


Date of issue 3/19/2025 (month/day/year)

Version 2

Section 1. Chemical product and company identification

- A. Product name** : SIGMAGUARD CSF 585 HARDENER
Product code : 00468181
- B. Relevant identified uses of the substance or mixture and uses advised against**
Product use : Professional applications, Used by spraying.
Use of the substance/ mixture : Coating.
Uses advised against : Product is not intended, labelled or packaged for consumer use.
- C. Supplier's or Importer's information** : PPG SSC
(680-090)
19, Yeocheon-ro 217beon-gil, Nam-gu,
Ulsan, Korea
Tel: +82-52-210-8222
- Email Address** : Korea.MSDS@PPG.COM
- Emergency telephone number:** : ☎82-52-210-8331

Section 2. Hazards identification

- A. Hazard classification** : CORROSIVE TO METALS - Category 1
SKIN CORROSION - Category 1C
SERIOUS EYE DAMAGE - Category 1
AQUATIC HAZARD (LONG-TERM) - Category 3
This product is classified in accordance with the Industrial Safety and Health Act and the Chemical Control Act.
- B. GHS label elements, including precautionary statements**
Symbol : 
- Signal word** : Danger
- Hazard statements** : ☎290 - May be corrosive to metals.
H314 - Causes severe skin burns and eye damage.
H318 - Causes serious eye damage.
H412 - Harmful to aquatic life with long lasting effects.
- Precautionary statements**

Section 2. Hazards identification

- Prevention** : P280 - Wear protective gloves, protective clothing and eye or face protection.
P234 - Keep only in original packaging.
P273 - Avoid release to the environment.
P260 - Do not breathe vapor.
- Response** : P390 - Absorb spillage to prevent material damage.
P304 + P310 - IF INHALED: Immediately call a POISON CENTER or doctor.
P301 + P310, P330, P331 - IF SWALLOWED: Immediately call a POISON CENTER or doctor. Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353, P310 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Immediately call a POISON CENTER or doctor.
P363 - Wash contaminated clothing before reuse.
P305 + P351 + P338, P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.
P321 - Specific treatment (see the label).
- Storage** : Not applicable.
- Disposal** : P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

- C. Other hazards which do not result in classification** : None known.

Section 3. Composition/information on ingredients

CAS number/other identifiers

- CAS number** : Not applicable.

| Chemical name | Common name | Identifiers | % |
|--|---------------------------------------|---|----------|
| Poly[oxy(methyl-1,2-ethanediyl)], α -(2-aminomethylethyl)- ω -(2-aminomethylethoxy)- | POLYOXY PROPYLENE DIAMINE | CAS: 9046-10-0 (n = 2-6) EC: 618-561-0 | 60 - <70 |
| 2,4,6-tris[(dimethylamino)methyl]phenol | 2,4,6-tris(dimethylaminomethyl)phenol | CAS: 90-72-2 EC: 202-013-9 | 1 - <5 |

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

- A. Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Seek immediate medical attention.
- B. Skin contact** : Remove contaminated clothing and shoes. Wash skin thoroughly with soap and water or use recognized skin cleanser. Do NOT use solvents or thinners.

Section 4. First aid measures

- C. Inhalation** : Remove to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel.
- D. Ingestion** : If swallowed, seek medical advice immediately and show this container or label. Keep person warm and at rest. Do NOT induce vomiting.
- E. Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

- A. Extinguishing media**
- Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : None known.
- B. Specific hazards arising from the chemical** : In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon oxides
nitrogen oxides
- C. Special equipment for fire-fighting** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
- Fire-fighting procedures** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Section 6. Accidental release measures

- A. Personal precautions, protective equipment and emergency procedures** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

Section 6. Accidental release measures

B. Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

C. Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Absorb spillage to prevent material damage. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Absorb spillage to prevent material damage. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

A. Precautions for safe handling : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container. Absorb spillage to prevent material damage.

B. Conditions for safe storage, including any incompatibilities : Store between the following temperatures: 0 to 35°C (32 to 95°F). Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store in a corrosion resistant container with a resistant inner liner. Store locked up. Keep away from metals. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

A. Occupational exposure limits

None.

Recommended monitoring procedures : Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

B. Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Section 8. Exposure controls/personal protection

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

C. Personal protective equipment

Respiratory protection : Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. If workers are exposed to concentrations above the exposure limit, they must use appropriate, certified respirators. Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary.

Eye protection : Chemical splash goggles and face shield.

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Gloves : nitrile neoprene

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Section 9. Physical and chemical properties

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

A. Appearance

Physical state : Liquid.

Color : Not available.

B. Odor : Characteristic.

C. Odor threshold : Not available.

D. pH : Not applicable.

E. Melting/freezing point : Not available.

F. Boiling point/boiling range : >37.78°C (>100°F)

G. Flash point : Closed cup: 128°C (262.4°F)

H. Evaporation rate : Not available.

I. Flammability (solid, gas) : Not available.

J. Lower and upper explosive (flammable) limits : Not available.

Section 9. Physical and chemical properties

| | | | | | | | | |
|--|---|--|-------------------------------|---------------|---------------|-------------------------------|------------|---------------|
| K. Vapor pressure | : | Ingredient name | Vapor Pressure at 20°C | | | Vapor pressure at 50°C | | |
| | | | mm Hg | kPa | Method | mm Hg | kPa | Method |
| | | Poly[oxy(methyl-1,2-ethanediyl)], α -(2-aminomethylethyl)- ω -(2-aminomethylethoxy)- | 0.675 | 0.09 | | 1.575 | 0.21 | |
| L. Solubility(ies) | : | Media | | Result | | | | |
| | | cold water | | Not soluble | | | | |
| Solubility in water | : | Not available. | | | | | | |
| M. Vapor density | : | Not available. | | | | | | |
| N. Relative density | : | 0.98 | | | | | | |
| O. Partition coefficient: n-octanol/water | : | Not applicable. | | | | | | |
| P. Auto-ignition temperature | : | | | | | | | |
| | | Ingredient name | °C | °F | Method | | | |
| | | 2,4,6-tris(dimethylaminomethyl)phenol | 382 | 719.6 | EU A.15 | | | |
| Q. Decomposition temperature | : | Not available. | | | | | | |
| R. Viscosity | : | Dynamic (room temperature): Not available. | | | | | | |
| | | Kinematic (room temperature): Not available. Kinematic (40°C (104°F)): >21 mm ² /s (>21 cSt) | | | | | | |
| Flow time (ISO 2431) | : | Not available. | | | | | | |
| S. Molecular weight | : | Not applicable. | | | | | | |

Section 10. Stability and reactivity

| | | |
|--|---|--|
| A. Chemical stability | : | The product is stable. |
| Possibility of hazardous reactions | : | Under normal conditions of storage and use, hazardous reactions will not occur. |
| B. Conditions to avoid | : | When exposed to high temperatures may produce hazardous decomposition products. |
| C. Incompatible materials | : | Keep away from the following materials to prevent strong exothermic reactions: oxidizing agents, strong alkalis, strong acids. |
| D. Hazardous decomposition products | : | Depending on conditions, decomposition products may include the following materials: carbon oxides nitrogen oxides |

Section 11. Toxicological information

A. Information on the likely routes of exposure : Not available.

Potential acute health effects

Inhalation : No known significant effects or critical hazards.
Ingestion : No known significant effects or critical hazards.
Skin contact : Causes severe burns.
Eye contact : Causes serious eye damage.

Over-exposure signs/symptoms

Inhalation : No specific data.
Ingestion : Adverse symptoms may include the following:
 stomach pains
Skin contact : Adverse symptoms may include the following:
 pain or irritation
 redness
 blistering may occur
Eye contact : Adverse symptoms may include the following:
 pain
 watering
 redness

B. Health hazards

Acute toxicity

| Product/ingredient name | Result | Species | Dose | Exposure |
|--|-------------|---------|------------|----------|
| Poly[oxy(methyl-1,2-ethanediyl)], α-(2-aminomethylethyl)-ω-(2-aminomethylethoxy)-2,4,6-tris[(dimethylamino)methyl]phenol | LD50 Dermal | Rat | 2980 mg/kg | - |
| | LD50 Oral | Rat | 2885 mg/kg | - |
| | LD50 Dermal | Rat | 1280 mg/kg | - |
| | LD50 Oral | Rat | 1200 mg/kg | - |

Conclusion/Summary : There are no data available on the mixture itself.

Irritation/Corrosion

Conclusion/Summary

Skin : There are no data available on the mixture itself.
Eyes : There are no data available on the mixture itself.
Respiratory : There are no data available on the mixture itself.

Sensitization

Conclusion/Summary

Skin : There are no data available on the mixture itself.
Respiratory : There are no data available on the mixture itself.

Mutagenicity

Conclusion/Summary : There are no data available on the mixture itself.

Carcinogenicity

Conclusion/Summary : There are no data available on the mixture itself.

Section 11. Toxicological information

Reproductive toxicity

Conclusion/Summary : There are no data available on the mixture itself.

Teratogenicity

Conclusion/Summary : There are no data available on the mixture itself.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Potential chronic health effects

General : No known significant effects or critical hazards.


Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Reproductive toxicity : No known significant effects or critical hazards.

Additional information

Repeated exposure to high vapor concentrations may cause irritation of the respiratory system and permanent brain and nervous system damage. Inhalation of vapor/aerosol concentrations above the recommended exposure limits causes headaches, drowsiness and nausea and may lead to unconsciousness or death.

| Chemical name | Identifiers | GHS Classification |
|--|---|---|
| <p> Poly[oxy(methyl-1,2-ethanediyl)], α-(2-aminomethylethyl)-ω-(2-aminomethylethoxy)-</p> <p>2,4,6-tris[(dimethylamino)methyl]phenol</p> | <p>CAS: 9046-10-0 (n = 2-6)</p> <p>EC: 618-561-0</p> <p>CAS: 90-72-2</p> <p>EC: 202-013-9</p> | <p>CORROSIVE TO METALS - Category 1</p> <p>SKIN CORROSION - Category 1C</p> <p>SERIOUS EYE DAMAGE - Category 1</p> <p>AQUATIC HAZARD (LONG-TERM) - Category 3</p> <p>CORROSIVE TO METALS - Category 1</p> <p>ACUTE TOXICITY (oral) - Category 4</p> <p>ACUTE TOXICITY (dermal) - Category 4</p> <p>SKIN CORROSION - Category 1</p> <p>SERIOUS EYE DAMAGE - Category 1</p> |

Section 12. Ecological information

A. Ecotoxicity

Section 12. Ecological information

| Product/ingredient name | Result | Species | Exposure |
|---|----------------------|---------|----------|
| Poly[oxy(methyl-1,2-ethanediyl)], α -(2-aminomethylethyl)- ω -(2-aminomethylethoxy)-2,4,6-tris[(dimethylamino)methyl]phenol | EC50 15 mg/l | Algae | 72 hours |
| | Acute LC50 >100 mg/l | Daphnia | 48 hours |
| | Acute LC50 >100 mg/l | Fish | 96 hours |

B. Persistence and degradability

| Product/ingredient name | Test | Result | Dose | Inoculum |
|---|--|-----------------------------|------|----------|
| 2,4,6-tris[(dimethylamino)methyl]phenol | OECD Ready Biodegradability - Closed Bottle Test | 4 % - Not readily - 28 days | - | - |

| Product/ingredient name | Aquatic half-life | Photolysis | Biodegradability |
|---|-------------------|------------|------------------|
| Poly[oxy(methyl-1,2-ethanediyl)], α -(2-aminomethylethyl)- ω -(2-aminomethylethoxy)-2,4,6-tris[(dimethylamino)methyl]phenol | - | - | Not readily |
| | - | - | Not readily |

C. Bioaccumulative potential

| Product/ingredient name | LogP _{ow} | BCF | Potential |
|---|--------------------|-----|-----------|
| 2,4,6-tris[(dimethylamino)methyl]phenol | 0.219 | - | Low |

D. Mobility in soil

Soil/Water partition coefficient : Not available.

E. Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

A. **Disposal methods** : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Section 13. Disposal considerations

- B. Disposal precautions** : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

| | UN | IMDG | IATA |
|---------------------------------------|-----------------|-----------------|-----------------|
| A. UN number | UN3066 | UN3066 | UN3066 |
| B. UN proper shipping name | PAINT | PAINT | PAINT |
| C. Transport hazard class(es) | 8 | 8 | 8 |
| D. Packing group | III | III | III |
| Environmental hazards | No. | No. | No. |
| E. Marine pollutant substances | Not applicable. | Not applicable. | Not applicable. |

Additional information

- UN** : None identified.
IMDG : None identified.
IATA : None identified.

F. Special precaution which a user to be aware of or needs to comply with in connection with transport or transportation

Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not applicable.

Section 15. Regulatory information

A. Regulation according to ISHA

ISHA article 117 (Harmful substances prohibited from manufacture) : None of the components are listed.

ISHA article 118 (Harmful substances requiring permission) : None of the components are listed.

Article 2 of Youth Protection Act on Substances Hazardous to Youth : It is not allowed to sell to persons under the age of 19.

Exposure Limits of Chemical Substances and Physical Factors

Section 15. Regulatory information

None of the components have an OEL.

ISHA Enforcement Regs : None of the components are listed.

Annex 19 (Exposure standards established for harmful factors)

ISHA Enforcement Regs : None of the components are listed.

Annex 11-5 (Harmful factors subject to Work Environment Measurement)

ISHA Enforcement Regs : None of the components are listed.

Annex 22 (Harmful Factors Subject to Special Health Check-up)

Standard of Industrial Safety and Health : None of the components are listed.

Annex 12 (Hazardous substances subject to control)

B. Regulation according to Chemicals Control Act

Article 11 (TRI) : None of the components are listed.

Article 18 Prohibited (K-Reach Article 27) : None of the components are listed.

Article 19 Subject to authorization (K-Reach Article 25) : None of the components are listed.

Article 20 Restricted (K-Reach Article 27) : None of the components are listed.

Article 20 Toxic Chemicals (K-Reach Article 20) : Not applicable

Korea inventory : At least one component is not listed.

Article 39 (Accident Precaution Chemicals) : None of the components are listed.

C. Dangerous Materials Safety Management Act : **Class:** Class 4 - Flammable Liquid
Item: 5. Class 3 petroleums - Water-insoluble liquid
Threshold: 2000 L
Danger category: III
Signal word: Contact with sources of ignition prohibited

D. Wastes regulation : Dispose of contents and container in accordance with all local, regional, national and international regulations.

E. Regulation according to other foreign laws

Safety, health and environmental regulations specific for the product : No known specific national and/or regional regulations applicable to this product (including its ingredients).

Section 16. Other information

- A. References** : Korean Ministry of Environment; Chemical Control Act
Korean Ministry of Labor; Industrial Safety and Health Act
NIER Notice
Registry of Toxic Effects of Chemical Substances (RTECS)
U.S. Environmental Protection Agency, AQUIRE (Aquatic toxicity Information Retrieval) ECOTOX Database System.
- B. First issue date** : 6/12/2023
- C. Date of issue/Date of revision** : **3/19/2025**
- D. Version** : **2**
Prepared by : EHS
- E. Other**

✔ Indicates information that has changed from previously issued version.

Disclaimer

The information contained in this data sheet is based on present scientific and technical knowledge. The purpose of this information is to draw attention to the health and safety aspects concerning the products supplied by PPG, and to recommend precautionary measures for the storage and handling of the products. No warranty or guarantee is given in respect of the properties of the products. No liability can be accepted for any failure to observe the precautionary measures described in this data sheet or for any misuse of the products.