe vapour/spray. When using, do not eat, drink or smoke. Hands and/or face should be washed before breaks and at the end of the shift. Gloves must be inspected regularly and prior to each use. Replace if necessary (e.g. pinhole leaks). Take off immediately all contaminated clothing. Wash contaminated clothing before reuse. Store work clothing separately. Take off immediately all contaminated clothing. Store work clothing separately.

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Form:	liquid	
Colour:	colourless to yellowish	
Odour:	amine-like	
pH value:	11 (3.6 g/l, 20 °C)	
Melting point:	-7.1 °C Literature data.	
Boiling point:	347 °C (1,013 mbar)	
Flash point:	173 °C	(DIN 51758, closed cup)
Evaporation rate:	Value can be approximated from Henry's Law Constant or vapor pressure.	
Flammability:	not readily ignited	
Lower explosion limit:	0.5 %(V) (160.5 °C)	(air)
Upper explosion limit:	For liquids not relevant for classification and labelling.	
Ignition temperature:	275 °C	
Vapour pressure:	0.0008 hPa (20 °C)	(measured)

Density:	0.9456 g/cm3 (20 °C)	(other)
Relative density:	0.9456 (20 °C)	(other)
Solubility in water:	2.01 g/l (20 °C)	(OECD Guideline 105)
Partitioning coefficient n-octanol/water (log Kow):	2.51	(OECD Guideline 107)
Self ignition:	not self-igniting	(Method: other)
Thermal decomposition:	No decomposition if correctly stored and handled.	
Viscosity, dynamic:	152 mPa.s (20 °C)	(OECD 114)
	32.9 mPa.s (40 °C)	(OECD 114)
Viscosity, kinematic:	162 mm2/s (20 °C)	(OECD 114)
Explosion hazard:	not explosive	
Fire promoting properties:	not fire-propagating	

9.2. Other information

pKA:	10.3 (25 °C) The substance does not dissociate.	(OECD Guideline 112)
Surface tension:	Based on chemical structure, surface activity is not to be expected.	
Grain size distribution:	The substance / product is marketed or used in a non solid or granular form.	
Molar mass:	238.42 g/mol	

SECTION 10: Stability and Reactivity

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

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

10.2. Chemical stability
The product is chemically stable.

10.3. Possibility of hazardous reactions
Strong exothermic reaction with acids. Incompatible with acid chlorides and acid anhydrides.

10.4. Conditions to avoid
Avoid all sources of ignition: heat, sparks, open flame.

10.5. Incompatible materials

Substances to avoid:
Copper, strong acids, oxidizing agents, brass

10.6. Hazardous decomposition products

Hazardous decomposition products:
carbon monoxide, carbon dioxide, nitrogen oxides

SECTION 11: Toxicological Information

11.1. Information on toxicological effects

Acute toxicity

Assessment of acute toxicity:
Of high toxicity after short-term inhalation. Of high toxicity after short-term skin contact. Of moderate toxicity after single ingestion.

Experimental/calculated data:
LD50 rat (oral): 320 - 460 mg/kg (BASF-Test)

LC50 rat (by inhalation): 0.42 mg/l 4 h
An aerosol was tested.

LD50 rabbit (dermal): 200 - 400 mg/kg (BASF-Test)

Irritation

Assessment of irritating effects:
Corrosive! Damages skin and eyes.

Experimental/calculated data:
Skin corrosion/irritation In vitro assay: Corrosive. (OECD Guideline 435)

Serious eye damage/irritation rabbit: irreversible damage

Respiratory/Skin sensitization

Assessment of sensitization:
Skin sensitizing effects were not observed in animal studies.

Experimental/calculated data:
Guinea pig maximization test guinea pig: Non-sensitizing.

Germ cell mutagenicity

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

Carcinogenicity

Assessment of carcinogenicity:
A long-term carcinogenity study which does not meet the current requirements did not show a carcinogenic effect.

Reproductive toxicity

Assessment of reproduction toxicity:
The results of animal studies gave no indication of a fertility impairing effect. The product has not been fully tested. The statements have been derived in parts from products of a similar structure or composition.

Developmental toxicity

Assessment of teratogenicity:
The substance did not cause malformations in animal studies; however, toxicity to development was observed at high doses that were toxic to the parental animals.

Specific target organ toxicity (single exposure)

Assessment of STOT single:
The available information is not sufficient for evaluation.

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

Assessment of repeated dose toxicity:
After repeated administration the prominent effect is the induction of corrosion. Repeated exposure may affect certain organs. Damages the liver. Damages the kidneys. Damages the adrenal gland. Damages the heart. Damages blood cells.

Experimental/calculated data:
rat by inhalation (OECD Guideline 413)
NOAEL: 0.002 mg/l
LOAEL: 0.012 mg/l

rat gavage (OECD Guideline 408)
NOAEL: 2.5 mg/kg
LOAEL: 12 mg/kg

Aspiration hazard

No aspiration hazard expected.

Other relevant toxicity information

No experimental evidence available for genotoxicity in vitro (Ames test negative).

SECTION 12: Ecological Information

12.1. Toxicity

Assessment of aquatic toxicity:
Acutely toxic for aquatic organisms. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.

Toxicity to fish:
LC50 (96 h) 31.6 mg/l, Leuciscus idus (DIN 38412 Part 15, static)
Nominal concentration. The product will cause changes in the pH value of the test system. The result refers to an unneutralized sample. After neutralization a reduction in harmful effect can be observed.

Aquatic invertebrates:
EC50 (48 h) 4.6 mg/l, Daphnia magna (OECD Guideline 202, part 1)
Literature data.

Aquatic plants:
EC50 (72 h) > 5 mg/l (growth rate), Scenedesmus subspicatus (DIN 38412 Part 9)
Nominal concentration.

EC50 (72 h) 6.1 mg/l (growth rate) (OECD Guideline 201)

EC10 (72 h) 1.25 mg/l (growth rate), Scenedesmus subspicatus (DIN 38412 Part 9)
Nominal concentration.

Microorganisms/Effect on activated sludge:
EC20 (0.5 h) 160 mg/l, activated sludge, domestic (DIN EN ISO 8192)

Chronic toxicity to fish:
Study scientifically not justified.

Chronic toxicity to aquatic invertebrates:
No observed effect concentration (21 d) 4 mg/l, Daphnia magna (OECD Guideline 211)
Literature data.

Soil living organisms:
EC50 (56 d) 699 mg/kg, Eisenia sp. (OECD Guideline 222)
The details of the toxic effect relate to the nominal concentration.

Terrestrial plants:
Study scientifically not justified.

Other terrestrial non-mammals:
Study scientifically not justified.

12.2. Persistence and degradability

Assessment biodegradation and elimination (H2O):
Poorly biodegradable. Poorly eliminated from water.

Elimination information:
0 % BOD of the ThOD (28 d) (OECD 301C; ISO 9408; 92/69/EEC, C.4-F) (aerobic, Inoculum conforming to MITI requirements (OECD 301C))

< 1 % DOC reduction (28 d) (OECD Guideline 302 B) (activated sludge, domestic, adapted)

Assessment of stability in water:
According to structural properties, hydrolysis is not expected/probable.

12.3. Bioaccumulative potential

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

Bioaccumulation potential:
Bioconcentration factor: < 60 (60 d), Cyprinus sp. (OECD Guideline 305 C)

12.4. Mobility in soil

Assessment transport between environmental compartments:
Volatility: The substance will not evaporate into the atmosphere from the water surface.
Adsorption in soil: Adsorption to solid soil phase is expected. The data refer to the charged form of the substance.

12.5. Results of PBT and vPvB assessment

According to Annex XIII of Regulation (EC) No.1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH): The product does not fulfill the criteria for PBT (Persistent/bioaccumulative/toxic) and vPvB (very persistent/very bioaccumulative). Self classification

12.6. Other adverse effects

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

12.7. Additional information

Other ecotoxicological advice:
Due to the pH-value of the product, neutralization is generally required before discharging sewage into treatment plants.

SECTION 13: Disposal Considerations

13.1. Waste treatment methods

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

Incinerate in suitable incineration plant, observing local authority regulations.

A waste code in accordance with the European waste catalog (EWC) cannot be specified, due to dependence on the usage.
The waste code in accordance with the European waste catalog (EWC) must be specified in cooperation with disposal agency/manufacturer/authorities.

Contaminated packaging:
Contaminated packaging should be emptied as far as possible; then it can be passed on for recycling after being thoroughly cleaned.

SECTION 14: Transport Information

Land transport

ADR

UN number	UN2922
UN proper shipping name:	CORROSIVE LIQUID, TOXIC, N.O.S. (contains 2,2-DIMETHYL-4,4-METHYLENBIS(CYCLOHEXYLAMINE))
Transport hazard class(es):	8, 6.1, EHSM
Packing group:	II
Environmental hazards:	yes
Special precautions for user:	Tunnel code: E

RID

UN number	UN2922
UN proper shipping name:	CORROSIVE LIQUID, TOXIC, N.O.S. (contains 2,2-DIMETHYL-4,4-METHYLENBIS(CYCLOHEXYLAMINE))
Transport hazard class(es):	8, 6.1, EHSM
Packing group:	II
Environmental hazards:	yes
Special precautions for user:	None known

Inland waterway transport

ADN

UN number	UN2922
UN proper shipping name:	CORROSIVE LIQUID, TOXIC, N.O.S. (contains 2,2-DIMETHYL-4,4-METHYLENBIS(CYCLOHEXYLAMINE))

Transport hazard class(es):	8, 6.1, EHSM
Packing group:	II
Environmental hazards:	yes
Special precautions for user:	None known
Transport in inland waterway vessel:	Not evaluated

Sea transport

IMDG

UN number:	UN 2922
UN proper shipping name:	CORROSIVE LIQUID, TOXIC, N.O.S. (contains 2,2-DIMETHYL-4,4-METHYLENBIS(CYCLOHEXYLAMINE))
Transport hazard class(es):	8, 6.1, EHSM
Packing group:	II
Environmental hazards:	yes Marine pollutant: YES
Special precautions for user:	None known

Air transport

IATA/ICAO

UN number:	UN 2922
UN proper shipping name:	CORROSIVE LIQUID, TOXIC, N.O.S. (contains 2,2-DIMETHYL-4,4-METHYLENBIS(CYCLOHEXYLAMINE))
Transport hazard class(es):	8, 6.1
Packing group:	II
Environmental hazards:	No Mark as dangerous for the environment is needed
Special precautions for user:	None known

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

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

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

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

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

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

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

Regulation:	Not evaluated
Shipment approved:	Not evaluated
Pollution name:	Not evaluated
Pollution category:	Not evaluated
Ship Type:	Not evaluated

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

SECTION 15: Regulatory Information

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

The data should be considered when making any assessment under the Control of Substances Hazardous to Health Regulations (COSHH), and related guidance, for example, 'COSHH Essentials' (United Kingdom).
This product is classified under the Chemicals (Hazard Information and Packaging) Regulations, (CHIP) (United Kingdom).
This product may be subject to the Control of Major Accident Hazards Regulations (COMAH), and amendments if specific threshold tonnages are exceeded (United Kingdom).

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

15.2. Chemical Safety Assessment

Chemical Safety Assessment performed

SECTION 16: Other Information

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

Acute Tox. 4 (oral)
Acute Tox. 3 (dermal)
Acute Tox. 2 (Inhalation - mist)
Aquatic Acute 2
Aquatic Chronic 2
Eye Dam./Irrit. 1
Skin Corr./Irrit. 1B
STOT RE (Liver, Kidney, Adrenal gland, Heart, Blood) 2

Full text of the classifications, including the indication of danger, the hazard symbols, the R phrases, and the hazard statements, if mentioned in section 2 or 3:

T	Toxic.
C	Corrosive.
N	Dangerous for the environment.
22	Harmful if swallowed.
23/24	Toxic by inhalation and in contact with skin.
35	Causes severe burns.
48/22	Harmful: danger of serious damage to health by prolonged exposure if swallowed.
51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
43	May cause sensitization by skin contact.
Acute Tox.	Acute toxicity
Skin Corr./Irrit.	Skin corrosion/irritation
Eye Dam./Irrit.	Serious eye damage/eye irritation
STOT RE	Specific target organ toxicity — repeated exposure
Aquatic Chronic	Hazardous to the aquatic environment - chronic
Skin Sens.	Skin sensitization
H311	Toxic in contact with skin.
H330	Fatal if inhaled.
H302	Harmful if swallowed.
H373	May cause damage to organs (Liver, Kidney, Adrenal gland, Heart, Blood) through prolonged or repeated exposure.
H314	Causes severe skin burns and eye damage.
H411	Toxic to aquatic life with long lasting effects.
H317	May cause an allergic skin reaction.

If you have any queries relating to this MSDS, it's contents or any other product safety related questions, please write to the following e-mail address: product-safety-north@basf.com

The data contained in this safety data sheet are based on our current knowledge and experience and describe the product only with regard to safety requirements. The data do not describe the product's properties (product specification). Neither should any agreed property nor the suitability of the product for any specific purpose be deduced from the data contained in the safety data sheet. It is the responsibility of the recipient of the product to ensure any proprietary rights and existing laws and legislation are observed.

Annex: Exposure Scenarios

Index

1. Formulation
SU3; SU3, SU10; ERC2; PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC15

2. Use as an intermediate
SU3; SU3, SU8, SU9, SU10; ERC6a; PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15

3. Use as Monomer, Production of rigid foam, Use in/as Flexible Foam
SU3; ERC6c; PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15, PROC21

4. Use in/as Composite Material based on wood, mineral and natural fibres
SU22; SU22; ERC8c; PROC3, PROC5, PROC8a, PROC9, PROC10, PROC11, PROC13, PROC14

5. Use in/as Composite Material based on wood, mineral and natural fibres
SU22; SU22; ERC8f; PROC3, PROC5, PROC8a, PROC9, PROC10, PROC11, PROC13, PROC14

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1. Short title of exposure scenario

Formulation
SU3; SU3, SU10; ERC2; PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC15

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC2: Formulation of preparations
Operational conditions	
Annual amount per site	100,000 kg
Minimum emission days per year	100
Emission factor air	0 %
Emission factor water	0.001 %
Emission factor soil	0 %
Receive Surf. Water (Flow Rate).	18,000 m3/d
Dilution factor river	10

Dilution factor coast	100
Risk Management Measures	
Soil treatment measures considered suitable are, e.g.	No application of sludge to soil
Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	2,000 m3/d
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Environment
Risk Characterization Ratio (RCR)	0.002977
	Risk from environmental exposure is driven by wastewater treatment plant microbes.
Maximum amount of safe use	335,908.2 kg/d
Risk from environmental exposure is driven by wastewater treatment plant microbes.	

Contributing exposure scenario	
Use descriptors covered	PROC1: Use in closed process, no likelihood of exposure. Use domain: industrial
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	

Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.0017 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.028571
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.0993 mg/m³
Risk Characterization Ratio (RCR)	0.165564
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC2: Use in closed, continuous process with occasional controlled exposure. Use domain: industrial
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour)	Effectiveness: 70 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	

Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.01 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.166667
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.298 mg/m³
Risk Characterization Ratio (RCR)	0.496692
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC3: Use in closed batch process (synthesis or formulation). Use domain: industrial
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour)	Effectiveness: 70 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	

Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.0343 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.571429
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.1788 mg/m³
Risk Characterization Ratio (RCR)	0.298015
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises. Use domain: industrial
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour)	Effectiveness: 70 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	

Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.001 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.016667
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.298 mg/m³
Risk Characterization Ratio (RCR)	0.496692
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). Use domain: industrial
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour)	Effectiveness: 70 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of	

activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.001 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.016667
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.298 mg/m³
Risk Characterization Ratio (RCR)	0.496692
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC8a: Transfer of substance or preparation (charging/discharging) from/to ves-sels/large containers at non-dedicated facilities Use domain: industrial
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear suitable respiratory protection.	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
In case no respiratory protection is used:, Reduce duration of activity to less than 15 min, Personal measures	

have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.001 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.016667
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.1987 mg/m³
Risk Characterization Ratio (RCR)	0.331128
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities Use domain: industrial
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 95 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Personal measures have to be	

applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.001 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.016667
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.4967 mg/m³
Risk Characterization Ratio (RCR)	0.82782
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Use domain: industrial
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour)	Effectiveness: 70 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	

Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.001 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.016667
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.298 mg/m³
Risk Characterization Ratio (RCR)	0.496692
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC15: Use a laboratory reagent. Use domain: industrial
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour)	Effectiveness: 70 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	

Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.0171 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.285714
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.298 mg/m³
Risk Characterization Ratio (RCR)	0.496692
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

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2. Short title of exposure scenario

Use as an intermediate
SU3; SU3, SU8, SU9, SU10; ERC6a; PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)
Operational conditions	
Annual amount used in the EU	200,000 kg
Minimum emission days per year	20
Emission factor air	0 %
Emission factor water	0.001 %
Emission factor soil	0 %
Receive Surf. Water (Flow Rate).	18,000 m3/d
Dilution factor river	10
Dilution factor coast	100
Risk Management Measures	
Soil treatment measures considered suitable are, e.g.	No application of sludge to soil

Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	2,000 m3/d
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Environment
Risk Characterization Ratio (RCR)	0.02977
	Risk from environmental exposure is driven by wastewater treatment plant microbes.
Maximum amount of safe use	335,908.2 kg/d
Risk from environmental exposure is driven by wastewater treatment plant microbes.	

Contributing exposure scenario	
Use descriptors covered	PROC1: Use in closed process, no likelihood of exposure. Use domain: industrial
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.0017 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.028571

Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.0993 mg/m³
Risk Characterization Ratio (RCR)	0.165564
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC2: Use in closed, continuous process with occasional controlled exposure. Use domain: industrial
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour)	Effectiveness: 70 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness (90%)., Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	

Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.01 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.166667
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.298 mg/m³
Risk Characterization Ratio (RCR)	0.496692
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC3: Use in closed batch process (synthesis or formulation). Use domain: industrial
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour)	Effectiveness: 70 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	

Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.0343 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.571429
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.1788 mg/m³
Risk Characterization Ratio (RCR)	0.298015
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises. Use domain: industrial
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour)	Effectiveness: 70 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness (90%)., Personal measures have to be applied in case	

of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.001 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.016667
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.298 mg/m³
Risk Characterization Ratio (RCR)	0.496692
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC8a: Transfer of substance or preparation (charging/discharging) from/to ves-sels/large containers at non-dedicated facilities Use domain: industrial
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear suitable respiratory protection.	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
In case no respiratory protection is	

used:, Reduce duration of activity to less than 15 min, Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.001 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.016667
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.1987 mg/m³
Risk Characterization Ratio (RCR)	0.331128
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities Use domain: industrial
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 95 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs	

followed.	
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness (90%)., Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.001 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.016667
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.4967 mg/m³
Risk Characterization Ratio (RCR)	0.82782
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Use domain: industrial
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour)	Effectiveness: 70 %
Clean up contamination as soon as they occur. Regular inspection and	

maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness (90%)., Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.001 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.016667
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.298 mg/m³
Risk Characterization Ratio (RCR)	0.496692
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC15: Use a laboratory reagent. Use domain: industrial
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Provide a good standard of general or	Effectiveness: 70 %

controlled ventilation (5 to 10 air changes per hour)	
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness (90%)., Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.0171 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.285714
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.298 mg/m³
Risk Characterization Ratio (RCR)	0.496692
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

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3. Short title of exposure scenario

Use as Monomer, Production of rigid foam, Use in/as Flexible Foam
SU3; ERC6c; PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15, PROC21

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC6c: Industrial use of monomers for manufacture of thermoplastics
Operational conditions	
Annual amount used in the EU	200,000 kg
Minimum emission days per year	20
Emission factor air	0 %

Emission factor water	0.001 %
Emission factor soil	0 %
Receive Surf. Water (Flow Rate).	18,000 m3/d
Dilution factor river	10
Dilution factor coast	100
Risk Management Measures	
Soil treatment measures considered suitable are, e.g.	No application of sludge to soil
Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	2,000 m3/d
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Environment
Risk Characterization Ratio (RCR)	0.02977
	Risk from environmental exposure is driven by wastewater treatment plant microbes.
Maximum amount of safe use	335,908.2 kg/d
Risk from environmental exposure is driven by wastewater treatment plant microbes.	

Contributing exposure scenario	
Use descriptors covered	PROC1: Use in closed process, no likelihood of exposure. Use domain: industrial
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in	

place to check that the RMMs in place are being used correctly and OCs followed.	
Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.0017 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.028571
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.0993 mg/m³
Risk Characterization Ratio (RCR)	0.165564
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC2: Use in closed, continuous process with occasional controlled exposure. Use domain: industrial
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour)	Effectiveness: 70 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in	

place to check that the RMMs in place are being used correctly and OCs followed.	
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness (90%)., Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.01 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.166667
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.298 mg/m³
Risk Characterization Ratio (RCR)	0.496692
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC3: Use in closed batch process (synthesis or formulation). Use domain: industrial
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour)	Effectiveness: 70 %

Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness (90%)., Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.0343 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.571429
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.1788 mg/m³
Risk Characterization Ratio (RCR)	0.298015
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises. Use domain: industrial
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity	Effectiveness: 95 %

training	
Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour)	Effectiveness: 70 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness (90%)., Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.001 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.016667
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.298 mg/m³
Risk Characterization Ratio (RCR)	0.496692
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). Use domain: industrial
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	60 min 5 days per week

Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour)	Effectiveness: 70 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness (90%)., Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.001 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.016667
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.298 mg/m³
Risk Characterization Ratio (RCR)	0.496692
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC7: Industrial spraying Use domain: industrial
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 10 %
Physical state	liquid
Vapour pressure of the substance	0.08 Pa

during use	
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 95 %
Wear suitable respiratory protection.	Effectiveness: 90 %
Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour)	Effectiveness: 70 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Ensure that the task is carried out only downward. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.01 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.166667
Assessment method	Stoffenmanager v5.6
	Worker - inhalation, long-term - systemic
Exposure estimate	0.26 mg/m³
Risk Characterization Ratio (RCR)	0.433333

Contributing exposure scenario	
Use descriptors covered	PROC8a: Transfer of substance or preparation (charging/discharging) from/to ves-sels/large containers at non-dedicated facilities Use domain: industrial
Operational conditions	

Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear suitable respiratory protection.	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
In case no respiratory protection is used:, Reduce duration of activity to less than 15 min, Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.001 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.016667
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.1987 mg/m³
Risk Characterization Ratio (RCR)	0.331128
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

	Use domain: industrial
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 95 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness (90%)., Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.001 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.016667
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.4967 mg/m³
Risk Characterization Ratio (RCR)	0.82782
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario

Use descriptors covered	PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Use domain: industrial
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour)	Effectiveness: 70 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness (90%)., Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.001 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.016667
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.298 mg/m³
Risk Characterization Ratio (RCR)	0.496692

Guidance to Downstream Users
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)

Contributing exposure scenario	
Use descriptors covered	PROC10: Roller application or brushing Use domain: industrial
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 10 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour)	Effectiveness: 70 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness (90%)., Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.01 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.166667

Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, worker, modified version, The concentration of the substance has been considered using a linear approach.
	Worker - inhalation, long-term - systemic
Exposure estimate	0.298 mg/m³
Risk Characterization Ratio (RCR)	0.496692
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC13: Treatment of articles by dipping and pouring. Use domain: industrial
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 10 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour)	Effectiveness: 70 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness (90%)., Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	

Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.01 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.166667
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, worker, modified version, The concentration of the substance has been considered using a linear approach.
	Worker - inhalation, long-term - systemic
Exposure estimate	0.298 mg/m³
Risk Characterization Ratio (RCR)	0.496692
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelettisation. Use domain: industrial
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 10 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	240 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
In case no suitable local exhaust ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness (90%)., Personal	

measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.005 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.083333
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, worker, modified version, The concentration of the substance has been considered using a linear approach.
	Worker - inhalation, long-term - systemic
Exposure estimate	0.298 mg/m³
Risk Characterization Ratio (RCR)	0.496692
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC15: Use a laboratory reagent. Use domain: industrial
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 10 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
In case no suitable local exhaust	

ventilation is present:, Wear a suitable respiratory protection with adequate effectiveness (90%)., Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, worker, modified version, The concentration of the substance has been considered using a linear approach.
	Worker - dermal, long-term - systemic
Exposure estimate	0.0017 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.028571
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, worker, modified version, The concentration of the substance has been considered using a linear approach.
	Worker - inhalation, long-term - systemic
Exposure estimate	0.4967 mg/m³
Risk Characterization Ratio (RCR)	0.82782
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC21: Low energy manipulation of substances bound in materials and/or articles Use domain: industrial
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 10 %
Physical state	Solid, low dustiness
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct	

contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, worker, modified version, The concentration of the substance has been considered using a linear approach.
	Worker - dermal, long-term - systemic
Exposure estimate	0.0141 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.235714
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, worker, modified version, The concentration of the substance has been considered using a linear approach.
	Worker - inhalation, long-term - systemic
Exposure estimate	0.1 mg/m³
Risk Characterization Ratio (RCR)	0.166667
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

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4. Short title of exposure scenario

Use in/as Composite Material based on wood, mineral and natural fibres
SU22; SU22; ERC8c; PROC3, PROC5, PROC8a, PROC9, PROC10, PROC11, PROC13, PROC14

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix
Operational conditions	
Annual amount used in the EU	100,000 kg
Minimum emission days per year	365
Emission factor air	0 %
Emission factor water	1 %
Emission factor soil	0 %
Receive Surf. Water (Flow Rate).	18,000 m3/d

Dilution factor river	10
Dilution factor coast	100
Risk Management Measures	
Type of STP	Municipal STP
Assumed sewage treatment plant flow (m3/d)	2,000 m3/d
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Environment
Risk Characterization Ratio (RCR)	0.000163
	Risk from environmental exposure is driven by wastewater treatment plant microbes.
Maximum amount of safe use	335.9 kg/d
Risk from environmental exposure is driven by wastewater treatment plant microbes.	

Contributing exposure scenario	
Use descriptors covered	PROC3: Use in closed batch process (synthesis or formulation). Use domain: professional
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 80 %
Wear chemically resistant gloves in combination with ‘basic’ employee training.	Effectiveness: 90 %
Provide a good standard of general ventilation (not less than 3 - 5 air changes per hour)	Effectiveness: 30 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs	

followed.	
Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.001 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.016667
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, worker, modified version, The duration of activity has been considered using a linear approach.
	Worker - inhalation, long-term - systemic
Exposure estimate	0.5215 mg/m³
Risk Characterization Ratio (RCR)	0.869211
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). Use domain: professional
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 10 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	120 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 80 %
Wear chemically resistant gloves in combination with ‘basic’ employee training.	Effectiveness: 90 %
Provide a good standard of general ventilation (not less than 3 - 5 air changes per hour)	Effectiveness: 30 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and	

machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
At concentrations above 15%, Reduce duration of activity to less than 15 min, Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.002 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.033333
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, worker, modified version, The concentration of the substance has been considered using a linear approach., The duration of activity has been considered using a linear approach.
	Worker - inhalation, long-term - systemic
Exposure estimate	0.3477 mg/m³
Risk Characterization Ratio (RCR)	0.579474
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC8a: Transfer of substance or preparation (charging/discharging) from/to ves-sels/large containers at non-dedicated facilities Use domain: professional
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 10 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 80 %
Wear chemically resistant gloves in combination with ‘basic’ employee	Effectiveness: 90 %

training.	
Provide a good standard of general ventilation (not less than 3 - 5 air changes per hour)	Effectiveness: 30 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
At concentrations above 15%, Reduce duration of activity to less than 15 min, Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.001 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.016667
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, worker, modified version, The concentration of the substance has been considered using a linear approach., The duration of activity has been considered using a linear approach.
	Worker - inhalation, long-term - systemic
Exposure estimate	0.4346 mg/m³
Risk Characterization Ratio (RCR)	0.724342
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Use domain: professional
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 50 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	30 min 5 days per week

Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 80 %
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Provide a good standard of general ventilation (not less than 3 - 5 air changes per hour)	Effectiveness: 30 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.001 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.016667
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, worker, modified version, The concentration of the substance has been considered using a linear approach., The duration of activity has been considered using a linear approach.
	Worker - inhalation, long-term - systemic
Exposure estimate	0.4346 mg/m³
Risk Characterization Ratio (RCR)	0.724342
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC10: Roller application or brushing Use domain: professional
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 10 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa

Process temperature	20 °C
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 80 %
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Provide a good standard of general ventilation (not less than 3 - 5 air changes per hour)	Effectiveness: 30 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.001 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.016667
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, worker, modified version, The concentration of the substance has been considered using a linear approach., The duration of activity has been considered using a linear approach.
	Worker - inhalation, long-term - systemic
Exposure estimate	0.4346 mg/m³
Risk Characterization Ratio (RCR)	0.724342
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC11: Non industrial spraying Use domain: professional
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 10 %

Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 80 %
Wear suitable respiratory protection.	Effectiveness: 90 %
Provide a good standard of general ventilation (not less than 3 - 5 air changes per hour)	Effectiveness: 30 %
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Ensure that the task is carried out only downward. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.01 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.166667
Assessment method	Stoffenmanager v5.6
	Worker - inhalation, long-term - systemic
Exposure estimate	0.26 mg/m³
Risk Characterization Ratio (RCR)	0.433333

Contributing exposure scenario	
Use descriptors covered	PROC13: Treatment of articles by dipping and pouring. Use domain: professional
Operational conditions	

Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 10 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	120 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 80 %
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Provide a good standard of general ventilation (not less than 3 - 5 air changes per hour)	Effectiveness: 30 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.002 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.033333
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, worker, modified version, The concentration of the substance has been considered using a linear approach., The duration of activity has been considered using a linear approach.
	Worker - inhalation, long-term - systemic
Exposure estimate	0.3477 mg/m³
Risk Characterization Ratio (RCR)	0.579474
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC14: Production of preparations or articles by

	tabletting, compression, extrusion, pelettisation. Use domain: professional
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 10 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	120 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 80 %
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Provide a good standard of general ventilation (not less than 3 - 5 air changes per hour)	Effectiveness: 30 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.002 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.033333
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, worker, modified version, The concentration of the substance has been considered using a linear approach., The duration of activity has been considered using a linear approach.
	Worker - inhalation, long-term - systemic
Exposure estimate	0.3477 mg/m³
Risk Characterization Ratio (RCR)	0.579474
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see	

exposure estimates)

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5. Short title of exposure scenario

Use in/as Composite Material based on wood, mineral and natural fibres
SU22; SU22; ERC8f; PROC3, PROC5, PROC8a, PROC9, PROC10, PROC11, PROC13, PROC14

Control of exposure and risk management measures

Contributing exposure scenario		
Use descriptors covered	ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix	
Operational conditions		
Annual amount used in the EU	100,000 kg	
Minimum emission days per year	365	
Emission factor air	0 %	
Emission factor water	1 %	
Emission factor soil	3.7 %	
Receive Surf. Water (Flow Rate).	18,000 m3/d	
Dilution factor river	10	
Dilution factor coast	100	
Risk Management Measures		
Type of STP		Municipal STP
Assumed sewage treatment plant flow (m3/d)		2,000 m3/d
Exposure estimate and reference to its source		
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Environment	
Risk Characterization Ratio (RCR)	0.000163	
	Risk from environmental exposure is driven by wastewater treatment plant microbes.	
Maximum amount of safe use	335.9 kg/d	
Risk from environmental exposure is driven by wastewater treatment plant microbes.		

Contributing exposure scenario	
Use descriptors covered	PROC3: Use in closed batch process (synthesis or formulation). Use domain: professional
Operational conditions	

Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Outdoor
Risk Management Measures	
Wear suitable respiratory protection.	Effectiveness: 95 %
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.001 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.016667
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - systemic
Exposure estimate	0.2086 mg/m³
Risk Characterization Ratio (RCR)	0.347684
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). Use domain: professional
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine)

	Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Outdoor
Risk Management Measures	
Wear suitable respiratory protection.	Effectiveness: 95 %
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.001 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.016667
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, worker, modified version, The duration of activity has been considered using a linear approach.
	Worker - inhalation, long-term - systemic
Exposure estimate	0.4346 mg/m³
Risk Characterization Ratio (RCR)	0.724342
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC8a: Transfer of substance or preparation (charging/discharging) from/to ves-sels/large containers at non-dedicated facilities Use domain: professional
Operational conditions	

Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	15 min 5 days per week
Indoor/Outdoor	Outdoor
Risk Management Measures	
Wear suitable respiratory protection.	Effectiveness: 95 %
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.001 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.016667
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, worker, modified version, The duration of activity has been considered using a linear approach.
	Worker - inhalation, long-term - systemic
Exposure estimate	0.2716 mg/m³
Risk Characterization Ratio (RCR)	0.452714
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Use domain: professional
Operational conditions	

Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Outdoor
Risk Management Measures	
Wear suitable respiratory protection.	Effectiveness: 95 %
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.001 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.016667
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, worker, modified version, The duration of activity has been considered using a linear approach.
	Worker - inhalation, long-term - systemic
Exposure estimate	0.4346 mg/m³
Risk Characterization Ratio (RCR)	0.724342
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC10: Roller application or brushing Use domain: professional
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine)

	Content: >= 0 % - <= 10 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	240 min 5 days per week
Indoor/Outdoor	Outdoor
Risk Management Measures	
Wear suitable respiratory protection.	Effectiveness: 95 %
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.005 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.083333
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, worker, modified version, The concentration of the substance has been considered using a linear approach., The duration of activity has been considered using a linear approach.
	Worker - inhalation, long-term - systemic
Exposure estimate	0.4346 mg/m³
Risk Characterization Ratio (RCR)	0.724342
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC11: Non industrial spraying Use domain: professional
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine)

	Content: >= 0 % - <= 10 %
Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Outdoor
Risk Management Measures	
Wear suitable respiratory protection.	Effectiveness: 90 %
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Ensure that the task is carried out only downward. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.01 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.166667
Assessment method	Stoffenmanager v5.6
	Worker - inhalation, long-term - systemic
Exposure estimate	0.28 mg/m³
Risk Characterization Ratio (RCR)	0.466667

Contributing exposure scenario	
Use descriptors covered	PROC13: Treatment of articles by dipping and pouring. Use domain: professional
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 10 %

Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Outdoor
Risk Management Measures	
Wear suitable respiratory protection.	Effectiveness: 95 %
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.01 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.166667
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, worker, modified version, The concentration of the substance has been considered using a linear approach.
	Worker - inhalation, long-term - systemic
Exposure estimate	0.3477 mg/m³
Risk Characterization Ratio (RCR)	0.579474
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelettisation. Use domain: professional
Operational conditions	
Concentration of the substance	2,2'-dimethyl-4,4'methylenebis(cyclohexylamine) Content: >= 0 % - <= 10 %

Physical state	liquid
Vapour pressure of the substance during use	0.08 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Outdoor
Risk Management Measures	
Wear suitable respiratory protection.	Effectiveness: 95 %
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Clean up contamination as soon as they occur. Regular inspection and maintenance of equipment and machines. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.	
Personal measures have to be applied in case of potential exposure only., Change gloves, if duration of activity exceeds break through time	
Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	IH SkinPerm model
	Worker - dermal, long-term - systemic
Exposure estimate	0.01 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.166667
Assessment method	EASY TRA v3.6, ECETOC TRA v3.0, worker, modified version, The concentration of the substance has been considered using a linear approach.
	Worker - inhalation, long-term - systemic
Exposure estimate	0.3477 mg/m³
Risk Characterization Ratio (RCR)	0.579474
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

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