1. Identification

Product identifier used on the label

Lugalvan® Passivation 2020

Recommended use of the chemical and restriction on use

Recommended use*: Chemical

* The “Recommended use” identified for this product is provided solely to comply with a Federal requirement and is not part of the seller’s published specification. The terms of this Safety Data Sheet (SDS) do not create or infer any warranty, express or implied, including by incorporation into or reference in the seller’s sales agreement.

Details of the supplier of the safety data sheet

Company: BASF CORPORATION
100 Park Avenue
Florham Park, NJ 07932, USA

Telephone: +1 973 245-6000

Emergency telephone number

CHEMTREC: 1-800-424-9300
BASF HOTLINE: 1-800-832-HELP (4357)

Other means of identification

Chemical family: No applicable information available.
Synonyms: chemical for industrial metal-working

2. Hazards Identification


Classification of the product

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Corrosive to metals</td>
<td>Skin corrosion/irritation</td>
<td>Serious eye damage/eye irritation</td>
</tr>
</tbody>
</table>

Label elements

Pictogram:
Signal Word:
Danger

Hazard Statement:
H290 May be corrosive to metals.
H318 Causes serious eye damage.
H315 Causes skin irritation.

Precautionary Statements (Prevention):
P280 Wear protective gloves and eye/face protection.
P264 Wash with plenty of water and soap thoroughly after handling.
P234 Keep only in original packaging.

Precautionary Statements (Response):
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER or doctor/physician.
P303 + P352 IF ON SKIN (or hair): Wash with plenty of soap and water.
P362 + P364 Take off contaminated clothing and wash it before reuse.
P390 Absorb spillage to prevent material damage.

Precautionary Statements (Storage):
P406 Store in a corrosion-resistant/… container with a resistant inner liner.

Hazards not otherwise classified

No specific dangers known, if the regulations/notes for storage and handling are considered.

3. Composition / Information on Ingredients


<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Weight %</th>
<th>Chemical name</th>
</tr>
</thead>
<tbody>
<tr>
<td>107-21-1</td>
<td>&gt;= 1.0 - &lt; 7.0%</td>
<td>ethylene glycol</td>
</tr>
<tr>
<td>7664-38-2</td>
<td>&gt;= 3.0 - &lt; 5.0%</td>
<td>phosphoric acid</td>
</tr>
<tr>
<td>1746-03-8</td>
<td>&gt;= 0.1 - &lt; 1.0%</td>
<td>Phosphonic acid, ethenyl-</td>
</tr>
</tbody>
</table>

4. First-Aid Measures

Description of first aid measures

General advice:
Remove contaminated clothing.

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

If on skin:
Immediately wash thoroughly with plenty of water, apply sterile dressings, consult a skin specialist.
If in eyes:
Immediately wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

If swallowed:
Immediately rinse mouth and then drink 200-300 ml of water, seek medical attention.

Most important symptoms and effects, both acute and delayed

Symptoms: The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11.
Hazards: No data available.

Indication of any immediate medical attention and special treatment needed

Note to physician
Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

5. Fire-Fighting Measures

Extinguishing media

Suitable extinguishing media:
water spray, dry powder, foam

Special hazards arising from the substance or mixture

Hazards during fire-fighting:
harmful vapours
Evolution of fumes/fog. The substances/groups of substances mentioned can be released in case of fire.

Advice for fire-fighters

Protective equipment for fire-fighting:
Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

Further information:
Contaminated extinguishing water must be disposed of in accordance with official regulations.

6. Accidental release measures

Further accidental release measures:
High risk of slipping due to leakage/spillage of product.

Personal precautions, protective equipment and emergency procedures

Use personal protective clothing. Information regarding personal protective measures see, section 8.

Environmental precautions

Do not discharge into drains/surface waters/groundwater.

Methods and material for containment and cleaning up
For small amounts: Pick up with absorbent material (e.g. sand, sawdust, general-purpose binder).
Dispose of absorbed material in accordance with regulations.
For large amounts: Pump off product.
Spills should be contained, solidified, and placed in suitable containers for disposal.

7. Handling and Storage

Precautions for safe handling
No special measures necessary provided product is used correctly.

Protection against fire and explosion:
No special precautions necessary.

Conditions for safe storage, including any incompatibilities
Segregate from alkalies and alkalizing substances. Segregate from bases. Segregate from caustics. Segregate from iron and aluminum. Segregate from foods and animal feeds. Segregate from metals. Segregate from nitrites and alkaline substances. Segregate from strong bases. Segregate from textiles and similar materials.

Suitable materials for containers: High density polyethylene (HDPE), Low density polyethylene (LDPE), glass, enamelled, Stainless steel 1.4541, Stainless steel 1.4571, Stainless steel 1.4306 (V2A), Stainless steel 2.4610

Further information on storage conditions: Keep container tightly closed and in a cool place. Protect from temperatures below: 0 °C Changes in the properties of the product may occur if substance/product is stored below indicated temperature for extended periods of time. Protect from temperatures above: 50 °C Changes in the properties of the product may occur if substance/product is stored above indicated temperature for extended periods of time.

8. Exposure Controls/Personal Protection

Components with occupational exposure limits

<table>
<thead>
<tr>
<th>Component</th>
<th>ACGIH TLV</th>
<th>CLV 100 mg/m3 aerosol</th>
<th>OSHA PEL</th>
<th>STEL value 3 mg/m3</th>
<th>TWA value 1 mg/m3</th>
</tr>
</thead>
<tbody>
<tr>
<td>ethylene glycol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>phosphoric acid</td>
<td></td>
<td></td>
<td>PEL</td>
<td>1 mg/m3</td>
<td>TWA value 1 mg/m3</td>
</tr>
</tbody>
</table>

Personal protective equipment

Respiratory protection:
Respiratory protection in case of vapour/aerosol release. Particle filter with medium efficiency for solid and liquid particles (e.g. EN 143 or 149, Type P2 or FFP2)

Hand protection:
Chemical resistant protective gloves

Eye protection:
Tightly fitting safety goggles (chemical goggles).
Body protection:
Body protection must be chosen based on level of activity and exposure.

General safety and hygiene measures:
Wearing of closed work clothing is required additionally to the stated personal protection equipment.

9. Physical and Chemical Properties

Form: liquid
Odour: almost odourless
Odour threshold: not determined
Colour: colourless to yellowish
pH value: < 2 (DIN 19268)
solidification temperature: < 0 °C
Boiling point: 100 °C
Flash point: > 100 °C
Flammability: not flammable
Lower explosion limit: For liquids not relevant for classification and labelling.
Upper explosion limit: For liquids not relevant for classification and labelling.
Autoignition: Based on the water content the product does not ignite.
Vapour pressure: 23 hPa
(20 °C)
121 hPa
(50 °C)
Density: 1.114 g/cm³
(20 °C)
1.102 g/cm³
(50 °C)
Relative density: No data available.
Vapour density: not determined
Partitioning coefficient n-octanol/water (log Pow): Study does not need to be conducted.
Self-ignition temperature:
Thermal decomposition: No decomposition if stored and handled as prescribed/indicated.
Viscosity, dynamic: not determined
Viscosity, kinematic: 7.2 mm²/s
(23 °C)
Particle size: The substance / product is marketed or used in a non solid or granular form.
Solubility in water: soluble
Solubility (qualitative): soluble
 solvent(s): polar solvents,
Evaporation rate: Value can be approximated from Henry’s Law Constant or vapor pressure.
Other Information: If necessary, information on other physical and chemical parameters is indicated in this section.
10. Stability and Reactivity

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

Corrosion to metals:
Corrosion rate >6.25 mm/a using Type P3 steel (ISO 2604/IV/1975)
Corrosion rate > 6.25 mm/a using 7075-T6 or AZ5GU-T6

Oxidizing properties:
not fire-propagating

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

Peroxides: The product does not contain peroxides.

**Possibility of hazardous reactions**
No hazardous reactions if stored and handled as prescribed/indicated.

**Conditions to avoid**
See MSDS section 7 - Handling and storage.

**Incompatible materials**
strong acids, strong bases, reactive chemicals, strong oxidizing agents

**Hazardous decomposition products**
Decomposition products:
No hazardous decomposition products if stored and handled as prescribed/indicated.

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

11. Toxicological information

**Primary routes of exposure**
Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

**Acute Toxicity/Effects**

**Oral**
Type of value: LD50
Species: rat
Value: > 2,000 mg/kg

**Inhalation**
Type of value: LC50
Species: rat
not determined

**Dermal**
Type of value: LD50
Species: rat
not determined

Assessment other acute effects
No data available.

Irritation / corrosion
Assessment of irritating effects: Irritating to skin.

Skin
Result: Irritant.

Eye
Result: Risk of serious damage to eyes.

Sensitization
Assessment of sensitization: No data available.

Aspiration Hazard
No aspiration hazard expected.

Chronic Toxicity/Effects

Repeated dose toxicity
Assessment of repeated dose toxicity: No data available.

Genetic toxicity
Assessment of mutagenicity: No data available.

Carcinogenicity
Assessment of carcinogenicity: No data available.

Reproductive toxicity
Assessment of reproduction toxicity: No data available.

Teratogenicity
Assessment of teratogenicity: No data available.

Other Information
The product has not been tested. The statements on toxicology have been derived from the properties of the individual components.

Symptoms of Exposure
The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11.

12. Ecological Information

Toxicity

Aquatic toxicity
Assessment of aquatic toxicity:
There is a high probability that the product is not acutely harmful to aquatic organisms.

Toxicity to fish
LC50 > 100 mg/l, Fish

Aquatic invertebrates
LC50 (48 h), daphnia
not determined

Aquatic plants
EC50 (72 h), algae
not determined

Chronic toxicity to fish
No data available.

Chronic toxicity to aquatic invertebrates
No data available.

Microorganisms/Effect on activated sludge

Toxicity to microorganisms
Inhibition of degradation activity in activated sludge is not to be anticipated during correct introduction of low concentrations.

Persistence and degradability

Assessment biodegradation and elimination (H2O)
The substance can be virtually eliminated from water in suitable effluent treatment plants by biodegradation, stripping and mechanical separation. The polymer component of the product is poorly biodegradable.

Mobility in soil

Assessment transport between environmental compartments
The substance will not evaporate into the atmosphere from the water surface.

Additional information

Add. remarks environm. fate & pathway:
Treatment in biological waste water treatment plants has to be performed according to local and administrative regulations.

Other ecotoxicological advice:
Do not release untreated into natural waters. The product has not been tested. The statements on ecotoxicology have been derived from products of a similar structure and composition.

13. Disposal considerations

Waste disposal of substance:
Dispose of in accordance with national, state and local regulations. It is the waste generator’s responsibility to determine if a particular waste is hazardous under RCRA.

Container disposal:
Dispose of in accordance with national, state and local regulations.
14. Transport Information

**Land transport**

**USDOT**
- **Hazard class:** 8
- **Packing group:** III
- **ID number:** UN 3265
- **Hazard label:** 8
- **Proper shipping name:** CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (contains POLY POLY ACRYLIC ACID MODIFIED) CORROSIVE ON METALS

**Sea transport**

**IMDG**
- **Hazard class:** 8
- **Packing group:** III
- **ID number:** UN 3265
- **Hazard label:** 8
- **Marine pollutant:** NO
- **Proper shipping name:** CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (contains POLY POLY ACRYLIC ACID MODIFIED) CORROSIVE ON METALS

**Air transport**

**IATA/ICAO**
- **Hazard class:** 8
- **Packing group:** III
- **ID number:** UN 3265
- **Hazard label:** 8
- **Proper shipping name:** CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (contains POLY POLY ACRYLIC ACID MODIFIED) CORROSIVE ON METALS

15. Regulatory Information

**Federal Regulations**

**Registration status:**
- Chemical: TSCA, US blocked / not listed

**EPCRA 311/312 (Hazard categories):** Refer to SDS section 2 for GHS hazard classes applicable for this product.

**EPCRA 313:**

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Chemical name</th>
</tr>
</thead>
<tbody>
<tr>
<td>107-21-1</td>
<td>ethylene glycol</td>
</tr>
</tbody>
</table>

**CERCLA RQ**

<table>
<thead>
<tr>
<th>RQ LBS</th>
<th>CAS Number</th>
<th>Chemical name</th>
</tr>
</thead>
<tbody>
<tr>
<td>5000</td>
<td>7664-38-2;</td>
<td>phosphoric acid; ethylene glycol</td>
</tr>
<tr>
<td></td>
<td>107-21-1</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>123-91-1</td>
<td>1,4-dioxane</td>
</tr>
</tbody>
</table>
10 LBS  75-21-8  Ethylene Oxide

State regulations

<table>
<thead>
<tr>
<th>State RTK</th>
<th>CAS Number</th>
<th>Chemical name</th>
</tr>
</thead>
<tbody>
<tr>
<td>NJ</td>
<td>107-21-1</td>
<td>ethylene glycol</td>
</tr>
<tr>
<td></td>
<td>7664-38-2</td>
<td>phosphoric acid</td>
</tr>
<tr>
<td>PA</td>
<td>107-21-1</td>
<td>ethylene glycol</td>
</tr>
<tr>
<td></td>
<td>7664-38-2</td>
<td>phosphoric acid</td>
</tr>
</tbody>
</table>

Safe Drinking Water & Toxic Enforcement Act, CA Prop. 65:

WARNING: This product can expose you to chemicals including ETHYLENE OXIDE, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov.

[Other Prop 65 components may be present in the product.]

NFPA Hazard codes:
Health: 3  Fire: 1  Reactivity: 0  Special:

HMIS III rating
Health: 3  Flammability: 1  Physical hazard: 0

16. Other Information

SDS Prepared by:
BASF NA Product Regulations
SDS Prepared on: 2017/11/14

We support worldwide Responsible Care® initiatives. We value the health and safety of our employees, customers, suppliers and neighbors, and the protection of the environment. Our commitment to Responsible Care is integral to conducting our business and operating our facilities in a safe and environmentally responsible fashion, supporting our customers and suppliers in ensuring the safe and environmentally sound handling of our products, and minimizing the impact of our operations on society and the environment during production, storage, transport, use and disposal of our products.

Lugalvan® Passivation 2020 is a registered trademark of BASF Corporation or BASF SE IMPORTANT: WHILE THE DESCRIPTIONS, DESIGNS, DATA AND INFORMATION CONTAINED HEREIN ARE PRESENTED IN GOOD FAITH AND BELIEVED TO BE ACCURATE, IT IS PROVIDED FOR YOUR GUIDANCE ONLY. BECAUSE MANY FACTORS MAY AFFECT PROCESSING OR APPLICATION/USE, WE RECOMMEND THAT YOU MAKE TESTS TO DETERMINE THE SUITABILITY OF A PRODUCT FOR YOUR PARTICULAR PURPOSE PRIOR TO USE. NO WARRANTIES OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE MADE REGARDING PRODUCTS DESCRIBED OR DESIGNS, DATA OR INFORMATION SET FORTH, OR THAT THE PRODUCTS, DESIGNS, DATA OR INFORMATION MAY BE USED WITHOUT INFRINGING THE INTELLECTUAL PROPERTY RIGHTS OF OTHERS. IN NO CASE SHALL THE DESCRIPTIONS, INFORMATION, DATA OR DESIGNS PROVIDED BE CONSIDERED A PART OF OUR TERMS AND CONDITIONS OF SALE. FURTHER, YOU EXPRESSLY UNDERSTAND AND AGREE THAT THE DESCRIPTIONS, DESIGNS, DATA, AND INFORMATION FURNISHED BY OUR COMPANY HEREUNDER ARE GIVEN GRATIS AND WE ASSUME NO OBLIGATION OR LIABILITY FOR THE DESCRIPTION, DESIGNS, DATA AND INFORMATION GIVEN OR RESULTS OBTAINED, ALL SUCH BEING GIVEN AND ACCEPTED AT YOUR RISK.
END OF DATA SHEET