

Issue Date: 09-May-2018

Revision Date: -

Version: 1

SECTION 1: Identification**Product identifier:** De-scaler**Other means of identification:** De-scaler – Dish Machine De-scaler**Product code:** 78100.**UN/ID No:** NA 1760**Recommended use:** Warewashing.**Recommended restrictions:** Not for personal care.**Supplier/Distributor information:**

Company name: Triple S
Address: 2 Executive Park Drive
Billerica, MA 01862
URL: www.triple-s.com
Email: info@triple-s.com
Telephone: (978)-667-7900
Emergency phone number: (888)-779-1339 (24 hr)

SECTION 2: Hazard(s) identification**Classification of the Substance or Mixture:****Physical hazards**

Corrosive to metals Category 1

Health hazards

Acute toxicity; dermal/inhalation/oral: Category 4
Skin corrosion/irritation: Category 1B
Eye damage/irritation: Category 1

Label elements:**Signal word:** Danger**Hazard statements**

H290 May be corrosive to metals.
H302+H312+H332 Harmful if swallowed, in contact with skin or if inhaled.
H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.

SECTION 2: Hazard(s) identification (continued)**Precautionary statements****Prevention:**

- P101 If medical advice is needed, have product container or label at hand.
 P102 Keep out of reach of children.
 P103 Read label before use.
 P260 Do not breathe mist/vapors/spray.
 P262 Do not get in eyes, skin, or on clothing.
 P264 Wash thoroughly after handling.
 P270 Do not eat, drink or smoke when using this product.
 P271 Use in a well-ventilated area.
 P280 Wear protective gloves/protective clothing / eye protection.

Response:

- P301+312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
 P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
 P304+P340 IF INHALED: Remove person to fresh air and keep 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.
 P308+P313 IF exposed or concerned: Get medical advice/attention.
 P362+P364 Take off contaminated clothing and wash it before reuse.

Storage:

- P405 Store locked up.
 P406 Store in a corrosive resistant / container with a resistant inner liner.

Disposal:

- P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise Classified (HNOC): Not classified.

SECTION 3: Composition/information on ingredients**Substance/Mixtures:**

Chemical name	CAS Number	Concentration (%)
Water	7732-18-5	50-75
Phosphoric acid	7664-38-2	25-40
2-Hydroxyl- 1,2,3, propanetricarbocyclic acid	77-92-9	0-10

Section 4: First-aid measures

Description of first aid measures

General advice: Remove victims from the danger zone without endangering your own safety. Remove contaminated clothing (including underwear and shoes) immediately.

Inhalation: Bring accident victims out into the fresh air. If not breathing, give artificial respiration. **WARNING:** It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. If patient has difficulty breathing, administer oxygen, keep the patient calm and warm. In case of unconsciousness place patient stably in side position for transportation. Call a physician immediately.

Skin contact: Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before re-use. After contact with small amounts get medical attention if any discomfort or irritation continues. For large amounts, obtain medical attention.

Eye contact: Immediately flush eyes with gentle but large stream of water or eye wash solution for at least 15 minutes, lifting lower and upper eyelids occasionally. If possible remove any contact lenses and continue to wash. Call a physician, immediately.

Ingestion: If swallowed, rinse mouth with water (only if the person is conscious). Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. **DO NOT** induce vomiting unless directed to do so by medical personnel. Call a physician, immediately.

Most important symptoms/effects, acute and delayed:

Notes to physician: The severity of the symptoms described will vary dependent on the concentration and the length of exposure.

Inhalation: Irritation of nose, throat and upper respiratory tract. Severe exposures can lead to a chemical pneumonitis.

Ingestion: Corrosive. May cause sore throat, abdominal pain, nausea, and severe burns of the mouth, throat, and stomach. May affect the urinary system, liver, and blood. Severe exposures can lead to shock, circulatory collapse, and death.

Skin contact/Skin irritation: Corrosive. May cause redness, pain and severe skin burns.

Eye contact: Corrosive. May cause redness, pain, blurred vision, eye burns, and permanent eye damage. May cause corneal damage, conjunctivitis, and/or Lachrymation.

Indication of immediate medical attention and special treatment needed, if necessary:

Cases of eye contact and ingestion should be treated immediately. Have facilities in place to wash skin and eyes in case of exposure.

SECTION 5: Fire-fighting measures

Suitable extinguishing media: In case of fire use carbon dioxide (CO₂), foam, extinguishing powder. In cases of larger fires, water spray should be used. Use any means suitable for extinguishing surrounding fire. Water spray may be used to keep fire-exposed containers cool. If water is used, use in abundance to control heat.

SECTION 5: Fire-fighting measures (continued)

Unsuitable extinguishing media: Do not use water jet as this can spread the fire. Do not use carbon dioxide in enclosed spaces with insufficient ventilation.

Specific hazards arising from the chemical: Fire may produce irritating, corrosive and/or toxic gases. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. Move containers from fire area if you can do so without risk. Product containers can melt in the heat of a fire. Packaging materials will be combustible and provide fuel for the fire. In the event of fire and/or explosion do not breathe fumes. In the event of fire, cool tanks with water spray. For massive fire in cargo, use unmanned hose holder or monitor nozzles. If not, withdraw and let fire burn out.

Special protective equipment and precautions for fire-fighters: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode. During fire-fighting respirator with independent air-supply and airtight garment is required. Fight fire in early stages if safe to do so. Containers at risk of fire should be cooled with water and, if possible removed from the danger area. Provide ventilation and be wary of hydrogen generation upon reactions with some metals.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures: Ventilate area of leak or spill. Ensure adequate ventilation/exhaust extraction. Put on protective equipment (see Section 8). Have emergency procedures in place for treating spillages, evacuating the area and informing the emergency services if necessary. Restrict access to the area until the spillage is treated, if large amounts of vapors are produced that will be hazardous to others, evacuate the area. When any other effects of spillages will affect the safety of others the area should be evacuated. Avoid ingestion, inhalation of vapors and contact with skin and eyes. Non-emergency personnel should be kept away from the area of spillage.

Environment precautions: Do not flush into surface water or sanitary sewers system. Avoid unauthorized discharge to the environment. Clean up any spillages immediately; prevent material from spreading and entering drains or sewage systems. Large spillages or uncontrolled discharge to water systems must be alerted to the Environmental Agency or other regulatory body. If spillages to land cannot be treated safely or if contamination will occur the Environment Agency must be alerted immediately. If the product has entered a foul drain or sewage system in significant amounts to cause a hazard then the local water treatment company must be informed.

Methods and materials for containment and cleaning up: Contain and recover liquid when possible. Spillages: Dam and absorb spillages with sand, earth or other inert material. Fit drain covers where they are available if the spillage is likely to enter the drainage system. Collect spillage in containers, seal securely and deliver for disposal according to local regulations. Containers with collected spillage must be properly labeled with correct contents and hazard symbol. Flush area clean with lots of water. Be aware of potential for surfaces to become slippery. Ventilate area and allow drying before allowing access. Wash thoroughly after dealing with a spillage.

Reference to other sections: Refer to sections 8 and 13 for additional information.

SECTION 7: Handling and storage

Precautions for safe handling: Keep in a closed container and protect from physical damage. Store in a cool, dry, and ventilated area. Keep away from sources of heat, moisture, incompatibilities, and away from direct sunlight. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product. Do not wash out container and use it for other purposes.

Conditions for safe storage, including any incompatibilities: Store in closed original container at temperatures between 40°F and 80°F. If the product is transferred to another container, this should be made of a compatible material to the original container. Product is corrosive to mild steel. Store away from heat, direct sunlight and moisture. Store in a stable situation to avoid spillages. It is advisable to store in a bunded area or use other protective measures such as a sump pallet or storage tray.

SECTION 8: Exposure control/personal protection

Control Parameters

Occupational exposure limits

US.OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Chemical Name	CAS-No.	Type	Value	
Phosphoric acid	7664-38-2	PEL	1 mg/m ³	
Ethylene glycol monobutyl ether	111-76-2	PEL	50 ppm	240 mg/m ³

U.S. ACGIH Threshold Limit Values

Chemical Name	CAS-No.	Type	Value
Phosphoric acid	7664-38-2	STEL	3 mg/m ³
		TLV	1 mg/m ³
Ethylene glycol monobutyl ether	111-76-2	TWA	20 ppm

Appropriate engineering controls:

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the defined exposure limit requirements or guidelines. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, Industrial Ventilation, A Manual of Recommended Practices, most recent edition for details.

Individual protection measures, such as personal protective equipment (PPE)

Eye Protection: Use chemical safety goggles and/or full-face shield where dusting or splashing of solution is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Skin Protection: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

SECTION 8: Exposure control/personal protection (continued)

Hand protection: Wear protective gloves. Butyl rubber, rubber (natural, latex), nitrile, polyvinyl chloride (PVC). Be aware that latex gloves can produce an allergic reaction in sensitive individuals. Gloves should have a breakthrough time sufficient for the amount of handling but allow dexterity for safe movement and handling. The most suitable glove must be chosen in consultation with the gloves supplier, who can inform about the breakthrough time of the glove material. Gloves showing signs of degradation should be changed to avoid skin contamination. Be aware that the liquid may penetrate the gloves. Frequent change is advisable. When removing used gloves apply proper technique by avoiding skin contact with the outer surface. When packages of the product are being handled during storage or transport it is advisable to wear protective gloves to prevent damage to the skin.

Personal Respirators (NIOSH Approved): If the exposure limit is exceeded, a full face piece respirator with high efficiency dust/mist filter may be worn up to 50 times the exposure limit. Wear suitable respiratory protection when vapors or mists are produced if the Workplace Exposure Limit is exceeded and there is insufficient ventilation or extraction. For emergencies or instances where the exposure levels are not known, use a full face piece positive-pressure, air-supplied respirator. Respirator must be fitted with a cartridge suitable for the chemical of concern. Consult with the supplier as to the compatibility of the equipment with the chemical of concern. CAUTION: Air purifying respirators do not protect the user in oxygen deficient atmospheres, use air supplied system.

Thermal Hazards: Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations: Wash hands, change out of clothes as soon as possible. Wash clothes. Shower or bathe as soon as possible.

Other protective measures: Have an eye bath and safety shower close by.

SECTION 9: Physical and chemical properties

Appearance:	Liquid
Color:	Green
Odor:	No odor
Odor Threshold:	No data available
pH:	1.5 ± 0.5
Melting point/range:	No data available
Boiling point/range:	No data available
Flash point:	No data available
Evaporation rate:	No data available
Flammability (solid, gas):	No data available
Upper/lower flammability of explosive limits:	No data available
Vapour pressure (mm Hg):	No data available
Vapour density (Air=1):	No data available
Relative density:	No data available
Solubility(ies):	Excellent
Partition coefficient (n-octanol/water):	No data available
Auto-ignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity, dynamic:	No data available

Other Information: This product contains phosphoric acid.

SECTION 10: Stability and reactivity

Reactivity and/or chemical stability: If stored and handled in accordance with standard industrial practices no hazardous reactions are known. Product is very stable under normal conditions.

Possibility of hazardous reactions: Hazardous polymerization will not occur.

Conditions to avoid: Avoid heat, direct sunlight, and moisture. Avoid storage with incompatible materials. Avoid storage in freezing conditions. Avoid storage near unprotected drainage systems. Avoid storage in an unstable manner or in a situation that would result in exposure to the product. It is advisable to store the product within some form of containment to prevent spillages reaching drainage systems. Do not allow the storage container to be left exposed to the atmosphere.

Incompatible materials: Liberates explosive gas when reacting with chlorides and stainless steel. Can react violently with sodium tetrahydroborate. Exothermic reactions with aldehydes, amines, amides, alcohols and glycols, azo-compounds, carbamates, esters, caustics, phenols and cresols, ketones, organophosphates, epoxides, explosives, combustible materials, unsaturated halides, and organic peroxides. Phosphoric acid forms flammable gases with sulfides, mercaptans, cyanides and aldehydes. It also forms toxic fumes with cyanides, sulfide, fluorides, organic peroxides, and halogenated organics. Mixtures with nitromethane are explosive. Extremely corrosive in presence of copper, of stainless steel, and aluminum. Minor corrosive effects on bronze. Severe corrosive effects on brass. Corrosive to metals and alloys.

Hazardous decomposition products: Mild decomposition can result giving off hydrogen. Phosphorus oxides may form when heated to decomposition.

SECTION 11: Toxicological information

Acute toxicity: Toxicological testing has not been conducted with this material. The toxicology information listed below us based on the components of this material.

Category 4- dermal/oral/inhalation: Harmful if; in contact with skin, swallowed and inhaled.

Phosphoric Acid - Acute Toxicity Estimate (ATE)		
Oral LD ₅₀ 1,530 mg/kg (Rat)	Dermal LD ₅₀ 2,740 mg/kg (Rabbit)	Inhalation: Dust LC ₅₀ 850 mg/m (Rat)

Citric Acid - Acute Toxicity Estimate (ATE)	
Oral LD ₅₀ 3,000 mg/kg (Rat) 5,040 mg/kg (Mouse)	Dermal LD ₅₀ 5,500 mg/kg (Rat) 2,700 mg/kg (Mouse)

Skin Corrosion/ irritation: Category 1: Causes severe skin burns and eye damage due to an acidic pH.

Serious eye damage/irritation: Category 1: Causes serious eye damage due to an acidic pH.

Respiratory or skin sensitization: Classification not possible.

SECTION 11: Toxicological information (continued)

Germ cell mutagenicity: Classification not possible.

Carcinogenicity: Classification not possible. **Reproductive toxicity:** Classification not possible.

Specific Target Organ Toxicity - Single Exposure: Classification not possible.

Specific Target Organ Toxicity - Repeated Exposure: Classification not possible.

Aspiration hazard: Classification not possible.

SECTION 12: Ecological information

Toxicity: Do not allow to escape into waterways, wastewater or soil. Ecotoxicological studies of the product are not available. Please find below the data available to us from raw materials:

Citric Acid		
Acute EC ₅₀ -(Daphnia Magna): 80 mg/L Fresh Water -Long-time exposure in soft water -Daphnia: 100 mg/L: period of survival at pH 4.0 -Daphnia magna: 120 mg/l long: time exposure in soft water; toxic	Acute EC ₅₀ -Microcystis aeruginosaalgae: 8 days = 80 mg/L -Scenedesmus quadricaudaalgae 7 days = 640 mg/L	Acute LD ₁₀₀ -goldfish: 625 mg/L: long-time exposure in hard water -goldfish: 894 mg/l: long-time exposure in hard water -goldfish: 48 hours: 894 mg/L: period of survival at pH 4.5

Aquatic ecotoxicity: Citric acid is a naturally occurring chemical and is biodegradable. With high probability acutely not harmful to aquatic organisms.

Persistence and degradability: Expected to be readily biodegradable.

Bioaccumulative potential: Accumulation in organism is not to be expected.

Mobility in soil: When spilled onto soil, phosphoric acid will infiltrate downward, the rate being greater with lower concentration because of reduced viscosity. During transport through the soil, phosphoric acid will dissolve some of the soil material, in particular, carbonate-based materials. The acid will be neutralized to some degree with adsorption of the proton and phosphate ions also possible. However, significant amounts of acid will remain for transport down toward the groundwater table. Upon reaching the groundwater table, the acid will continue to move in the direction of groundwater flow. *Information obtained from US National Library of Medicine.*

Other adverse effects: No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

SECTION 13: Disposal considerations

General information

Do not allow unauthorized disposal to the environment. If operators are exposed to vapors during the disposal process then suitable respiratory protection should be worn. All other personal protective equipment as described in section 8 should be worn.

Disposal methods:

Avoid unauthorized disposal. Do not dump into any sewers, on the ground, or into any body of water. All disposal practices must be in compliance with federal, state/provincial and local laws and regulations. For a large spill, dike, collect and contact local authorities about disposal.

SECTION 14: Transport information

UN Number:	NA 1760
UN Proper Shipping Name:	Compound, Cleaning liquid (Phosphoric acid)
Transport hazard class(es):	
DOT Hazard Class:	8
DOT Subsidiary Hazard Class:	Not available
Label:	Corrosive
Packing group, if available:	II
Environmental Hazards:	No
Special precautions for user:	Not available.

Transport in bulk according to Annex II of MARPOL 73/78³ and the IBC Code ³: Not applicable.

SECTION 15: Regulatory information

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

Unless otherwise noted, no components are SARA TITLE 3 SECTION 313 40 CFR listed materials. The ingredients of this product are listed on the TSCA inventory. This product is not made with VOC'S that could cause damage to the ozone layer. Connecticut hazardous material survey.: Phosphoric Acid Illinois toxic substances disclosure to employee act: Phosphoric acid Illinois chemical safety act: Phosphoric acid New York release reporting list: Phosphoric acid Rhode Island RTK hazardous substances: Phosphoric acid Pennsylvania RTK: Phosphoric acid Minnesota: Phosphoric acid Massachusetts RTK: Phosphoric acid Massachusetts spill list: Phosphoric acid New Jersey: Phosphoric acid New Jersey spill list: Phosphoric acid Louisiana spill reporting: Phosphoric acid California Director's list of hazardous substances: Phosphoric acid TSCA 8(b) inventory: Phosphoric Acid; Water SARA 313 toxic chemical notification and release reporting.

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

DSCL (EEC):

R34- Causes burns. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S45-In case of accident or if you feel unwell, seek medical advice immediately.

SECTION 16: Other information including date of preparation or last revision

Chemical State: Liquid

Chemical Type: Mixture

3	Health
0	Flammability
0	Physical Hazard
D	Personal Protection

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