



Using Safety Data Sheets to Help Protect Your Plant

LEE RAWLINGS

SOUTH VALLEY WRF

4-12-2022

New SDS Format Includes 16 Sections

- 1- Identification of the product including synonyms
- 2- Hazard Identification Rated 1 – 4
- 3- Composition Information
- 4- First Aid Measures
- 5- Fire Fighting
- 6- Accidental Release Measures
- 7- Handling and Storage
- 8- Exposure Controls/personal protection
- 9- Physical and chemical properties
- 10- Stability and reactivity
- 11- Toxicological Information
- 12- Ecological Information
- 13- Disposal Considerations
- 14- Transportation Information
- 15- Regulatory Information
- 16- Other

Focus On Four Sections

- ▶ Identification
- ▶ Hazards
- ▶ Composition
- ▶ Ecological Information

Identification

- ▶ Trade Name- example CleanPerc
- ▶ Synonyms- Perc, Tetrachloroethene, 1,1,2,2,-Tetrachloroethylene
Perchloroethylene
- ▶ Use- sometimes given in SDS if not try Wikipedia or Google
 - ▶ dry cleaner solvent



Perchloroethylene (Dry Cleaning Grade)

Safety Data Sheet

SDS ID: 89070

***** Section 1 - Identification *****

Material Name

CleanPerc Perchloroethylene (Dry Cleaning Grade)

Product Code

Not available.

Synonyms

Tetrachloroethene, 1,1,2,2-Tetrachloroethylene

Product Use

Cleaning agent. If this product is used in combination with other products, refer to the Safety Data Sheet for those products.

Restrictions on Use

THIS PRODUCT IS NOT FOR SALE OR USE IN THE STATE OF CALIFORNIA

Hazards

- ▶ Look at the rating 1 – 4, 4 is most harmful
- ▶ Toxicity often hinted at with the term irritant
- ▶ Warnings are red flags to potential toxicity
- ▶ How much volume do they have on-site

Composition

- ▶ What percent of the compound is the chemical of concern?
- ▶ Make sure that the components add up to 100%
- ▶ Is the toxicity of the components broken out?
 - ▶ Might have to search for SDS of individual components separately

Ecological

- ▶ Look for information on commonly used organisms
 - ▶ Recommend Fathead Minnows and Daphnia Magna
- ▶ Pay attention to the test duration
- ▶ Type of Test- Flow Through or Static
- ▶ Watch the units that the concentration is reported mg/L or ug/L
- ▶ Compare the reported toxicity with other chemicals to gauge the level of concern

Sodium Chloride

Section 12 - Ecological Information Ecotoxicity:

- ▶ Fish: Fathead Minnow *Pimephales promelas*: LC50: 7650 mg/L; 96H; .
- ▶ Daphnia: Daphnia: EC50: 1000 mg/L; 48H; .
 - ▶ LC50- Lethal Concentration 50% mortality
 - ▶ EC50- Effective Concentration 50% of the organisms show the affect
 - ▶ Often used to report Daphnia results using immobilization as the measured affect because the organisms are so small it is difficult to see if they are dead or just sick enough that they don't try to swim.

Use #1

Sodium selenate is an [insecticide](#) used in [horticulture](#) for the control of mites, aphids, and [mealybugs](#). It is also used as a [fungicide](#) (ATSDR, 1996).

Use #2

Sodium selenite is used to add a pink color to glass. It is also used in some vitamin supplements.

Sodium Selenate

Section 12. Ecological Information

Toxicity to fish: mortality NOEC - Pimephales promelas (fathead minnow) - 1.25 mg/l - 5.0 d

LC50 - Pimephales promelas (fathead minnow) - 0.69 mg/l - 96.0 h

Toxicity to daphnia and other aquatic invertebrates: EC50 - Daphnia magna (Water flea) - 0.39 mg/l - 48 h

Ecotoxicity: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Results of PBT and vPvB Assessment: Not available.

Persistence and Degradability: Soluble in water. Persistence is unlikely.

Environmental Precautions: DO NOT DISCHARGE into drains and rivers.

Nonylphenol

Nonylphenols are a family of closely related organic compounds composed of phenol bearing a 9 carbon-tail. Nonylphenols can come in numerous structures, all of which may be considered alkylphenols. They are used in manufacturing antioxidants, lubricating oil additives, laundry and dish detergents, emulsifiers, and solubilizers. They are used extensively in epoxy formulation in North America but its use has been phased out in Europe. These compounds are also precursors to the commercially important non-ionic surfactants alkylphenol ethoxylates and nonylphenol ethoxylates, which are used in detergents, paints, pesticides, personal care products, and plastics. Nonylphenol has attracted attention due to its prevalence in the environment and its potential role as an endocrine disruptor and xenoestrogen, due to its ability to act with estrogen-like activity. The estrogenicity and biodegradation heavily depends on the branching of the nonyl sidechain. Nonylphenol has been found to act as an agonist of the GPER.

12. Ecological information

Ecotoxicity




The product contains following substances which are hazardous for the environment. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

| Component | Freshwater Algae | Freshwater Fish | Microtox | Water Flea |
|-------------------------|--|---|------------|---|
| 4-Nonylphenol, branched | EC50: = 1.3 mg/L, 72h (Desmodesmus subspicatus) EC50: 0.36 - 0.48 mg/L, 96h static (Pseudokirchneriella subcapitata) EC50: 0.16 - 0.72 mg/L, 72h static (Pseudokirchneriella subcapitata) | LC50: = 0.1351 mg/L, 96h flow-through (Lepomis macrochirus) LC50: = 0.135 mg/L, 96h flow-through (Pimephales promelas) | Not listed | EC50: = 0.14 mg/L, 48h (Daphnia magna) |

Persistence and Degradability May persist

Bioaccumulation/ Accumulation No information available.

Mobility . Is not likely mobile in the environment due its low water solubility.

| | | | | | | | | | | | |
|--|---|--|----------------|-----|--------------|---|------------------|---|---------------------|---|--|
| <p>WHMIS (Canada)</p>  <p>B-2 D-2A D-2B</p> | <p>NFPA (USA)</p> <p>Fire</p>  <p>Health Reactivity</p> <p>Specific hazard</p> | <p>HMIS (USA)</p> <table border="1"> <tr> <td>Health hazards</td> <td>* 2</td> </tr> <tr> <td>Flammability</td> <td>3</td> </tr> <tr> <td>Physical hazards</td> <td>2</td> </tr> <tr> <td>Personal protection</td> <td>X</td> </tr> </table> | Health hazards | * 2 | Flammability | 3 | Physical hazards | 2 | Personal protection | X | <p>Protective clothing</p>  |
| Health hazards | * 2 | | | | | | | | | | |
| Flammability | 3 | | | | | | | | | | |
| Physical hazards | 2 | | | | | | | | | | |
| Personal protection | X | | | | | | | | | | |

Section 1. Chemical product and company identification

| | |
|------------------------|---|
| Trade name | 102T |
| Product type | Polyester Resin Solution |
| Chemical family | Aromatic. |
| Material uses | Used in the manufacture of thermoset plastic parts. |

| | |
|--|--|
| <p>Manufacturer</p> <p>AOC, LLC 950 Highway 57 East Collierville, TN U.S.A. 38017 Website: www.aoc-resins.com Phone Number: (901) 854-2800 8am-5pm (Central Time) Mon-Fri</p> | <p>In case of emergency</p> <p>CHEMTREC (US): 24 hours/7 days (800) 424-9300 CANUTEC (Canada): 24 hours/7 days (613) 996-6666</p> |
|--|--|

Section 2. Hazards identification

OSHA status This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Routes of entry Eye contact, Skin contact, Inhalation, Ingestion

Potential acute health effects

Eyes: Severe eye irritant which may result in redness, burning, tearing and blurred vision.
Skin: Skin irritant which may result in burning sensation. Repeated or prolonged skin contact may cause dermatitis.
Ingestion: Ingestion may result in mouth, throat and gastrointestinal irritation, nausea, vomiting and diarrhea.
Inhalation: Inhalation of spray mist or liquid vapors may cause upper respiratory irritation and possible central nervous system effects including headaches, nausea, vomiting, dizziness, drowsiness, loss of coordination, impaired judgement and general weakness.

Potential chronic health effects

CARCINOGENIC EFFECTS:
Styrene: Classified A4 (not classifiable for human or animal) by ACGIH. Classified 2B (possible for human) by IARC. An increased incidence of lung tumors was observed in mice from a recent inhalation study. The relevance of this finding is uncertain since data from other long-term animal studies and from epidemiology studies of workers exposed to styrene do not provide a basis to conclude that styrene is carcinogenic to humans. Lung effects have been observed in mouse studies following repeated exposure.
Talc: Classified A2 (suspected for human) by ACGIH. Classified 1 (proven for human) by IARC. Classified 1 (known) by NTP.
Crystalline Silica: Classified A2 (suspected for human) by ACGIH. Classified 1 (proven for human) by IARC. Classified 1 (known) by NTP.
MUTAGENIC or TERATOGENIC EFFECTS: No known effect according to our database.

MSDS no. 9673V5

102T

Section 3. Composition/information on ingredients

| Name | CAS # | % by weight |
|-----------------------|------------|-------------|
| 1) Styrene | 100-42-5 | 28.8 |
| 2) Talc | 14807-96-6 | 20 - 30 |
| 3) Crystalline Silica | 14808-60-7 | 0.1 - 1 |

MSDS no. 9673V5

102T

Section 12. Ecological information

Ecotoxicity

Toxic to aquatic organisms. Should not be released to sewage system or other bodies of water at concentrations above limits established in regulations or permits.

Styrene

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish: LC50; Species: *Lepomis macrochirus* (Bluegill) length 3.8-6.4 cm, weight 1-2 g; Conditions: freshwater, static, 25 deg C, pH 7.5, hardness 20 mg/L CaCO₃, all 18 mg/L CaCO₃, dissolved oxygen 7.8 mg/L; **Concentration: 25050 ug/L for 24 hr (95% confidence interval: 19030-33530 ug/L) /formulation**

Toxicity to daphnia and other aquatic invertebrates: LC50; Species: *Daphnia magna* (Water Flea) age < or =24 hr; Conditions: freshwater, flow through, 20-21 deg C, pH 7.5-8.0 hardness 170-180 mg/L CaCO₃, alkalinity 110-120 mg/L CaCO₃, dissolved oxygen 5.8-8.4 mg/L; **Concentration: 5000 ug/L for 24 hr (95% confidence interval: 3300-7400 ug/L) /99.929% purity**

Toxicity to algae: EC50; Species: *Pseudokirchneriella subcapitata* (Green Algae) 1X10⁴ cells/mL; Conditions: freshwater, static, 24-25 deg C, pH 7.6-9.4; **Concentration: 3900 ug/L for 24 hr (95% confidence interval: 220-66000 ug/L); Effect: decreased population abundance /99.929% purity**

Toxicity to microorganisms: no data available

12.2 Persistence and degradability

AEROBIC: Styrene biodegraded 97 and 87% in 16 weeks in a landfill soil and sandy loam soil, respectively. Degradation was not detected in sterile soil(1). Styrene was biodegraded at experimental concentrations in soil, but decreased with an increase in styrene concentration; 62% at 20 ug/kg to 16% at 1000 mg/kg(2). The rate of microbial transformation varied between different soils and was notably slower in an acid silt loam (pH 4.87)(2). Degradation of styrene of 2.3 to 4.3% per week and 3.8-12.0% per week in subsurface soil was shown with samples taken directly above and below aquifers from Pickett, OK and Fort Polk, LA, respectively; degradation in autoclave samples was not observed(3).

12.3 Bioaccumulative potential

A BCF of 13.5 for goldfish was determined for styrene(1). According to a classification scheme(2), this BCF suggests bioconcentration in aquatic organisms is low(SRC). Biomagnification of styrene in water respiring organisms (zooplankton, forage and predatory fish) and air breathing organisms (reptile, amphibian, sea bird, marine mammal, herbivore and carnivore, human) were all <1(3).

12.4 Mobility in soil

The log K_{oc} of styrene is reported to be 2.96(1). According to a classification scheme(2), this K_{oc} value suggests that styrene is expected to have low mobility in soil. More styrene is sorbed in 78 hrs on samples from a sandy aquifer(3). Styrene is retained by particulates particularly in organic matter-rich soils(3). Of styrene that had been allowed to sorb to soil for 78 hrs, 61.0 and 66.7% was desorbed in 16 days from soil and aquifer soils, respectively(4).

12.5 Other adverse effects

no data available

Styrene

12. Ecological information

Ecotoxicity

Do not empty into drains. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product contains following substances which are hazardous for the environment. Contains a substance which is: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

| Component | Freshwater Algae | Freshwater Fish | Microtox | Water Flea |
|-----------|---|--|--|---|
| Styrene | EC50: 0.15 - 3.2 mg/L, 96h static (Pseudokirchneriella subcapitata) EC50: 0.46 - 4.3 mg/L, 72h static (Pseudokirchneriella subcapitata) EC50: = 0.72 mg/L, 96h (Pseudokirchneriella subcapitata) EC50: = 1.4 mg/L, 72h (Pseudokirchneriella subcapitata) | LC50: 19.03 - 33.53 mg/L, 96h static (Lepomis macrochirus) LC50: 6.75 - 14.5 mg/L, 96h static (Pimephales promelas) LC50: 58.75 - 95.32 mg/L, 96h static (Poecilia reticulata) LC50: 3.24 - 4.99 mg/L, 96h flow-through (Pimephales promelas) | = 5.4 mg/L EC50 Photobacterium phosphoreum 5 min | EC50: 3.3 - 7.4 mg/L, 48h (Daphnia magna) |

Persistence and Degradability Insoluble in water Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility Is not likely mobile in the environment due its low water solubility. Will likely be mobile in the environment due to its volatility.

SAFETY DATA SHEET

Date of issue: 08/21/2015

Date of previous issue: New SDS



Section 1. Identification

Product name L040-TNVG-33
Product type Vinyl Ester Resin
Chemical family Aromatic.
SDS No. US-1508:2943 (Version: 1.0)

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

Identified uses Used in the manufacture of thermoset plastic parts.
Uses advised against No additional information.

Supplier's details AOC, LLC
955 Highway 57 East
Collierville, TN 38017
Website: www.aoc-resins.com
Phone Number: (901) 854-2800
Hours: 8AM-5pm (Central Time) Monday-Friday

Emergency telephone number (with hours of operation) CHEMTREC (US): 24 hours/7 days (800) 424-9300
CANUTEC (Canada): 24 hours/7 days (613) 996-6666

Section 2. Hazards Identification

OSHA/HCS status

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture

SENSITIZATION (Skin) – Category 1 – H317
SERIOUS EYE DAMAGE/ EYE IRRITATION – Category 2B – H320
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory system) – Category 3 – H335

Section 2. Hazards identification

P261: Do not breathe vapor or mist.
P270: Do not eat, drink or smoke when using this product.
P264: Wash hands thoroughly after handling.
P271: Use only outdoors or in a well-ventilated area.
P272: Contaminated work clothing should not be allowed out of the workplace.
P280: Wear protective gloves/protective clothing/eye protection/face protection.

Response

P302+P352: IF ON SKIN: Wash with plenty of soap and water.
P308+P313: IF exposed or concerned: Get medical attention.
P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312: Call a POISON CENTER or doctor/physician if you feel unwell.
P333+P313: If skin irritation occurs: Get medical attention/advice.
P337+P313: If eye irritation persists: Get medical attention.
P363: Wash contaminated clothing before reuse.
P391: Collect spillage.

Storage

P403 + P235: Store in a well-ventilated place. Keep cool.
P233: Keep container tightly closed.
P405: Store locked up.

Disposal

P501: Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified

None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture.

| Ingredient name | CAS number | % |
|----------------------------|-------------|-----------|
| Trade Secret Ingredient(s) | Proprietary | ≥25 - <50 |
| Talc | 14807-96-6 | ≥10 - <25 |
| Crystalline Silica | 14808-60-7 | ≥1 - <3 |

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 12. Ecological information

Toxicity

| Product/ingredient name | Result | Species | Exposure |
|----------------------------|--|--------------------------|----------------------------------|
| Trade Secret Ingredient(s) | EC50 3.68 mg/l LC50 35.96 mg/l LC50 4.9 mg/l | Algae Daphnia Fish | 96 hours 48 hours 96 hours |

Persistence and degradability

Not available.

Bioaccumulative potential

| Product/ingredient name | LogP _{ow} | BCF | Potential |
|----------------------------|--------------------|-------|-----------|
| Trade Secret Ingredient(s) | - | 46.83 | low |

Mobility in soil

Soil/water partition coefficient (K_{oc})

Not available.

Other adverse effects

No known effect according to our database.

Mitigation Efforts

- ▶ Included in the contract specs to limit styrene at 0.50 mg/L
- ▶ Control Release of cure water to keep below 0.50 mg/L
- ▶ Set a maximum discharge temperature
- ▶ Sampled for styrene in influent starting before release of cure water and throughout discharge of cure water
- ▶ Put another 5 mgd treatment into service (delayed due to construction issues)

Effects Seen at the Plant

- ▶ Pipes near the plant are between 48 and 60 inch diameter.
- ▶ Used hot water cure due to size of the pipes
- ▶ At times during discharge of the cure water measured 1 to 2 mg/L styrene.
- ▶ Some of the highest levels of styrene were seen during inversion of the liner.
- ▶ Strong styrene odor in head works
- ▶ Increased total phosphorus in effluent lasting for a couple days until the PAO population could recover.
- ▶ Increased nitrite in the effluent suggesting the nitrifying/denitrifying bacteria also had an adverse reaction to the resin taking several days to recover.

Dilution Formula

(Concentration Solution #1)(Volume of Solution #1) = (Concentration Solution #2)(Volume Solution #2)

20% solution

1,000 gallon tank

Concentration of chemical

If the tank emptied in 1 day to a 1 million gallon per day treatment plant

$(200,000 \text{ mg/L})(1,000 \text{ gallons per day}) = (\text{Conc Solution \#2})(1,000,000 \text{ gallons per day})$

$\text{Conc Solution \#2} = \frac{(200,000 \text{ mg/L})(1,000 \text{ gallon per day})}{1,000,000 \text{ gallons per day}}$

Concentration Solution #2 = 200 mg/L

Pounds Formula

Pounds / day = (Volume in million gallons / day) x (Concentration in mg/l) x (8.34 lbs/gal)

An industry uses 2,000 lbs of a chemical each day. What is the concentration of the chemical at a 0.5 mgd plant?

$$\text{Conc mg/L} = \frac{(\text{lbs/day})}{(\text{Volume in mgd})(8.34 \text{ lbs/gal})}$$

$$\text{Conc mg/L} = \frac{(2,000 \text{ lbs/day})}{(0.5 \text{ million gallon/day})(8.34 \text{ lbs/gallon})}$$

$$\text{Conc} = 479.6 \text{ mg/L}$$

Concentration of a Particular Ion

► Molecule Na_2SeO_4

| | | |
|----|-------|--|
| Na | 22.99 | $22.99 \times 2 = 45.98$ |
| Se | 78.97 | $78.97 \times 1 = 78.97$ |
| O | 16.00 | <u>$16.00 \times 4 = 64.00$</u> |
| | | Total = 188.95 |

Selenium makes up 42% of the molecule (78.97 divided by 188.95)

A 2% solution of sodium selenate contains 8,400 mg/L Selenium
(20,000 mg/L \times .42)