

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006



Viton™ VTR-9140 fluoroelastomer

| | | | |
|---------|----------------|---------------|---------------------------------|
| Version | Revision Date: | SDS Number: | Date of last issue: 26.03.2020 |
| 4.3 | 02.04.2021 | 1332983-00036 | Date of first issue: 27.02.2017 |

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

1.1 Product identifier

Trade name : Viton™ VTR-9140 fluoroelastomer

SDS-Identcode : 130000033028

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

Use of the Sub-stance/Mixture : Manufacture of rubber products

1.3 Details of the supplier of the safety data sheet

Company : Chemours Netherlands B.V.
Baanhoekweg 22
3313 LA Dordrecht Netherlands

Telephone : +31-(0)-78-630-1011

Telefax : +31-78-6163737

E-mail address of person responsible for the SDS : sds-support@chemours.com

1.4 Emergency telephone number

+(44)-870-8200418 (CHEMTREC - Recommended)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Long-term (chronic) aquatic hazard, Category 3 : H412: Harmful to aquatic life with long lasting effects.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard statements : H412 Harmful to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**
P273 Avoid release to the environment.

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

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SECTION 3: Composition/information on ingredients

3.2 Mixtures

Components

| Chemical name | CAS-No. EC-No. Index-No. Registration number | Classification | Concentration (% w/w) |
|---|---|--|--------------------------|
| Reaction mass of 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol and benzyltriphenylphosphonium, salt with 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[phenol] (1:1) | Not Assigned 01-2120763412-59-0000 | Repr. 1B; H360 STOT RE 2; H373 (Seminal vesicle, Prostate) Aquatic Acute 1; H400 Aquatic Chronic 1; H410 M-Factor (Acute aquatic toxicity): 1 M-Factor (Chronic aquatic toxicity): 10 | >= 1 - < 2.5 |

Alternative CAS Numbers for some regions

| Chemical name | Alternative CAS Number(s) |
|---|---------------------------|
| Reaction mass of 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol and benzyltriphenylphosphonium, salt with 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[phenol] (1:1) | 75768-65-9, 1478-61-1 |

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

- Protection of first-aiders : No special precautions are necessary for first aid responders.
- If inhaled : If inhaled, remove to fresh air.
Get medical attention if symptoms occur.
- In case of skin contact : Wash with water and soap as a precaution.
Get medical attention if symptoms occur.
- In case of eye contact : Flush eyes with water as a precaution.
Get medical attention if irritation develops and persists.
- If swallowed : If swallowed, DO NOT induce vomiting.
Get medical attention if symptoms occur.
Rinse mouth thoroughly with water.

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4.2 Most important symptoms and effects, both acute and delayed

None known.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically and supportively.

SECTION 5: Firefighting measures

5.1 Extinguishing media

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

Unsuitable extinguishing media : None known.

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire-fighting : Exposure to combustion products may be a hazard to health.

Hazardous combustion products : Carbon oxides
Fluorine compounds

5.3 Advice for firefighters

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

Specific extinguishing methods : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Use water spray to cool unopened containers.
Remove undamaged containers from fire area if it is safe to do so.
Evacuate area.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Follow safe handling advice (see section 7) and personal protective equipment recommendations (see section 8).

6.2 Environmental precautions

Environmental precautions : Avoid release to the environment.
Prevent further leakage or spillage if safe to do so.
Retain and dispose of contaminated wash water.
Local authorities should be advised if significant spillages cannot be contained.

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6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Sweep up or vacuum up spillage and collect in suitable container for disposal.
Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.
Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.

6.4 Reference to other sections

See sections: 7, 8, 11, 12 and 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Technical measures : See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.

Local/Total ventilation : Use only with adequate ventilation.

Advice on safe handling : Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment
Take care to prevent spills, waste and minimize release to the environment.

Hygiene measures : If exposure to chemical is likely during typical use, provide eye flushing systems and safety showers close to the working place. When using do not eat, drink or smoke. Wash contaminated clothing before re-use.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Keep in properly labelled containers. Store in accordance with the particular national regulations.

Advice on common storage : No special restrictions on storage with other products.

7.3 Specific end use(s)

Specific use(s) : No data available

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Contains no substances with occupational exposure limit values.

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

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| Substance name | End Use | Exposure routes | Potential health effects | Value |
|---|---------|-----------------|----------------------------|-------------------------|
| Reaction mass of 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol and benzyltriphenylphosphonium, salt with 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[phenol] (1:1) | Workers | Inhalation | Long-term systemic effects | 0.118 mg/m ³ |
| | Workers | Skin contact | Long-term systemic effects | 0.033 mg/kg bw/day |

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

| Substance name | Environmental Compartment | Value |
|---|---------------------------|-------------------------------|
| Reaction mass of 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol and benzyltriphenylphosphonium, salt with 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[phenol] (1:1) | Freshwater - intermittent | 0.0045 mg/l |
| | Marine sediment | 0.033 mg/kg dry weight (d.w.) |
| | Fresh water sediment | 0.328 mg/kg dry weight (d.w.) |
| | Sewage treatment plant | 10 mg/l |
| | Soil | 0.065 mg/kg dry weight (d.w.) |
| | Fresh water | 0.00045 mg/l |
| | Marine water | 0.000045 mg/l |

8.2 Exposure controls

Engineering measures

Ensure adequate ventilation, especially in confined areas.

Minimize workplace exposure concentrations.

Personal protective equipment

Eye protection : Wear the following personal protective equipment:
Safety glasses
Equipment should conform to BS EN 166

Hand protection
Material : Nitrile rubber
Glove thickness : 0.38 mm

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Wearing time : 480 min

Remarks : Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous substance and specific to place of work. For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer. Wash hands before breaks and at the end of workday. Breakthrough time is not determined for the product. Change gloves often!

Skin and body protection : Skin should be washed after contact.

Respiratory protection : No personal respiratory protective equipment normally required.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

| | |
|--|---------------------------------|
| Appearance | : sheets |
| Colour | : white, off-white |
| Odour | : odourless |
| Odour Threshold | : No data available |
| pH | : No data available |
| Melting point/freezing point | : No data available |
| Initial boiling point and boiling range | : No data available |
| Flash point | : Not applicable |
| Evaporation rate | : Not applicable |
| Flammability (solid, gas) | : No data available |
| Upper explosion limit / Upper flammability limit | : No data available |
| Lower explosion limit / Lower flammability limit | : No data available |
| Vapour pressure | : Not applicable |
| Relative vapour density | : Not applicable |
| Density | : 1.75 - 1.90 g/cm ³ |

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| | |
|--|--|
| Solubility(ies) | |
| Water solubility | : insoluble |
| Partition coefficient: n-octanol/water | : Not applicable |
| Auto-ignition temperature | : No data available |
| Decomposition temperature | : No data available |
| Viscosity | |
| Viscosity, kinematic | : Not applicable |
| Explosive properties | : Not explosive |
| Oxidizing properties | : The substance or mixture is not classified as oxidizing. |

9.2 Other information

| | |
|---------------|---------------------|
| Particle size | : No data available |
|---------------|---------------------|

SECTION 10: Stability and reactivity

10.1 Reactivity

Not classified as a reactivity hazard.

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

| | |
|---------------------|---------------|
| Hazardous reactions | : None known. |
|---------------------|---------------|

10.4 Conditions to avoid

| | |
|---------------------|---------------|
| Conditions to avoid | : None known. |
|---------------------|---------------|

10.5 Incompatible materials

| | |
|--------------------|---------|
| Materials to avoid | : None. |
|--------------------|---------|

10.6 Hazardous decomposition products

No hazardous decomposition products are known.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

| | |
|--|--|
| Information on likely routes of exposure | : Skin contact Ingestion Eye contact |
|--|--|

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Acute toxicity

Not classified based on available information.

Components:

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:

| | | |
|---------------------|---|---|
| Acute oral toxicity | : | LD50 (Rat): > 2,000 mg/kg |
| | | Method: OECD Test Guideline 425 |
| | | Assessment: The substance or mixture has no acute oral toxicity |

Skin corrosion/irritation

Not classified based on available information.

Components:

Reaction mass of 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol and benzyltriphenylphosphonium, salt with 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[phenol] (1:1)

:

| | | |
|---------|---|-------------------------|
| Species | : | Not tested on animals |
| Method | : | OECD Test Guideline 439 |
| Result | : | No skin irritation |

Serious eye damage/eye irritation

Not classified based on available information.

Components:

Reaction mass of 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol and benzyltriphenylphosphonium, salt with 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[phenol] (1:1)

:

| | | |
|---------|---|-------------------------|
| Species | : | In Vitro - Bovine |
| Method | : | OECD Test Guideline 437 |
| Result | : | No eye irritation |

Respiratory or skin sensitisation

Skin sensitisation

Not classified based on available information.

Respiratory sensitisation

Not classified based on available information.

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Components:

Reaction mass of 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol and benzyltriphenylphosphonium, salt with 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[phenol] (1:1)

:

| | |
|-----------------|--|
| Test Type | : Direct Peptide Reactivity Assay (DPRA) |
| Exposure routes | : Skin contact |
| Species | : Not tested on animals |
| Method | : OECD Test Guideline 442C |
| Result | : equivocal |

| | |
|-----------------|----------------------------|
| Test Type | : KeratinoSens assay |
| Exposure routes | : Skin contact |
| Species | : Not tested on animals |
| Method | : OECD Test Guideline 442D |
| Result | : positive |

| | |
|-----------------|--|
| Test Type | : Maximisation Test |
| Exposure routes | : Skin contact |
| Species | : Guinea pig |
| Method | : OECD Test Guideline 406 |
| Result | : negative |
| Remarks | : Based on data from similar materials |

| | |
|------------|--------------------------------------|
| Assessment | : Does not cause skin sensitisation. |
|------------|--------------------------------------|

Germ cell mutagenicity

Not classified based on available information.

Components:

Reaction mass of 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol and benzyltriphenylphosphonium, salt with 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[phenol] (1:1)

:

| | |
|-----------------------|---|
| Genotoxicity in vitro | : Test Type: Bacterial reverse mutation assay (AMES) Method: OECD Test Guideline 471 Result: negative |
|-----------------------|---|

| | |
|--|--|
| | Test Type: In vitro mammalian cell gene mutation test Method: OECD Test Guideline 476 Result: negative |
|--|--|

| | |
|------------------------------------|--|
| Germ cell mutagenicity- Assessment | : Weight of evidence does not support classification as a germ cell mutagen. |
|------------------------------------|--|

Carcinogenicity

Not classified based on available information.

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Reproductive toxicity

Not classified based on available information.

Product:

Reproductive toxicity - Assessment : No toxicity to reproduction

Components:

Reaction mass of 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol and benzyltriphenylphosphonium, salt with 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[phenol] (1:1)

:

Effects on fertility : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 422
Result: positive
Remarks: Based on data from similar materials

Effects on foetal development : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 422
Result: negative
Remarks: Based on data from similar materials

Reproductive toxicity - Assessment : Clear evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments

STOT - single exposure

Not classified based on available information.

STOT - repeated exposure

Not classified based on available information.

Product:

Assessment : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Components:

Reaction mass of 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol and benzyltriphenylphosphonium, salt with 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[phenol] (1:1)

:

Exposure routes : Ingestion
Target Organs : Seminal vesicle, Prostate

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Assessment : Shown to produce significant health effects in animals at concentrations of >10 to 100 mg/kg bw.

Repeated dose toxicity

Components:

Reaction mass of 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol and benzyltriphenylphosphonium, salt with 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[phenol] (1:1)

:

| | |
|-------------------|--|
| Species | : Rat, male and female |
| NOAEL | : 10 mg/kg |
| LOAEL | : 100 mg/kg |
| Application Route | : Ingestion |
| Exposure time | : 28 Days |
| Method | : OECD Test Guideline 407 |
| Remarks | : Based on data from similar materials |

Aspiration toxicity

Not classified based on available information.

Further information

Product:

Remarks : According to data on similar materials, and from modeling assessment, the product is not considered to require classification as dangerous to health.

SECTION 12: Ecological information

12.1 Toxicity

Product:

Ecotoxicology Assessment

| | |
|--------------------------|---|
| Acute aquatic toxicity | : This product has no known ecotoxicological effects. |
| Chronic aquatic toxicity | : Harmful to aquatic life with long lasting effects. |

Components:

Reaction mass of 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol and benzyltriphenylphosphonium, salt with 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[phenol] (1:1)

:

| | |
|------------------|--|
| Toxicity to fish | : LC50 (Pimephales promelas (fathead minnow)): 1.2 mg/l Exposure time: 96 h |
|------------------|--|

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Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 0.79 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : ErC50 (Raphidocelis subcapitata (freshwater green alga)): 0.45 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

NOEC (Raphidocelis subcapitata (freshwater green alga)): 0.0087 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

M-Factor (Acute aquatic toxicity) : 1

M-Factor (Chronic aquatic toxicity) : 10

12.2 Persistence and degradability

Components:

Reaction mass of 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol and benzyltriphenylphosphonium, salt with 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[phenol] (1:1)

:

Biodegradability : Result: Not readily biodegradable.
Method: OECD Test Guideline 301B

12.3 Bioaccumulative potential

Components:

Reaction mass of 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol and benzyltriphenylphosphonium, salt with 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[phenol] (1:1)

:

Partition coefficient: n-octanol/water : log Pow: 2.28

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Product:

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Assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects

Product:

Endocrine disrupting potential : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : Dispose of in accordance with local regulations. According to the European Waste Catalogue, Waste Codes are not product specific, but application specific. Waste codes should be assigned by the user, preferably in discussion with the waste disposal authorities.

Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal. If not otherwise specified: Dispose of as unused product.

SECTION 14: Transport information

14.1 UN number

Not regulated as a dangerous good

14.2 UN proper shipping name

Not regulated as a dangerous good

14.3 Transport hazard class(es)

Not regulated as a dangerous good

14.4 Packing group

Not regulated as a dangerous good

14.5 Environmental hazards

Not regulated as a dangerous good

14.6 Special precautions for user

Not applicable

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

Remarks : Not applicable for product as supplied.

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SECTION 15: Regulatory information

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

| | |
|---|--|
| REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII) | : Conditions of restriction for the following entries should be considered: Cadmium (Number on list 72, 28) Nickel (Number on list 27) |
| REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59). | : Not applicable |
| REACH - List of substances subject to authorisation (Annex XIV) | : Not applicable |
| Regulation (EC) No 1005/2009 on substances that deplete the ozone layer | : Not applicable |
| Regulation (EU) 2019/1021 on persistent organic pollutants (recast) | : Not applicable |
| Regulation (EC) No 649/2012 of the European Parliament and the Council concerning the export and import of dangerous chemicals | : Not applicable |
| Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances. | Not applicable |

15.2 Chemical safety assessment

A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

Other information : Viton™ and any associated logos are trademarks or copyrights of The Chemours Company FC, LLC. Chemours™ and the Chemours Logo are trademarks of The Chemours Company. Before use read Chemours safety information. For further information contact the local Chemours office or nominated distributors. Do not use or resell Chemours™ materials in medical applications involving implantation in the human body or contact with internal body fluids or tissues unless agreed to by Seller in a written agreement covering such use. For further information, please contact your Chemours representative.

Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

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Full text of H-Statements

| | | |
|------|---|--|
| H360 | : | May damage fertility or the unborn child. |
| H373 | : | May cause damage to organs through prolonged or repeated exposure. |
| H400 | : | Very toxic to aquatic life. |
| H410 | : | Very toxic to aquatic life with long lasting effects. |

Full text of other abbreviations

| | | |
|-----------------|---|--|
| Aquatic Acute | : | Short-term (acute) aquatic hazard |
| Aquatic Chronic | : | Long-term (chronic) aquatic hazard |
| Repr. | : | Reproductive toxicity |
| STOT RE | : | Specific target organ toxicity - repeated exposure |

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Further information

| | | |
|---|---|---|
| Sources of key data used to compile the Safety Data Sheet | : | Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, http://echa.europa.eu/ |
|---|---|---|

Classification of the mixture:

Aquatic Chronic 3 H412

Classification procedure:

Based on product data or assessment

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The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.

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Annex: Exposure Scenarios

Table of Contents

| Number | Title |
|--------|--|
| ES 1 | Industrial use; Processing aid - Polymerisation. |

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ES 1: Industrial use; Processing aid - Polymerisation.

1.1. Title section

| | |
|-------------------------------|--|
| Exposure Scenario name | : Use in rubber production and processing |
| Structured Short Title | : Industrial use; Processing aid - Polymerisation. |

| Environment | | |
|-------------|---|--------|
| CS 1 | Use in rubber production and processing | ERC6d |
| Worker | | |
| CS 2 | Use in polymer production, Mixing, Batch process | PROC5 |
| CS 3 | Material transfers, Non-dedicated facility | PROC8a |
| CS 4 | Material transfers, Dedicated facility | PROC8b |
| CS 5 | Pressing uncured rubber blanks, Curing chemical | PROC14 |
| CS 6 | Laboratory activities | PROC15 |
| CS 7 | Loading and unloading, Manual | PROC21 |

1.2. Conditions of use affecting exposure

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

| Product (article) characteristics | |
|--|------------------------|
| Covers concentrations up to 4 % | |
| Physical form of product | : Solid, low dustiness |
| Amount used (or contained in articles), frequency and duration of use/exposure | |
| Annual amount per site | : 5 tonnes/year |
| Daily amount per site | : 23 kg/day |
| Emission days | : 220 |
| Release fraction to wastewater from process | |
| Worst case assumption 0.02 % | |
| Release fraction to air from process | |
| Worst case assumption 0.1 % | |

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| Technical and organisational conditions and measures | |
|---|--|
| Process designed to minimize releases to wastewater. Process designed to minimize releases to air. Soil emission controls are not applicable as there is no direct release to soil. | |
| Conditions and measures related to sewage treatment plant | |
| STP type | : Sewage treatment plant used |
| STP effluent | : 2,000 m3/d |
| Conditions and measures related to treatment of waste (including article waste) | |
| Waste treatment | : Contain and dispose of waste according to local regulations. |
| Other conditions affecting environmental exposure | |
| Receiving surface water flow | : 18,000 m3/d |

1.2.2. Control of worker exposure: Mixing or blending in batch processes (PROC5)

| Product (article) characteristics | |
|--|--|
| Covers concentrations up to 5 % | |
| Physical form of product | : Solid, low dustiness |
| Amount used (or contained in articles), frequency and duration of use/exposure | |
| Duration | : Covers daily exposures up to 8 hours |
| Technical and organisational conditions and measures | |
| Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Local exhaust ventilation | |
| Assumes a good basic standard of occupational hygiene is implemented | |
| Conditions and measures related to personal protection, hygiene and health evaluation | |
| Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 % | |
| Other conditions affecting workers exposure | |
| Indoor or outdoor use | : Indoor use |

1.2.3. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

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| Product (article) characteristics | |
|---|--|
| Covers concentrations up to 5 % | |
| Physical form of product | : Solid, low dustiness |
| Amount used (or contained in articles), frequency and duration of use/exposure | |
| Duration | : Covers daily exposures up to 8 hours |
| Technical and organisational conditions and measures | |
| Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). | |
| Assumes a good basic standard of occupational hygiene is implemented | |
| Conditions and measures related to personal protection, hygiene and health evaluation | |
| Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. Dermal - minimum efficiency of 95 % | |
| Other conditions affecting workers exposure | |
| Indoor or outdoor use | : Indoor use |

1.2.4. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

| Product (article) characteristics | |
|--|--|
| Covers concentrations up to 5 % | |
| Physical form of product | : Solid, low dustiness |
| Amount used (or contained in articles), frequency and duration of use/exposure | |
| Duration | : Covers daily exposures up to 8 hours |
| Technical and organisational conditions and measures | |
| Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Local exhaust ventilation | |
| Transfer via enclosed lines. | |
| Assumes a good basic standard of occupational hygiene is implemented | |
| Conditions and measures related to personal protection, hygiene and health evaluation | |
| Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 % | |

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Other conditions affecting workers exposure

Indoor or outdoor use : Indoor use

1.2.5. Control of worker exposure: Tableting, compression, extrusion, pelettisation, granulation (PROC14)

Product (article) characteristics

Covers concentrations up to 5 %

Physical form of product : Solid, low dustiness

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Covers daily exposures up to 8 hours

Technical and organisational conditions and measures

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
Local exhaust ventilation

Assumes a good basic standard of occupational hygiene is implemented

Conditions and measures related to personal protection, hygiene and health evaluation

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure

Indoor or outdoor use : Indoor use

1.2.6. Control of worker exposure: Use as laboratory reagent (PROC15)

Product (article) characteristics

Covers concentrations up to 5 %

Physical form of product : Solid, low dustiness

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Covers daily exposures up to 8 hours

Technical and organisational conditions and measures

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Assumes a good basic standard of occupational hygiene is implemented

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| Conditions and measures related to personal protection, hygiene and health evaluation | |
|--|--------------|
| Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 % | |
| Other conditions affecting workers exposure | |
| Indoor or outdoor use | : Indoor use |

1.2.7. Control of worker exposure: Low energy manipulation and handling of substances bound in/on materials and/or articles (PROC21)

| Product (article) characteristics | |
|--|--|
| Covers concentrations up to 1 % | |
| Physical form of product | : Solid, low dustiness |
| Amount used (or contained in articles), frequency and duration of use/exposure | |
| Duration | : Covers daily exposures up to 8 hours |
| Technical and organisational conditions and measures | |
| Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Local exhaust ventilation | |
| Assumes a good basic standard of occupational hygiene is implemented | |
| Conditions and measures related to personal protection, hygiene and health evaluation | |
| Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 % | |
| Other conditions affecting workers exposure | |
| Indoor or outdoor use | : Indoor use |

1.3. Exposure estimation and reference to its source

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

| Protection Target | Exposure estimate | RCR |
|---------------------|------------------------------------|-----|
| Freshwater | 0.0012 mg/L (ECETOC TRA) | 0.3 |
| Freshwater sediment | 0.09 mg/kg dry weight (ECETOC TRA) | 0.3 |

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| | | |
|----------------------------|-------------------------------------|---------|
| Marine water | 0.000023 mg/L (ECETOC TRA) | 0.5 |
| Marine sediment | 0.017 mg/kg dry weight (ECETOC TRA) | 0.5 |
| Sewage treatment plant | 0.0012 mg/L (ECETOC TRA) | < 0.001 |
| Agricultural soil | 0.045 mg/kg dry weight (ECETOC TRA) | 0.7 |
| Man via environment - Oral | 0.000086 mg/kg bw/day (ECETOC TRA) | 0.002 |

1.3.2. Worker exposure: Mixing or blending in batch processes (PROC5)

| Exposure route | Health effect | Exposure indicator | Exposure estimate | RCR |
|----------------|---------------|--------------------|--|------|
| inhalative | systemic | long-term | 0.007 mg/m ³ (ECETOC TRA worker v3) | 0.06 |
| dermal | systemic | long-term | 0.03 mg/kg bw/day (ECETOC TRA worker v3) | 0.83 |

1.3.3. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

| Exposure route | Health effect | Exposure indicator | Exposure estimate | RCR |
|----------------|---------------|--------------------|--|-------|
| inhalative | systemic | long-term | < 0.007 mg/m ³ (ECETOC TRA worker v3) | 0.058 |
| dermal | systemic | long-term | 0.013 mg/kg bw/day (ECETOC TRA worker v3) | 0.39 |

1.3.4. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

| Exposure route | Health effect | Exposure indicator | Exposure estimate | RCR |
|----------------|---------------|--------------------|--|-------|
| inhalative | systemic | long-term | 0.001 mg/m ³ (ECETOC TRA worker v3) | 0.008 |
| dermal | systemic | long-term | < 0.002 mg/kg bw/day (ECETOC TRA worker v3) | 0.039 |

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1.3.5. Worker exposure: Tableting, compression, extrusion, pelettisation, granulation (PROC14)

| Exposure route | Health effect | Exposure indicator | Exposure estimate | RCR |
|----------------|---------------|--------------------|---|-------|
| inhalative | systemic | long-term | 0.002 mg/m ³ (ECETOC TRA worker v3) | 0.017 |
| dermal | systemic | long-term | 0.007 mg/kg bw/day (ECETOC TRA worker v3) | 0.21 |

1.3.6. Worker exposure: Use as laboratory reagent (PROC15)

| Exposure route | Health effect | Exposure indicator | Exposure estimate | RCR |
|----------------|---------------|--------------------|---|------|
| inhalative | systemic | long-term | 0.014 mg/m ³ (ECETOC TRA worker v3) | 0.12 |
| dermal | systemic | long-term | 0.007 mg/kg bw/day (ECETOC TRA worker v3) | 0.21 |

1.3.7. Worker exposure: Low energy manipulation and handling of substances bound in/on materials and/or articles (PROC21)

| Exposure route | Health effect | Exposure indicator | Exposure estimate | RCR |
|----------------|---------------|--------------------|--|------|
| inhalative | systemic | long-term | 0.01 mg/m ³ (ECETOC TRA worker v3) | 0.08 |
| dermal | systemic | long-term | 0.03 mg/kg bw/day (ECETOC TRA worker v3) | 0.86 |

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

For further information, please contact sds-support@chemours.com.