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

1.1. Product identifier

Trade name
EXOLIT RP 607

Material number: 193051

REACH - Registration number according to article 20(3): 01-2119489913-23-0000, 01-2119555669-21-0043, 01-2119560591-39

Chemical nature: Red phosphorus, stabilized and microencapsulated

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

Relevant identified uses of the substance or mixture
Industry sector: Plastic processing industry.
Type of use: Flame retardants

Uses advised against
Type of use: Industrial manufacture of screening smoke ammunition or smoke payloads. Screening smoke ammunition and smoke payloads are produced by mixing red phosphorus with oxidizing substances which will lead to an explosive mixture. The safe use of explosive mixtures cannot be described in an exposure assessment according to Regulation (EC) No. 1907/2006. Thus this use is not supported.

Exposure scenarios: see annex

1.3. Details of the supplier of the safety data sheet

Identification of the company
Clariant Plastics & Coatings (Deutschland) GmbH
65926 Frankfurt am Main
Telephone no.: +49 69 305 18000

Information about the substance/mixture
BU Additives
Product Stewardship
e-mail: SDS.Europe@clariant.com

1.4. Emergency telephone number

00800-5121 5121 (24 h)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)
Flammable solids, Category 1 H228: Flammable solid.
Skin sensitisation, Category 1 H317: May cause an allergic skin reaction.

Long-term (chronic) aquatic hazard, H412: Harmful to aquatic life with long lasting effects.
2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms:

Signal word: Danger

Hazard statements:
H228 Flammable solid.
H317 May cause an allergic skin reaction.
H412 Harmful to aquatic life with long lasting effects.

Precautionary statements:

Prevention:
P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical equipment.
P273 Avoid release to the environment.

Response:
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

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.
Risk of dust explosion.

SECTION 3: Composition/information on ingredients

3.1 Substances

Substance name: Red phosphorus, stabilized and microencapsulated

Components

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red phosphorus stabilized with tin sulfate</td>
<td>Not Assigned</td>
<td></td>
<td>&gt;= 90 - &lt;= 100</td>
</tr>
<tr>
<td>Tin sulphate</td>
<td>7488-55-3 231-302-2</td>
<td></td>
<td>&gt;= 2,5 - &lt; 3</td>
</tr>
<tr>
<td>Aliphatic polyamine</td>
<td>Not Assigned</td>
<td></td>
<td>&gt;= 1 - &lt; 2,5</td>
</tr>
</tbody>
</table>
SECTION 4: First aid measures

4.1 Description of first aid measures

General advice: Remove/Take off immediately all contaminated clothing. Get medical attention.

If inhaled: Get medical attention if symptoms occur.

In case of skin contact:
- IF ON SKIN: Wash with plenty of soap and water.
- In case of skin burns caused by contact with phosphorus, immediately physically remove any phosphorus adhering to the skin with water (e.g. by using a brush) and douse with a 2% copper sulphate solution.
- Cover wounds with a sterile dressing, and keep moist in all circumstances.
- Immediate medical treatment necessary, as untreated burns can result in slow-healing wounds and toxication with phosphorus yellow.

In case of eye contact: In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

If swallowed: If swallowed do not induce vomiting, seek medical advice and show safety datasheet or label.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms: Allergic reactions

Risks: May cause an allergic skin reaction.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment: After a burn to the skin caused by phosphorus, any residual product adhering to the wound must be removed mechanically with a brush in order to prevent further burns or toxic effects through dermal absorption of yellow phosphorus. The wound must then be rinsed immediately with a commercial solution of 2% copper sulphate in order to neutralise any residual yellow phosphorus. Any such wound must be kept damp in all circumstances during movement of the victim for further medical treatment, so that any residual yellow phosphorus does not lead to further inflammation.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media:
- Water (with detergent)
- Water spray jet
- Water mist
- Sand
- Foam
5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting: In case of fire hazardous decomposition products may be produced such as:
- Phosphorus oxides (e.g., Phosphorus pentoxide)
- Phosphorus pentoxide in air forms a dense, non-transparent, corrosive mist of phosphoric acid.

5.3 Advice for firefighters

Special protective equipment for firefighters: Self-contained breathing apparatus. In case of fire, use acid-resistant equipment / personal protective equipment.

Further information: If the product is involved in a fire, yellow/white phosphorus can be formed, which may cause re-ignition of areas already extinguished. Following a fire, residual matter must be kept under water, or kept damp, in order to avoid the possibly that adhering residual yellow phosphorus spontaneously re-ignites.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions: See: Exposure controls and personal protection.

6.2 Environmental precautions

Environmental precautions: The product should not be allowed to enter drains, water courses or the soil. Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up: Dampen dust and place it in a properly closed receptacle and dispose of it safely.
- Do not allow to dry.
- Avoid dust formation.
- Carefully oxidise small amounts (e.g., with diluted bleaching powder solution, hydrogen peroxide solution)

6.4 Reference to other sections

Information regarding Safe handling, see chapter 7.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Advice on safe handling:
- Handle under nitrogen, protect from moisture.
- Avoid dust formation.
- Avoid shock and friction.
- Take measures to prevent the build up of electrostatic charge.
- Risk of ignition.
- All metal parts of the mixing and processing equipment must be earthed.
- Use antistatic tools.
- Keep working area moist and well ventilated.
- Ensure that dried product residues are re-dampened before transferring, handling or transporting.

Advice on protection against fire and explosion:
- Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.
- Render equipment and apparatus inert (nitrogen, inert gases) and earth before putting into operation. Avoid impact, friction and accumulation of electrostatic charge. Use only non-sparking tools. Avoid dust formation. Always keep working area moist and well-ventilated. Cover extinguished areas with 10% copper sulphate or soda solution. Detergents may be added to the solutions.

Hygiene measures:
- Clean skin thoroughly after work; apply skin cream.

Temperature class:
- T5

Fire-fighting class:
- A

Dust explosion class:
- ST3 Capability of dust explosion

7.2 Conditions for safe storage, including any incompatibilities:

Further information on storage conditions:
- Keep container tightly closed. Store contents under nitrogen.

Advice on common storage:
- Do not store with strong oxidizing agents

Further information on storage stability:
- When stored in unopened container, the product is stable for at least 12 month.

7.3 Specific end use(s):

Specific use(s):
- No further recommendations.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

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

<table>
<thead>
<tr>
<th>Substance name</th>
<th>End Use</th>
<th>Exposure routes</th>
<th>Potential health effects</th>
<th>Value</th>
</tr>
</thead>
</table>
## Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

<table>
<thead>
<tr>
<th>Substance name</th>
<th>Environmental Compartiment</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red phosphorus CAS-No.: 7723-14-0</td>
<td>Fresh water</td>
<td>0.00105 mg/l</td>
</tr>
</tbody>
</table>

### Workers

<table>
<thead>
<tr>
<th>Remarks:</th>
<th>Environmental Compartiment</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNEL</td>
<td>Dermal</td>
<td>30 mg/kg bw/day</td>
</tr>
</tbody>
</table>

### Inhalation

<table>
<thead>
<tr>
<th>Remarks:</th>
<th>Environmental Compartiment</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNEL</td>
<td>Long-term systemic effects</td>
<td>4 mg/m3</td>
</tr>
</tbody>
</table>

### Tin sulphate CAS-No.: 7488-55-3

<table>
<thead>
<tr>
<th>Remarks:</th>
<th>Environmental Compartiment</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNEL</td>
<td>Long-term systemic effects</td>
<td>1,375 mg/m3</td>
</tr>
</tbody>
</table>

### Skin contact

<table>
<thead>
<tr>
<th>Remarks:</th>
<th>Environmental Compartiment</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNEL</td>
<td>Long-term systemic effects</td>
<td>0.39 mg/kg bw/day</td>
</tr>
</tbody>
</table>

### Ingestion

<table>
<thead>
<tr>
<th>Remarks:</th>
<th>Environmental Compartiment</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNEL</td>
<td>Long-term systemic effects</td>
<td>0.195 mg/kg bw/day</td>
</tr>
</tbody>
</table>

### General population

<table>
<thead>
<tr>
<th>Remarks:</th>
<th>Environmental Compartiment</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNEL</td>
<td>Long-term systemic effects</td>
<td>0.289 mg/m3</td>
</tr>
</tbody>
</table>

### Long-term local effects

<table>
<thead>
<tr>
<th>Remarks:</th>
<th>Environmental Compartiment</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNEL</td>
<td>Long-term local effects</td>
<td>3,05 mg/m3</td>
</tr>
</tbody>
</table>

### Acute systemic effects

<table>
<thead>
<tr>
<th>Remarks:</th>
<th>Environmental Compartiment</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNEL</td>
<td>Acute systemic effects</td>
<td>2,75 mg/m3</td>
</tr>
</tbody>
</table>

### Acute local effects

<table>
<thead>
<tr>
<th>Remarks:</th>
<th>Environmental Compartiment</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNEL</td>
<td>Acute local effects</td>
<td>14,51 mg/m3</td>
</tr>
</tbody>
</table>
8.2 Exposure controls

Personal protective equipment

Eye protection : safety glasses/face shield

Hand protection

Remarks : Nitrile rubber gloves. Minimum breakthrough time (glove): not determined Minimum thickness (glove): not determined Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).

Skin and body protection : Antistatic boots

Flame-resistant clothing

Respiratory protection : Half mask with a particle filter P2 (EN 143)

Protective measures : Avoid prolonged or repeated contact with skin.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance : powder

Colour : red brown

Odour : odourless

pH : approx. 7 (20 °C)

Concentration: 100 g/l

Suspension in water

Melting point (decomposition) : 600 °C

(42,000 hPa)

Boiling point : Study not performed as melting point is above 300 °C

(REACh exemption Annex VII).

Flash point : Not applicable
Burning rate : 3.3 - 5.6 mm/s
Method: 92/69/EG (L383) A.10 * Entzünd
GLP: no

Burning number : 5
Method: VDI 2263, ESCIS, Vol. 1
Complete combustion with flames

Upper explosion limit / upper flammability limit : Not applicable
Lower explosion limit / Lower flammability limit : Not applicable

Vapour pressure : 100 hPa (300 °C)
1.000 hPa (400 °C)

Relative density : 2.2 (20 °C)
Density : approx. 2.2 g/cm³
Bulk density : 700 - 1.200 kg/m³ (20 °C)

Solubility(ies)
Water solubility : insoluble
Solubility in other solvents : Description: Insoluble in most organic solvents.
Partition coefficient: n-octanol/water : Not applicable

Auto-ignition temperature : > 340 °C
Method: VDI 2263 "Dust fires and explosions; Danger, Evaluation, Protection measures"

Decomposition temperature : > 400 °C
Heating rate: 1 K/min
Method: DTA

Viscosity
Viscosity, dynamic : Not applicable

Explosive properties : Not explosive
Not explosive
Method: Expert judgement

Oxidizing properties : The product does not contain organic peroxide-groups which result from either the manufacturing process or from added ingredients.

9.2 Other information
Surface tension : not required
Sublimation point : Not applicable
Dust explosion class : ST3  Capable of dust explosion
Minimum ignition energy : approx. 0,1 mJ
Particle size : < 400 µm
Self-ignition : 300 °C
Method: VDI 2263 (Grewer)

SECTION 10: Stability and reactivity

10.1 Reactivity
See section 10.3. "Possibility of hazardous reactions"

10.2 Chemical stability
Stable

10.3 Possibility of hazardous reactions
Hazardous reactions : Risk of dust explosion., Explosive reactions with oxidising agents such as potassium chlorate and/or peroxides., At high temperatures small amounts of hydrogen phosphide are formed with water., Not corrosive to metals

10.4 Conditions to avoid
Conditions to avoid : sparks
Thermal decomposition
ignition
shock
friction

10.5 Incompatible materials
Materials to avoid : oxidants

10.6 Hazardous decomposition products
Hydrogen phosphide
White/yellow phosphorus

SECTION 11: Toxicological information

11.1 Information on toxicological effects
Acute toxicity

Product:
Acute oral toxicity : LD50 (Rat, female): > 15.000 mg/kg
Method: OECD Test Guideline 401
SAFETY DATA SHEET  
according to Regulation (EC) No. 1907/2006

EXOLIT RP 607  

GLP: no  
Remarks: No significant adverse effects were reported

Acute inhalation toxicity : Remarks: no data available

Acute dermal toxicity : Remarks: no data available

Components:

Red phosphorus stabilized with tin sulfate:
Acute oral toxicity : LD50 (Rat, female): > 15.000 mg/kg  
Method: OECD Test Guideline 401  
GLP: no  
Remarks: No significant adverse effects were reported

Acute inhalation toxicity : Remarks: no data available

Acute dermal toxicity : Remarks: no data available

Tin sulphate:
Acute oral toxicity : LD50 (Rat): > 2.000 mg/kg  
Method: OECD Test Guideline 401  
Test substance: anhydrous substance

Acute inhalation toxicity : Assessment: The component/mixture is moderately toxic after short term inhalation.  
Remarks: no data available

Acute dermal toxicity : Remarks: This information is not available.

Skin corrosion/irritation

Product:
Species : Rabbit  
Exposure time : 24 h  
Method : OECD Test Guideline 404  
Result : No skin irritation  
GLP : no

Components:

Red phosphorus stabilized with tin sulfate:
Species : Rabbit  
Exposure time : 24 h  
Method : OECD Test Guideline 404  
Result : No skin irritation  
GLP : no

Tin sulphate:
Species : Rabbit  
Exposure time : < 4 h
Result : Irritating to skin.

**Serious eye damage/eye irritation**

**Product:**
- **Species:** Rabbit
- **Exposure time:** 24 h
- **Method:** OECD Test Guideline 405
- **Result:** No eye irritation
- **GLP:** no

**Components:**
- **Red phosphorus stabilized with tin sulfate:**
  - **Species:** Rabbit
  - **Exposure time:** 24 h
  - **Method:** OECD Test Guideline 405
  - **Result:** No eye irritation
  - **GLP:** no

**Tin sulphate:**
- **Species:** rabbit eye
- **Result:** Risk of serious damage to eyes.

**Respiratory or skin sensitisation**

**Product:**
- **Test Type:** Buehler Test
- **Exposure routes:** Dermal
- **Species:** Guinea pig
- **Method:** OECD Test Guideline 406
- **Result:** Not a skin sensitizer.
- **GLP:** no

**Components:**
- **Red phosphorus stabilized with tin sulfate:**
  - **Test Type:** Buehler Test
  - **Exposure routes:** Dermal
  - **Species:** Guinea pig
  - **Method:** OECD Test Guideline 406
  - **Result:** Not a skin sensitizer.
  - **GLP:** no

**Tin sulphate:**
- **Test Type:** Open epicutaneous test
- **Exposure routes:** Skin contact
- **Species:** Humans
- **Method:** tests on human beings
- **Result:** May cause sensitisation by skin contact.
Germ cell mutagenicity

Product:
Genotoxicity in vitro:
Test Type: Ames test
- Test system: Salmonella typhimurium
- Concentration: 3 - 5000 mg/plate
- Metabolic activation: with and without metabolic activation
- Method: OECD Test Guideline 471
- Result: negative
- GLP: yes

Test Type: In vitro mammalian cell gene mutation test
- Test system: Chinese hamster lung cells
- Concentration: 1.3 - 60 µg/ml
- Metabolic activation: with and without metabolic activation
- Method: OECD Test Guideline 476
- Result: negative
- GLP: yes

Test Type: Chromosome aberration test in vitro
- Test system: Chinese hamster lung cells
- Concentration: 2.3 - 5000 µg/ml
- Metabolic activation: with and without metabolic activation
- Method: OECD Test Guideline 473
- Result: negative
- GLP: yes

Components:
Red phosphorus stabilized with tin sulfate:
Genotoxicity in vitro:
Test Type: Ames test
- Test system: Salmonella typhimurium
- Concentration: 3 - 5000 mg/plate
- Metabolic activation: with and without metabolic activation
- Method: OECD Test Guideline 471
- Result: negative
- GLP: yes

Test Type: In vitro mammalian cell gene mutation test
- Test system: Chinese hamster lung cells
- Concentration: 1.3 - 60 µg/ml
- Metabolic activation: with and without metabolic activation
- Method: OECD Test Guideline 476
- Result: negative
- GLP: yes

Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster lung cells
Concentration: 2.3 - 5000 µg/ml
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative
GLP: yes

Germ cell mutagenicity - Assessment: In vitro tests did not show mutagenic effects

**Tin sulphate:**
Genotoxicity in vitro:
- Test Type: In vitro gene mutation study in mammalian cells
- Test system: mouse lymphoma cells
- Concentration: 10 - 100 µg/ml
- Metabolic activation: with and without metabolic activation
- Method: OECD Test Guideline 476
- Result: negative
- Remarks: By analogy with a product of similar composition

Germ cell mutagenicity - Assessment: It is concluded that the product is not mutagenic based on evaluation of several mutagenicity tests.

**Carcinogenicity**

**Product:**
- Carcinogenicity - Assessment: No information available.

**Components:**

**Red phosphorus stabilized with tin sulfate:**
- Carcinogenicity - Assessment: No information available.

**Tin sulphate:**
- Carcinogenicity - Assessment: Not classifiable as a human carcinogen.

**Reproductive toxicity**

**Product:**
- Reproductive toxicity - Assessment: No information available.

**Components:**

**Red phosphorus stabilized with tin sulfate:**
- Reproductive toxicity - Assessment: No information available.
Tin sulphate:

Effects on fertility: Remarks: This information is not available.

Effects on foetal development: Remarks: This information is not available.

Reproductive toxicity - Assessment: No reproductive toxicity to be expected.

No teratogenic effects to be expected.

STOT - single exposure

Product:

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

Components:

Red phosphorus stabilized with tin sulfate:

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

Tin sulphate:

Assessment: May cause respiratory irritation.

STOT - repeated exposure

Product:

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

Components:

Red phosphorus stabilized with tin sulfate:

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

Tin sulphate:

Exposure routes: Oral

Target Organs: Cardiovascular

Assessment: May cause damage to organs through prolonged or repeated exposure.

Repeated dose toxicity

Product:

Method: Repeated dose toxicity

Remarks: The study is not necessary from a scientific perspective.
Components:
Red phosphorus stabilized with tin sulfate:
Method: Repeated dose toxicity
Remarks: The study is not necessary from a scientific perspective.

Tin sulphate:
Remarks: This information is not available.

Aspiration toxicity
Product:
no data available

Components:
Red phosphorus stabilized with tin sulfate:
no data available

Tin sulphate:
No aspiration toxicity classification

Experience with human exposure
Product:
General Information: Health injuries are not known or expected under normal use.

Components:
Red phosphorus stabilized with tin sulfate:
General Information: Health injuries are not known or expected under normal use.

Further information
Product:
Remarks: Frequent contact can lead to skin and eye irritation, especially if product is allowed to dry out.
Remarks: Since 1997 the lung function of about 70 workers has been examined annually and documented, which showed no change of lung function associated with red phosphorus dust.

Components:
Red phosphorus stabilized with tin sulfate:
Remarks: Frequent contact can lead to skin and eye irritation, especially if product is allowed to dry out.
Remarks: Since 1997 the lung function of about 70 workers has been examined annually and documented, which showed no change of lung function associated with red phosphorus dust.
SECTION 12: Ecological information

12.1 Toxicity

**Product:**

**Toxicity to fish:**
- LC50 (Danio rerio (zebra fish)): 33.2 mg/l
- Exposure time: 96 h
- Test Type: static test
- Analytical monitoring: no
- Method: OECD Test Guideline 203
- GLP: yes
- Remarks: The details of the toxic effect relate to the nominal concentration.

**Toxicity to daphnia and other aquatic invertebrates:**
- EC50 (Daphnia magna (Water flea)): 10.5 mg/l
- End point: Immobilization
- Exposure time: 48 h
- Test Type: static test
- Analytical monitoring: no
- Method: OECD Test Guideline 202
- GLP: yes
- Remarks: The details of the toxic effect relate to the nominal concentration.

**Toxicity to algae/aquatic plants:**
- ErC50 (Desmodesmus subspicatus (green algae)): 18.3 mg/l
- End point: Growth rate
- Exposure time: 72 h
- Test Type: static test
- Analytical monitoring: yes
- Method: OECD Test Guideline 201
- GLP: yes
- Remarks: The details of the toxic effect relate to the nominal concentration.

- NOEC (Desmodesmus subspicatus (green algae)): 5 mg/l
- End point: Growth rate
- Exposure time: 72 h
- Test Type: static test
- Analytical monitoring: yes
- Method: OECD Test Guideline 201
- GLP: yes
- Remarks: The details of the toxic effect relate to the nominal concentration.

- ErC10 (Desmodesmus subspicatus (green algae)): 6.6 mg/l
- End point: Growth rate
- Exposure time: 72 h
- Test Type: static test
- Analytical monitoring: yes
- Method: OECD Test Guideline 201
- GLP: yes
- Remarks: The details of the toxic effect relate to the nominal concentration.
concentration.

Toxicity to fish (Chronic toxicity) : Remarks: no data available

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : Remarks: no data available

Toxicity to microorganisms : EC50 (activated sludge): > 1.000 mg/l
End point: Bacteria toxicity (respiration inhibition)
Exposure time: 3 h
Test Type: Respiration inhibition
Analytical monitoring: no
Method: OECD Test Guideline 209
GLP: yes

: NOEC : 1.000 mg/l
End point: Nitrate formation rate
Exposure time: 28 d
Test Type: Other
Analytical monitoring: no
Method: OECD 216
GLP: yes

Toxicity to soil dwelling organisms : Test Type: artificial soil
EC50: 428 mg/kg
Exposure time: 56 d
End point: Reproduction
Species: Eisenia fetida (earthworms)
Method: OECD Test Guideline 222
GLP:yes

Test Type: artificial soil
NOEC: 1.000 mg/kg
Exposure time: 96 h
End point: mortality
Species: Nematode Caenorhabditis elegans
Method: Other
GLP:yes

Sediment toxicity : NOEC: 1000 mg/kg
Duration: 28 d
Sediment: artificial soil
Exposure duration: 28 d
Species: Lumbriculus variegatus (Worm)
Basis for effect: Reproduction
Method: OECD 225
GLP: yes

Components:
Red phosphorus stabilized with tin sulfate:
Toxicity to fish:
- LC50 (Danio rerio (zebra fish)): 33.2 mg/l
- Exposure time: 96 h
- Test Type: static test
- Analytical monitoring: no
- Method: OECD Test Guideline 203
- GLP: yes
- Remarks: The details of the toxic effect relate to the nominal concentration.

Toxicity to daphnia and other aquatic invertebrates:
- EC50 (Daphnia magna (Water flea)): 10.5 mg/l
- End point: Immobilization
- Exposure time: 48 h
- Test Type: static test
- Analytical monitoring: no
- Method: OECD Test Guideline 202
- GLP: yes
- Remarks: The details of the toxic effect relate to the nominal concentration.

Toxicity to algae/aquatic plants:
- ErC50 (Desmodesmus subspicatus (green algae)): 18.3 mg/l
- End point: Growth rate
- Exposure time: 72 h
- Test Type: static test
- Analytical monitoring: yes
- Method: OECD Test Guideline 201
- GLP: yes
- Remarks: The details of the toxic effect relate to the nominal concentration.

NOEC (Desmodesmus subspicatus (green algae)): 5 mg/l
- End point: Growth rate
- Exposure time: 72 h
- Test Type: static test
- Analytical monitoring: yes
- Method: OECD Test Guideline 201
- GLP: yes
- Remarks: The details of the toxic effect relate to the nominal concentration.

ErC10 (Desmodesmus subspicatus (green algae)): 6.6 mg/l
- End point: Growth rate
- Exposure time: 72 h
- Test Type: static test
- Analytical monitoring: yes
- Method: OECD Test Guideline 201
- GLP: yes
- Remarks: The details of the toxic effect relate to the nominal concentration.

Toxicity to microorganisms:
- EC50 (activated sludge): > 1.000 mg/l
- End point: Bacteria toxicity (respiration inhibition)
- Exposure time: 3 h
- Test Type: Respiration inhibition
- Analytical monitoring: no
Method: OECD Test Guideline 209
GLP: yes

NOEC: 1.000 mg/l
Exposure time: 28 d
Test Type: Other
Analytical monitoring: no
Method: OECD 216
GLP: yes

Toxicity to fish (Chronic toxicity)
Remarks: no data available

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)
Remarks: no data available

Toxicity to soil dwelling organisms:
Test Type: artificial soil
EC50: 428 mg/kg
Exposure time: 56 d
End point: Reproduction
Species: Eisenia fetida (earthworms)
Method: OECD Test Guideline 222
GLP: yes

Test Type: artificial soil
NOEC: 1.000 mg/kg
Exposure time: 96 h
End point: mortality
Species: Nematode Caenorhabditis elegans
Method: Other
GLP: yes

Sediment toxicity:
NOEC: 1000 mg/kg
Duration: 28 d
Sediment: artificial soil
Exposure duration: 28 d
Species: Lumbriculus variegatus (Worm)
Basis for effect: Reproduction
Method: OECD 225
GLP: yes

Sediment toxicity:
Toxicity to fish:
Remarks: The details of the toxic effect relate to the nominal concentration.

Tin sulphate:
Toxicity to fish:
LC50 (Fish): 9 - 50 mg/l saltwater
Exposure time: 96 h
Test Type: static test
Method: Other
GLP: No information available.
Remarks: The details of the toxic effect relate to the nominal concentration.

Toxicity to daphnia and other aquatic invertebrates:
LC50 (Daphnia magna (Water flea)): 55 mg/l
aquatic invertebrates

Exposure time: 48 h
Test Type: static test
Analytical monitoring: yes
Method: OECD Test Guideline 202
GLP: no
Remarks: By analogy with a product of similar composition

Toxicity to algae/aquatic plants

EC50 (Scenedesmus quadricauda (Green algae)): 50 mg/l dissolved Sn
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Method: Other
GLP: no
Remarks: By analogy with a product of similar composition

NOEC (Scenedesmus quadricauda (Green algae)): 14 mg/l dissolved Sn
Exposure time: 8 d
Test Type: static test
Analytical monitoring: yes
Method: Other
GLP: no
Remarks: By analogy with a product of similar composition

M-Factor (Acute aquatic toxicity): 1

Toxicity to microorganisms

EC50 (activated sludge): 1.194 mg/l, substance
End point: Bacteria toxicity (respiration inhibition)
Exposure time: 3 h
Test Type: aquatic
Analytical monitoring: no
Method: OECD Test Guideline 209
GLP: yes
Remarks: The details of the toxic effect relate to the nominal concentration.

Toxicity to fish (Chronic toxicity)

NOEC: ca. 3 mg/l, dissolved Sn
Exposure time: 120 h
Species: Danio rerio (zebra fish)
Test Type: static test
Analytical monitoring: yes
Method: OECD Test Guideline 212
GLP: No information available.
Remarks: By analogy with a product of similar composition

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity): Remarks: not required

M-Factor (Chronic aquatic toxicity): 1
Ecotoxicology Assessment
Chronic aquatic toxicity: Harmful to aquatic life with long lasting effects.

12.2 Persistence and degradability

**Product:**
- Biodegradability: Test Type: Primary biodegradation
  Remarks: Not applicable for inorganic compound.
- Physico-chemical removability: Remarks: Not applicable due to insolubility in water. This product does not come into contact with the effluent when it is used for its purpose, otherwise it can be removed by filtration operations.
- Stability in water: Test Type: abiotic
  pH: 4 - 9
  Method: OECD Test Guideline 111
  GLP: yes
  Remarks: Hydrolyses slowly on contact with water.

**Components:**

Red phosphorus stabilized with tin sulfate:
- Biodegradability: Test Type: Primary biodegradation
  Remarks: Not applicable for inorganic compound.
- Physico-chemical removability: Remarks: Not applicable due to insolubility in water. This product does not come into contact with the effluent when it is used for its purpose, otherwise it can be removed by filtration operations.
- Stability in water: Test Type: abiotic
  pH: 4 - 9
  Method: OECD Test Guideline 111
  GLP: yes
  Remarks: Hydrolyses slowly on contact with water.

Tin sulphate:
- Biodegradability: Remarks: Not applicable

12.3 Bioaccumulative potential

**Product:**
- Bioaccumulation: Remarks: Bioaccumulation is unlikely.

**Components:**

Red phosphorus stabilized with tin sulfate:
- Bioaccumulation: Remarks: Bioaccumulation is unlikely.
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

EXOLIT RP 607

Substance key: 000000131906
Revision Date: 25.02.2019
Version : 5 - 0 / EU
Date of printing : 20.03.2019

Partition coefficient: n-octanol/water : Remarks: Not applicable

Tin sulphate:
Bioaccumulation : Remarks: Not applicable

12.4 Mobility in soil

Components:

Tin sulphate:
Distribution among environmental compartments : Remarks: no data available

12.5 Results of PBT and vPvB assessment

Product:
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.

Components:

Red phosphorus stabilized with tin sulfate:
Assessment : The substance is inorganic, thus a PBT and vPvB criteria assessment is not applicable according to Annex XIII of Regulation (EC) 1907/2006.

Tin sulphate:
Assessment : Remarks: Not applicable

12.6 Other adverse effects

Product:
Environmental fate and pathways : not available

Additional ecological information : The product should not be allowed to enter drains, water courses or the soil. Since Red phosphorus is an amorphous polymeric form of elemental phosphorus, it is insoluble in water and organic solvents. However, slow disproportionating and oxidizing reactions produce traces of phoshine (strong smell and is toxic), but mainly phosphorus acids (H3PO4, H3PO3, H3PO2) as well as traces of unknown phosphorus compounds. These reaction products (particularly phoshine) are the cause of the toxic effects to organisms of red phosphorus. These reactions are increased by high temperatures and moisture.
Components:

Red phosphorus stabilized with tin sulfate:

Environmental fate and pathways: not available

Additional ecological information:

The product should not be allowed to enter drains, water courses or the soil. Since Red phosphorus is an amorphous polymeric form of elemental phosphorus, it is insoluble in water and organic solvents. However, slow disproportionating and oxidizing reactions produce traces of phosphine (strong smell and is toxic), but mainly phosphorus acids (H3PO4, H3PO3, H3PO2) as well as traces of unknown phosphorus compounds. These reaction products (particularly phosphine) are the cause of the toxic effects to organisms of red phosphorus. These reactions are increased by high temperatures and moisture.

Tin sulphate:

Environmental fate and pathways: no data available

Additional ecological information:

The product should not be allowed to enter drains, water courses or the soil.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product: Contact manufacturer.
Special waste incineration plant with flue gas dust scrubber

Contaminated packaging: Packaging that cannot be cleaned should be disposed of as product waste
Used bags of PE should be wetted outside and inside with water before being destroyed, to avoid dust explosions

SECTION 14: Transport information

Section 14.1. to 14.5.

ADR

UN no.: UN 1338
Proper shipping name: Phosphorus, amorphous, mixture
Class: 4.1
Primary risk: 4.1
Packing group: III
Hazard no.: 40
Remarks: Shipment permitted
14.6. Special precautions for user

See sections 6 to 8 of this Safety Data Sheet.

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code (International Bulk Chemicals Code)

No transport as bulk according IBC - Code.

SECTION 15: Regulatory information

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

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
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

EXOLIT RP 607
Substance key: 000000131906
Version: 5 - 0 / EU

Regulation (EC) No 850/2004 on persistent organic pollutants: Not applicable

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:
Red phosphorus (Number on list 665)

Other regulations:
Apart from the data/regulations specified in this chapter, no further information is available concerning safety, health and environmental protection.

15.2 Chemical safety assessment
A Chemical Safety Assessment has been carried out for this substance.

SECTION 16: Other information

Full text of other abbreviations

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; AICS - Australian Inventory of Chemical Substances; 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; IECS - 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
Further information

Other information : Observe national and local legal requirements

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### Exposure scenario

<table>
<thead>
<tr>
<th>Number</th>
<th>Title</th>
<th>*</th>
<th>PROC codes</th>
<th>ERC code(s)</th>
<th>Phosphorus red</th>
</tr>
</thead>
<tbody>
<tr>
<td>ES 1</td>
<td>Formulation or re-packing; Polymer preparations and compounds</td>
<td></td>
<td>PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15</td>
<td>ERC2, ERC3</td>
<td>Phosphorus red</td>
</tr>
<tr>
<td>ES 2</td>
<td>Industrial use; Application, Polymer preparations and compounds</td>
<td></td>
<td>PROC2, PROC3, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15, PROC21, PROC24</td>
<td>ERC4, ERC5</td>
<td>Phosphorus red</td>
</tr>
<tr>
<td>ES 3</td>
<td>Formulation or re-packing; Manufacture of substance, Use in rubber production and processing</td>
<td></td>
<td>SU8, SU9, SU11</td>
<td>PROC5, PROC8b, PROC9</td>
<td>ERC3</td>
</tr>
<tr>
<td>ES 4</td>
<td>Industrial use; Application, Use in rubber production and processing</td>
<td></td>
<td>SU8, SU9, SU11</td>
<td>PROC5, PROC7, PROC8b, PROC9, PROC10, PROC14, PROC21</td>
<td>ERC3, ERC5</td>
</tr>
<tr>
<td>ES 5</td>
<td>Formulation or re-packing; Adhesives, sealants</td>
<td></td>
<td>SU8, SU9</td>
<td>PROC5, PROC7, PROC8b</td>
<td>ERC2</td>
</tr>
<tr>
<td>ES 6</td>
<td>Industrial use; Application, Adhesives, sealants</td>
<td></td>
<td>SU8, SU9</td>
<td>PROC10</td>
<td>ERC5</td>
</tr>
<tr>
<td>ES 7</td>
<td>Professional use; Application, Adhesives, sealants</td>
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<td>PC1</td>
<td>ERC8c</td>
<td>Phosphorus red</td>
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<tr>
<td>ES 8</td>
<td>Industrial use; Formulation into mixture, Matches</td>
<td></td>
<td>SU8, SU9</td>
<td>PROC5, PROC8b, PROC10, PROC13</td>
<td>ERC2</td>
</tr>
<tr>
<td>ES 9</td>
<td>Industrial use; Application, Matches</td>
<td></td>
<td>SU8, SU9</td>
<td>PROC5, PROC8b, PROC10, PROC13</td>
<td>ERC3</td>
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<tr>
<td>ES 10</td>
<td>Industrial use; Manufacture of substance, Biocidal products</td>
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<td>SU8, SU9</td>
<td>PROC5, PROC8b, PROC10, PROC13</td>
<td>ERC2, ERC3</td>
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<tr>
<td>ES 11</td>
<td>Industrial use; Application, Use as an intermediate, Base metals and alloys</td>
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<td>SU8, SU9</td>
<td>PROC1, PROC2, PROC3, PROC4, PROC8b, PROC9, PROC15</td>
<td>ERC6a</td>
</tr>
</tbody>
</table>
1. ES 1: Formulation or re-packing; Polymer preparations and compounds

1.1. Title section

<table>
<thead>
<tr>
<th>Environment</th>
<th>CS1: Formulation or re-packing (Formulation into mixture, Formulation into solid matrix)</th>
<th>ERC2, ERC3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workers</td>
<td>CS2: Formulation or re-packing (Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions, Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition, Mixing or blending in batch processes, Transfer of substance or mixture (charging/discharging) at non dedicated-facilities, Transfer of substance or mixture (charging/discharging) at dedicated facilities, Transfer of substance or mixture into small containers (dedicated filling line, including weighing), Tableting, compression, extrusion, pelettisation, granulation, Use as laboratory reagent)</td>
<td>PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15</td>
</tr>
</tbody>
</table>

1.2. ES 1 Conditions of use affecting exposure

1.2.1 ES 1 - CS 1: Control of environmental exposure: Formulation or re-packing (Formulation into mixture, Formulation into solid matrix) (ERC2, ERC3)

Product characteristics

- Molecular weight: 31 g/mol

Amount used

- Daily amount per site: 66.7 kg/day

Frequency and duration of use

- Continuous exposure: 1 uses per day
- Continuous exposure: 300 times per year

Environment factors not influenced by risk management

- Flow rate of receiving surface water: 18,000 m³/d

Technical conditions and measures / Organizational measures

- Air: Filtration (Effectiveness (of a measure): > 99 %)
- Water: Sedimentation (Effectiveness (of a measure): > 80 %)
Remarks:

Ensure operatives are trained to minimise exposures. Ensure control measures are regularly inspected and maintained.

Conditions and measures related to sewage treatment plant:

Flow rate of sewage treatment plant effluent: 2,000 m³/d
Sludge Treatment: No application of sewage sludge to soil

Waste management measures:

Waste treatment: Incineration
Disposal methods: (Effectiveness of a measure): > 99%

1.2.2 ES 1 - CS 2: Control of worker exposure: Formulation or re-packing (Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions, Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition, Mixing or blending in batch processes, Transfer of substance or mixture (charging/discharging) at non dedicated-facilities, Transfer of substance or mixture (charging/discharging) at dedicated facilities, Transfer of substance or mixture into small containers (dedicated filling line, including weighing), Tabletted, compression, extrusion, pelletisation, granulation, Use as laboratory reagent) (PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15)

Remarks: As no toxicological hazard was identified no human-related (worker/consumer) exposure assessment and risk characterization was performed.

Product characteristics:

Concentration of the Substance in Mixture/Article: <= 100%
Molecular weight: 31 g/mol
Physical Form (at time of use): Solid, medium dustiness
Vapour pressure: < 0.001 Pa
Remarks: Elevated temperature

1.3. ES 1 Exposure estimation and reference to its source

1.3.1 ES 1 - CS 1: Environmental release and exposure: Formulation or re-packing (Formulation into mixture, Formulation into solid matrix) (ERC2, ERC3)

<table>
<thead>
<tr>
<th>Release route</th>
<th>Release rate</th>
<th>Release estimation method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
<td>0 kg/day</td>
<td>EUSES v2.1</td>
</tr>
<tr>
<td>Water</td>
<td>0.00667 kg/day</td>
<td>EUSES v2.1</td>
</tr>
<tr>
<td>Waste</td>
<td>0 kg/day</td>
<td>EUSES v2.1</td>
</tr>
</tbody>
</table>
1.4. ES 1 Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

ECHA guidance for downstream users
Section 2

2. ES 2: Industrial use; Application, Polymer preparations and compounds

2.1. Title section

<table>
<thead>
<tr>
<th>Environment</th>
<th>CS1: Industrial use (Use of non-reactive processing aid at industrial site (no inclusion into or onto article), Use at industrial site leading to inclusion into/onto article)</th>
<th>ERC4, ERC5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workers</td>
<td>CS2: Industrial use (Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions, Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition, Mixing or blending in batch processes, Industrial spraying, Transfer of substance or mixture (charging/discharging) at non dedicated-facilities, Transfer of substance or mixture (charging/discharging) at dedicated facilities, Transfer of substance or mixture into small containers (dedicated filling line, including weighing), Roller application or brushing, Treatment of articles by dipping and pouring, Tabletting, compression, extrusion, peletisation, granulation, Use as laboratory reagent, Low energy manipulation and handling of substances bound in/on materials and/or articles, High (mechanical) energy work-up of substances bound in/on materials and/or articles)</td>
<td>PROC2, PROC3, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15, PROC21, PROC24</td>
</tr>
</tbody>
</table>

2.2. ES 2 Conditions of use affecting exposure
2.2.1 ES 2 - CS 1: Control of environmental exposure: Industrial use (Use of non-reactive processing aid at industrial site (no inclusion into or onto article), Use at industrial site leading to inclusion into/onto article) (ERC4, ERC5)

Product characteristics
Molecular weight : 31 g/mol

Amount used
Daily amount per site : 66.7 kg/day

Frequency and duration of use
Continuous exposure : 1 uses per day
Continuous exposure : 300 times per year

Environment factors not influenced by risk management
Flow rate of receiving surface water : 18,000 m³/d

Technical conditions and measures / Organizational measures
Air : Filtration (Effectiveness (of a measure): > 99 %)
Water : Sedimentation (Effectiveness (of a measure): > 80 %)
Remarks : Ensure operatives are trained to minimise exposures. Ensure control measures are regularly inspected and maintained.

Conditions and measures related to sewage treatment plant
Flow rate of sewage treatment plant effluent : 2,000 m³/d
Sludge Treatment : No application of sewage sludge to soil

Waste management measures
Waste treatment : Incineration
Disposal methods : (Effectiveness (of a measure): > 99 %)

2.2.2 ES 2 - CS 2: Control of worker exposure: Industrial use (Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions, Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition, Mixing or blending in batch processes, Industrial spraying, Transfer of substance or mixture (charging/discharging) at non dedicated-facilities, Transfer of substance or mixture (charging/discharging) at dedicated facilities, Transfer of substance or mixture into small containers (dedicated filling line, including weighing), Roller application or brushing, Treatment of articles by dipping and pouring, Tabletting, compression, extrusion, peletisation, granulation, Use as laboratory reagent, Low energy manipulation and handling of substances bound in/on materials and/or articles, High (mechanical) energy work-up of substances bound in/on materials and/or articles) (PROC2, PROC3, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13,
2.3. ES 2 Exposure estimation and reference to its source

2.3.1 ES 2 - CS 1: Environmental release and exposure: Industrial use (Use of non-reactive processing aid at industrial site (no inclusion into or onto article), Use at industrial site leading to inclusion into/onto article) (ERC4, ERC5)

<table>
<thead>
<tr>
<th>Release route</th>
<th>Release rate</th>
<th>Release estimation method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
<td>0 kg/day</td>
<td>EUSES v2.1</td>
</tr>
<tr>
<td>Water</td>
<td>0.000667 kg/day</td>
<td>EUSES v2.1</td>
</tr>
<tr>
<td>Waste</td>
<td>0 kg/day</td>
<td>EUSES v2.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Protection target</th>
<th>Exposure estimation and reference to its source (EUSES v2.1)</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshwater</td>
<td>0.0000074 µg/L</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Freshwater sediment</td>
<td>74 µg/kg dry weight</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Soil</td>
<td>14.1 µg/kg dry weight</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Sewage treatment plant</td>
<td>0.005 µg/L</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Secondary poisoning</td>
<td>Not applicable</td>
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<tr>
<td>Indirect exposure to humans via the enviroment</td>
<td>Not applicable</td>
<td></td>
</tr>
</tbody>
</table>

2.4. ES 2 Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

ECHA guidance for downstream users
Section 2

3. ES 3: Formulation or re-packing; Manufacture of
substance, **Use in rubber production and processing**; SU8, SU9, SU11

### 3.1. Title section

<table>
<thead>
<tr>
<th>Manufacture of bulk, large scale chemicals (including petroleum products) (SU8)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Manufacture of fine chemicals (SU9)</td>
<td></td>
</tr>
<tr>
<td>Manufacture of rubber products (SU11)</td>
<td></td>
</tr>
<tr>
<td>Environment</td>
<td>CS1: Formulation or re-packing (Formulation into solid matrix) ERC3</td>
</tr>
<tr>
<td>Workers</td>
<td>CS2: Formulation or re-packing (Mixing or blending in batch processes, Transfer of substance or mixture (charging/discharging) at dedicated facilities, Transfer of substance or mixture into small containers (dedicated filling line, including weighing)) PROC5, PROC8b, PROC9</td>
</tr>
</tbody>
</table>

### 3.2. ES 3 Conditions of use affecting exposure

#### 3.2.1 ES 3 - CS 1: Control of environmental exposure: Formulation or re-packing (Formulation into solid matrix) (ERC3)

<table>
<thead>
<tr>
<th>Product characteristics</th>
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<tbody>
<tr>
<td>Molecular weight</td>
<td>31 g/mol</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Amount used</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily amount per site</td>
<td>66.7 kg/day</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Frequency and duration of use</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous exposure</td>
<td>1 uses per day</td>
</tr>
<tr>
<td>Continuous exposure</td>
<td>300 times per year</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environment factors not influenced by risk management</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow rate of receiving surface water</td>
<td>18.000 m3/d</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Technical conditions and measures</th>
<th>Organizational measures</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
<td>Filtration (Effectiveness (of a measure): &gt; 99 %)</td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>Sedimentation (Effectiveness (of a measure): &gt; 80 %)</td>
<td></td>
</tr>
<tr>
<td>Remarks</td>
<td>Ensure operatives are trained to minimise exposures. Ensure control measures are regularly inspected and maintained.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Conditions and measures related to sewage treatment plant</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow rate of sewage treatment plant effluent</td>
<td>2.000 m3/d</td>
</tr>
<tr>
<td>Sludge Treatment</td>
<td>No application of sewage sludge to soil</td>
</tr>
</tbody>
</table>
Waste management measures
Waste treatment: Incineration
Disposal methods: (Effectiveness of a measure): > 99 %

3.2.2 ES 3 - CS 2: Control of worker exposure: Formulation or re-packing (Mixing or blending in batch processes, Transfer of substance or mixture (charging/discharging) at dedicated facilities, Transfer of substance or mixture into small containers (dedicated filling line, including weighing)) (PROC5, PROC8b, PROC9)

Remarks: As no toxicological hazard was identified no human-related (worker/consumer) exposure assessment and risk characterization was performed.

Product characteristics
Concentration of the Substance in Mixture/Article: >= 5 - <= 25 %
Molecular weight: 31 g/mol
Physical Form (at time of use): Solid, low dustiness
Vapour pressure: < 0,001 Pa
Remarks: Covers use at ambient temperatures.

3.3. ES 3 Exposure estimation and reference to its source

3.3.1 ES 3 - CS 1: Environmental release and exposure: Formulation or re-packing (Formulation into solid matrix) (ERC3)

<table>
<thead>
<tr>
<th>Release route</th>
<th>Release rate</th>
<th>Release estimation method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
<td>0 kg/day</td>
<td>EUSES v2.1</td>
</tr>
<tr>
<td>Water</td>
<td>0.00667 kg/day</td>
<td>EUSES v2.1</td>
</tr>
<tr>
<td>Waste</td>
<td>0 kg/day</td>
<td>EUSES v2.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>protection target</th>
<th>Exposure estimation and reference to its source (EUSES v2.1)</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshwater</td>
<td>0.00018 µg/L</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Freshwater sediment</td>
<td>1800 µg/kg dry weight</td>
<td>0.018</td>
</tr>
<tr>
<td>Soil</td>
<td>130 µg/kg dry weight</td>
<td>0.01</td>
</tr>
<tr>
<td>Sewage treatment plant</td>
<td>0.27 µg/L</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Secondary poisoning</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Indirect exposure to humans via the environment</td>
<td>Not applicable</td>
<td></td>
</tr>
</tbody>
</table>

3.4. ES 3 Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario
4. ES 4: Industrial use; Application, Use in rubber production and processing; SU8, SU9, SU11

4.1. Title section

<table>
<thead>
<tr>
<th>Environment</th>
<th>CS1: Industrial use (Formulation into solid matrix, Use at industrial site leading to inclusion into/onto article)</th>
<th>ERC3, ERC5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workers</td>
<td>CS2: Industrial use (Mixing or blending in batch processes, Industrial spraying, Transfer of substance or mixture (charging/discharging) at dedicated facilities, Transfer of substance or mixture into small containers (dedicated filling line, including weighing), Roller application or brushing, Tablettung, compression, extrusion, pelettisation, granulation, Low energy manipulation and handling of substances bound in/on materials and/or articles)</td>
<td>PROC5, PROC7, PROC8b, PROC9, PROC10, PROC14, PROC21</td>
</tr>
</tbody>
</table>

4.2. ES 4 Conditions of use affecting exposure

4.2.1 ES 4 - CS 1: Control of environmental exposure: Industrial use (Formulation into solid matrix, Use at industrial site leading to inclusion into/onto article) (ERC3, ERC5)

Product characteristics
- Molecular weight: 31 g/mol

Amount used
- Daily amount per site: 66.7 kg/day

Frequency and duration of use
- Continuous exposure: 1 uses per day
- Continuous exposure: 300 times per year

Environment factors not influenced by risk management
- Flow rate of receiving surface: 18,000 m³/d

Technical conditions and measures / Organizational measures
Conditions and measures related to sewage treatment plant

Flow rate of sewage treatment plant effluent: 2.000 m³/d
Sludge Treatment: No application of sewage sludge to soil

Waste management measures

Waste treatment: Incineration
Disposal methods: (Effectiveness of a measure): > 99 %

4.2.2 ES 4 - CS 2: Control of worker exposure: Industrial use (Mixing or blending in batch processes, Industrial spraying, Transfer of substance or mixture (charging/discharging) at dedicated facilities, Transfer of substance or mixture into small containers (dedicated filling line, including weighing), Roller application or brushing, Tableting, compression, extrusion, pelettisation, granulation, Low energy manipulation and handling of substances bound in/on materials and/or articles) (PROC5, PROC7, PROC8b, PROC9, PROC10, PROC14, PROC21)

Remarks: As no toxicological hazard was identified no human-related (worker/consumer) exposure assessment and risk characterization was performed.

Product characteristics

Concentration of the Substance in Mixture/Article: >= 5 - <= 25 %
Molecular weight: 31 g/mol
Physical Form (at time of use): Solid, low dustiness
Vapour pressure: < 0.001 Pa
Remarks: Covers use at ambient temperatures.

4.3. ES 4 Exposure estimation and reference to its source

4.3.1 ES 4 - CS 1: Environmental release and exposure: Industrial use (Formulation into solid matrix, Use at industrial site leading to inclusion into/onto article) (ERC3, ERC5)

<table>
<thead>
<tr>
<th>Release route</th>
<th>Release rate</th>
<th>Release estimation method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
<td>0 kg/day</td>
<td>EUSES v2.1</td>
</tr>
<tr>
<td>Water</td>
<td>0.000667 kg/day</td>
<td>EUSES v2.1</td>
</tr>
<tr>
<td>Waste</td>
<td>0 kg/day</td>
<td>EUSES v2.1</td>
</tr>
</tbody>
</table>
4.4. ES 4  Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

ECHA guidance for downstream users
Section 2

5. ES 5: Formulation or re-packing; Adhesives, sealants; SU8, SU9

5.1. Title section

<table>
<thead>
<tr>
<th>Environment</th>
<th>Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS1: Formulation or re-packing (Formulation into mixture)</td>
<td>ERC2</td>
</tr>
<tr>
<td>CS2: Formulation or re-packing (Mixing or blending in batch processes, Industrial spraying, Transfer of substance or mixture (charging/discharging) at dedicated facilities)</td>
<td>PROC5, PROC7, PROC8b</td>
</tr>
</tbody>
</table>

5.2. ES 5  Conditions of use affecting exposure

5.2.1 ES 5 - CS 1: Control of environmental exposure: Formulation or re-packing (Formulation into mixture) (ERC2)

**Product characteristics**
- **Molecular weight**: 31 g/mol

**Amount used**
- **Daily amount per site**: 16.7 kg/day

**Frequency and duration of use**
- **Continuous exposure**: 1 uses per day
Continuous exposure: 300 times per year

Environment factors not influenced by risk management
Flow rate of receiving surface: 18,000 m³/d

Technical conditions and measures / Organizational measures
Air: Filtration (Effectiveness (of a measure): > 99 %)
Water: Sedimentation (Effectiveness (of a measure): > 80 %)
Remarks: Ensure operatives are trained to minimise exposures.
Ensure control measures are regularly inspected and maintained.

Conditions and measures related to sewage treatment plant
Flow rate of sewage treatment plant effluent: 2,000 m³/d
Sludge Treatment: No application of sewage sludge to soil

Waste management measures
Waste treatment: Incineration
Disposal methods: (Effectiveness (of a measure): > 99 %)

5.2.2 ES 5 - CS 2: Control of worker exposure: Formulation or re-packing (Mixing or blending in batch processes, industrial spraying, Transfer of substance or mixture (charging/discharging) at dedicated facilities) (PROC5, PROC7, PROC8b)
Remarks: As no toxicological hazard was identified no human-related (worker/consumer) exposure assessment and risk characterization was performed.

Product characteristics
Concentration of the Substance in Mixture/Article: >= 5 - <= 25 %
Molecular weight: 31 g/mol
Physical Form (at time of use): Solid, low dustiness
Vapour pressure: < 0.001 Pa
Remarks: Covers use at ambient temperatures.

5.3. ES 5 Exposure estimation and reference to its source

5.3.1 ES 5 - CS 1: Environmental release and exposure: Formulation or re-packing (Formulation into mixture) (ERC2)

<table>
<thead>
<tr>
<th>Release route</th>
<th>Release rate</th>
<th>Release estimation method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
<td>0 kg/day</td>
<td>EUSES v2.1</td>
</tr>
</tbody>
</table>
Water: 0.00167 kg/day
Waste: 0 kg/day

<table>
<thead>
<tr>
<th>protection target</th>
<th>Exposure estimation and reference to its source (EUSES v2.1)</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshwater</td>
<td>0.000048 µg/L</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Freshwater sediment</td>
<td>480 µg/kg dry weight</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Soil</td>
<td>32.6 µg/kg dry weight</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Sewage treatment plant</td>
<td>0.067 µg/L</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Secondary poisoning</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Indirect exposure to humans</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>via the environment</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5.4. ES 5  Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

ECHA guidance for downstream users
Section 2

6. ES 6: Industrial use; Application, Adhesives, sealants; SU8, SU9

6.1. Title section

Manufacture of bulk, large scale chemicals (including petroleum products) (SU8)
Manufacture of fine chemicals (SU9)
Environment
CS1: Industrial use (Use at industrial site leading to inclusion into/onto article) ERC5
Workers
CS2: Industrial use (Roller application or brushing) PROC10

6.2. ES 6  Conditions of use affecting exposure

6.2.1 ES 6 - CS 1: Control of environmental exposure: Industrial use (Use at industrial site leading to inclusion into/onto article) (ERC5)

Product characteristics
Molecular weight : 31 g/mol

Amount used
Daily amount per site : 8.3 kg/day

Frequency and duration of use
Continuous exposure: 1 uses per day
Continuous exposure: 300 times per year

Environment factors not influenced by risk management
Flow rate of receiving surface: 18,000 m³/d

Technical conditions and measures / Organizational measures
Air: Filtration (Effectiveness of a measure): > 99 %
Water: Sedimentation (Effectiveness of a measure): > 80 %
Remarks: Ensure operatives are trained to minimise exposures. Ensure control measures are regularly inspected and maintained.

Conditions and measures related to sewage treatment plant
Flow rate of sewage treatment plant effluent: 2,000 m³/d
Sludge Treatment: No application of sewage sludge to soil

Waste management measures
Waste treatment: Incineration
Disposal methods: (Effectiveness of a measure): > 99 %

6.2.2 ES 6 - CS 2: Control of worker exposure: Industrial use (Roller application or brushing) (PROC10)
Remarks: As no toxicological hazard was identified no human-related (worker/consumer) exposure assessment and risk characterization was performed.

Product characteristics
Concentration of the Substance in Mixture/Article: >= 5 - <= 25 %
Molecular weight: 31 g/mol
Physical Form (at time of use): Solid, low dustiness
Vapour pressure: < 0.001 Pa
Remarks: Covers use at ambient temperatures.

6.3. ES 6 Exposure estimation and reference to its source
6.3.1 ES 6 - CS 1: Environmental release and exposure: Industrial use (Use at industrial site leading to inclusion into/onto article) (ERC5)

<table>
<thead>
<tr>
<th>Release route</th>
<th>Release rate</th>
<th>Release estimation method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
<td>0 kg/day</td>
<td>EUSES v2.1</td>
</tr>
</tbody>
</table>
6.4. ES 6 Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

ECHA guidance for downstream users
Section 2

7. ES 7: Professional use; Application, Adhesives, sealants

7.1. Title section

<table>
<thead>
<tr>
<th>Adhesives, sealants (PC1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment</td>
</tr>
<tr>
<td>CS1: Professional use (Widespread use leading to inclusion into/onto article (indoor)) ERC8c</td>
</tr>
<tr>
<td>Workers</td>
</tr>
<tr>
<td>CS2: Professional use (Adhesives, sealants) PC1</td>
</tr>
</tbody>
</table>

7.2. ES 7 Conditions of use affecting exposure

7.2.1 ES 7 - CS 1: Control of environmental exposure: Professional use (Widespread use leading to inclusion into/onto article (indoor)) (ERC8c)

Product characteristics
Molecular weight : 31 g/mol
Amount used
Amounts used : 0,8 kg/day
Frequency and duration of use
Continuous exposure : 1 uses per day
Continuous exposure: 300 times per year

Environment factors not influenced by risk management
Flow rate of receiving surface: 18,000 m³/d

Technical conditions and measures / Organizational measures
Remarks: Ensure control measures are regularly inspected and maintained.

Conditions and measures related to sewage treatment plant
Flow rate of sewage treatment plant effluent: 2,000 m³/d

Waste management measures
Waste treatment: Incineration
Disposal methods: (Effectiveness (of a measure): > 99 %)
Waste treatment: Landfill, Not applicable
Waste treatment: Recycling, Not applicable

7.2.2 ES 7 - CS 2: Control of worker exposure: Professional use (Adhesives, sealants) (PC1)
Remarks: As no toxicological hazard was identified no human-related (worker/consumer) exposure assessment and risk characterization was performed.

Product characteristics
Concentration of the Substance in Mixture/Article: >= 5 - <= 25 %
Molecular weight: 31 g/mol
Physical Form (at time of use): Solid, low dustiness
Vapour pressure: < 0,001 Pa
Remarks: Covers use at ambient temperatures.

7.3. ES 7 Exposure estimation and reference to its source

7.3.1 ES 7 - CS 1: Environmental release and exposure: Professional use (Widespread use leading to inclusion into/onto article (indoor)) (ERC8c)

<table>
<thead>
<tr>
<th>Release route</th>
<th>Release rate</th>
<th>Release estimation method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
<td>0 kg/day</td>
<td>EUSES v2.1</td>
</tr>
<tr>
<td>Water</td>
<td>0.000008 kg/day</td>
<td>EUSES v2.1</td>
</tr>
<tr>
<td>Waste</td>
<td>0 kg/day</td>
<td>EUSES v2.1</td>
</tr>
</tbody>
</table>

Protection target: Exposure estimation and reference to its source (EUSES v2.1) RCR
7.4. ES 7 Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

ECHA guidance for downstream users
Section 2

8. ES 8: Industrial use; Formulation into mixture, Matches; SU8, SU9

8.1. Title section

<table>
<thead>
<tr>
<th>Environment</th>
<th>CS1: Industrial use (Formulation into mixture)</th>
<th>ERC2</th>
<th>CS2: Industrial use (Mixing or blending in batch processes, Transfer of substance or mixture (charging/discharging) at dedicated facilities, Roller application or brushing, Treatment of articles by dipping and pouring)</th>
<th>PROC5, PROC8b, PROC10, PROC13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8.2. ES 8 Conditions of use affecting exposure

8.2.1 ES 8 - CS 1: Control of environmental exposure: Industrial use (Formulation into mixture) (ERC2)

Product characteristics
Molecular weight : 31 g/mol

Amount used
Daily amount per site : 26.7 kg/day

Frequency and duration of use
Continuous exposure : 1 uses per day
Continuous exposure: 300 times per year

Environment factors not influenced by risk management:
Flow rate of receiving surface water: 18,000 m³/d

Technical conditions and measures / Organizational measures:
Air: Filtration (Effectiveness of a measure): > 99 %
Water: Sedimentation (Effectiveness of a measure): > 80 %
Remarks: Ensure operatives are trained to minimise exposures. Ensure control measures are regularly inspected and maintained.

Conditions and measures related to sewage treatment plant:
Flow rate of sewage treatment plant effluent: 2,000 m³/d
Sludge Treatment: No application of sewage sludge to soil

Waste management measures:
Waste treatment: Incineration
Disposal methods: (Effectiveness of a measure): > 99 %

8.2.2 ES 8 - CS 2: Control of worker exposure: Industrial use (Mixing or blending in batch processes, Transfer of substance or mixture (charging/discharging) at dedicated facilities, Roller application or brushing, Treatment of articles by dipping and pouring) (PROC5, PROC8b, PROC10, PROC13)

Remarks: As no toxicological hazard was identified no human-related (worker/consumer) exposure assessment and risk characterization was performed.

Product characteristics:
Concentration of the Substance in Mixture/Article: >= 5 - <= 25 %
Molecular weight: 31 g/mol
Physical Form (at time of use): Solid, low dustiness
Vapour pressure: < 0,001 Pa
Remarks: Covers use at ambient temperatures.

8.3. ES 8 Exposure estimation and reference to its source:

8.3.1 ES 8 - CS 1: Environmental release and exposure: Industrial use (Formulation into mixture) (ERC2)

<table>
<thead>
<tr>
<th>Release route</th>
<th>Release rate</th>
<th>Release estimation method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
<td>0 kg/day</td>
<td>EUSES v2.1</td>
</tr>
</tbody>
</table>
8.4. ES 8 Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

ECHA guidance for downstream users
Section 2

9. ES 9: Industrial use; Application, Matches; SU8, SU9

9.1. Title section

<table>
<thead>
<tr>
<th>Environment</th>
<th>CS1: Industrial use (Formulation into solid matrix)</th>
<th>ERC3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workers</td>
<td>CS2: Industrial use (Mixing or blending in batch processes, Transfer of substance or mixture (charging/discharging) at dedicated facilities, Roller application or brushing, Treatment of articles by dipping and pouring)</td>
<td>PROC5, PROC8b, PROC10, PROC13</td>
</tr>
</tbody>
</table>

9.2. ES 9 Conditions of use affecting exposure

9.2.1 ES 9 - CS 1: Control of environmental exposure: Industrial use (Formulation into solid matrix) (ERC3)

Product characteristics
Molecular weight : 31 g/mol

Amount used
Daily amount per site : 26.7 kg/day
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

EXOLIT RP 607

Substance key: 000000131906
Revision Date: 25.02.2019
Version : 5 - 0 / EU
Date of printing : 20.03.2019

Frequency and duration of use
Continuous exposure : 1 uses per day
Continuous exposure : 300 times per year

Environment factors not influenced by risk management
Flow rate of receiving surface water : 18,000 m³/d

Technical conditions and measures / Organizational measures
Air : Filtration (Effectiveness (of a measure): > 99 %)
Water : Sedimentation (Effectiveness (of a measure): > 80 %)
Remarks : Ensure operatives are trained to minimise exposures. Ensure control measures are regularly inspected and maintained.

Conditions and measures related to sewage treatment plant
Flow rate of sewage treatment plant effluent : 2,000 m³/d
Sludge Treatment : No application of sewage sludge to soil

Waste management measures
Waste treatment : Incineration
Disposal methods : (Effectiveness (of a measure): > 99 %)

9.2.2 ES 9 - CS 2: Control of worker exposure: Industrial use (Mixing or blending in batch processes, Transfer of substance or mixture (charging/discharging) at dedicated facilities, Roller application or brushing, Treatment of articles by dipping and pouring) (PROC5, PROC8b, PROC10, PROC13)
Remarks : As no toxicological hazard was identified no human-related (worker/consumer) exposure assessment and risk characterization was performed.

Product characteristics
Concentration of the Substance in Mixture/Article : >= 5 - <= 25 %
Molecular weight : 31 g/mol
Physical Form (at time of use) : Solid, low dustiness
Vapour pressure : < 0,001 Pa
Remarks : Covers use at ambient temperatures.

9.3. ES 9 Exposure estimation and reference to its source

9.3.1 ES 9 - CS 1: Environmental release and exposure: Industrial use (Formulation...
into solid matrix) (ERC3)

<table>
<thead>
<tr>
<th>Release route</th>
<th>Release rate</th>
<th>Release estimation method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
<td>0 kg/day</td>
<td>EUSES v2.1</td>
</tr>
<tr>
<td>Water</td>
<td>0.000267 kg/day</td>
<td>EUSES v2.1</td>
</tr>
<tr>
<td>Waste</td>
<td>0 kg/day</td>
<td>EUSES v2.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>protection target</th>
<th>Exposure estimation and reference to its source (EUSES v2.1)</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshwater</td>
<td>0.000011 µg/L</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Freshwater sediment</td>
<td>24.0 µg/kg dry weight</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Soil</td>
<td>5.42 µg/kg dry weight</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Sewage treatment plant</td>
<td>0.011 µg/L</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Secondary poisoning</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Indirect exposure to humans via the environment</td>
<td>Not applicable</td>
<td></td>
</tr>
</tbody>
</table>

9.4. ES 9  Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

ECHA guidance for downstream users
Section 2

10. ES 10: Industrial use; Manufacture of substance, Biocidal products; SU8, SU9

10.1. Title section

<table>
<thead>
<tr>
<th>Environment</th>
<th>Manufacture of bulk, large scale chemicals (including petroleum products) (SU8)</th>
<th>ERC2, ERC3</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS1:</td>
<td>Industrial use (Formulation into mixture, Formulation into solid matrix)</td>
<td>ERC2, ERC3</td>
</tr>
<tr>
<td>Workers</td>
<td></td>
<td>PROC5, PROC8b, PROC10, PROC13</td>
</tr>
<tr>
<td>CS2:</td>
<td>Industrial use (Mixing or blending in batch processes, Transfer of substance or mixture (charging/discharging) at dedicated facilities, Roller application or brushing, Treatment of articles by dipping and pouring)</td>
<td>PROC5, PROC8b, PROC10, PROC13</td>
</tr>
</tbody>
</table>

10.2. ES 10  Conditions of use affecting exposure

10.2.1 ES 10 - CS 1: Control of environmental exposure: Industrial use (Formulation into mixture, Formulation into solid matrix) (ERC2, ERC3)
Product characteristics
   Molecular weight : 31 g/mol

Amount used
   Daily amount per site : 333.3 kg/day

Frequency and duration of use
   Continuous exposure : 1 uses per day
   Continuous exposure : 300 times per year

Environment factors not influenced by risk management
   Flow rate of receiving surface water : 18,000 m³/d

Technical conditions and measures / Organizational measures
   Air : Filtration (Effectiveness (of a measure): > 99 %)
   Water : Sedimentation (Effectiveness (of a measure): > 80 %)
   Remarks : Ensure operatives are trained to minimise exposures.
             Ensure control measures are regularly inspected and maintained.

Conditions and measures related to sewage treatment plant
   Flow rate of sewage treatment plant : 2,000 m³/d
   Sludge Treatment : No application of sewage sludge to soil

Waste management measures
   Waste treatment : Incineration
   Disposal methods : (Effectiveness (of a measure): > 99 %)

10.2.2 ES 10 - CS 2: Control of worker exposure: Industrial use (Mixing or blending in batch processes, Transfer of substance or mixture (charging/discharging) at dedicated facilities, Roller application or brushing, Treatment of articles by dipping and pouring) (PROC5, PROC8b, PROC10, PROC13)
   Remarks : As no toxicological hazard was identified no human-related (worker/consumer) exposure assessment and risk characterization was performed.

Product characteristics
   Concentration of the Substance in Mixture/Article : <= 100 %
   Molecular weight : 31 g/mol
   Physical Form (at time of use) : Solid, medium dustiness
   Vapour pressure : < 0.001 Pa
   Remarks : Covers use at ambient temperatures.
10.3. ES 10 Exposure estimation and reference to its source

10.3.1 ES 10 - CS 1: Environmental release and exposure: Industrial use (Formulation into mixture, Formulation into solid matrix) (ERC2, ERC3)

<table>
<thead>
<tr>
<th>Release route</th>
<th>Release rate</th>
<th>Release estimation method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
<td>0 kg/day</td>
<td>EUSES v2.1</td>
</tr>
<tr>
<td>Water</td>
<td>0.000333 kg/day</td>
<td>EUSES v2.1</td>
</tr>
<tr>
<td>Waste</td>
<td>0 kg/day</td>
<td>EUSES v2.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>protection target</th>
<th>Exposure estimation and reference to its source (EUSES v2.1)</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshwater</td>
<td>0.0000057 µg/L</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Freshwater sediment</td>
<td>57.0 µg/kg dry weight</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Soil</td>
<td>7.16 µg/kg dry weight</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Sewage treatment plant</td>
<td>0.0025 µg/L</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Secondary poisoning</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Indirect exposure to humans via the environment</td>
<td>Not applicable</td>
<td></td>
</tr>
</tbody>
</table>

10.4. ES 10 Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

ECHA guidance for downstream users
Section 2

11. ES 11: Industrial use; Application, Use as an intermediate, Base metals and alloys; SU8, SU9

11.1. Title section

<table>
<thead>
<tr>
<th>Manufacture of bulk, large scale chemicals (including petroleum products) (SU8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacture of fine chemicals (SU9)</td>
</tr>
<tr>
<td>Environment</td>
</tr>
<tr>
<td>CS1: Industrial use (Use of intermediate)</td>
</tr>
<tr>
<td>Workers</td>
</tr>
<tr>
<td>CS2: Industrial use (Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions, Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions, Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled</td>
</tr>
</tbody>
</table>
11.2. ES 11  Conditions of use affecting exposure

11.2.1 ES 11 - CS 1:  Control of environmental exposure: Industrial use (Use of intermediate) (ERC6a)

Product characteristics
Molecular weight : 31 g/mol

Amount used
Daily amount per site : 33,3 kg/day

Frequency and duration of use
Continuous exposure : 1 uses per day
Continuous exposure : 300 times per year

Environment factors not influenced by risk management
Flow rate of receiving surface water : 18.000 m3/d

Technical conditions and measures / Organizational measures
Air : Filtration (Effectiveness of a measure): > 99 %
Water : Sedimentation (Effectiveness of a measure): > 80 %
Remarks : Ensure operatives are trained to minimise exposures.
Ensure control measures are regularly inspected and maintained.

Conditions and measures related to sewage treatment plant
Flow rate of sewage treatment plant effluent : 2.000 m3/d
Sludge Treatment : No application of sewage sludge to soil

Waste management measures
Waste treatment : Incineration
Disposal methods : (Effectiveness of a measure): > 99 %

11.2.2 ES 11 - CS 2:  Control of worker exposure: Industrial use (Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions, Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions, Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent
11.3. ES 11 Exposure estimation and reference to its source

11.3.1 ES 11 - CS 1: Environmental release and exposure: Industrial use (Use of intermediate) (ERC6a)

<table>
<thead>
<tr>
<th>Release route</th>
<th>Release rate</th>
<th>Release estimation method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
<td>0 kg/day</td>
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</tr>
<tr>
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<td>EUSES v2.1</td>
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</tr>
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<td>Soil</td>
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<td>Sewage treatment plant</td>
<td>0 µg/L</td>
<td>0</td>
</tr>
<tr>
<td>Secondary poisoning</td>
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11.4. ES 11 Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

ECHA guidance for downstream users
Section 2