CORROSIVE CHEMICAL QUICK REFERENCE GUIDE

FINISH THOMPSON INC.

INTRODUCTION

Diverse industries all over the world use corrosive chemicals to produce many of the products and services we rely on every day.

These include pharmaceuticals, medical and personal care, food and beverage, chemical manufacturing/ distribution, water/waste water treatment, and electroplated/anodized items such as tin cans, bicycle handles, gold-plated jewelry, and more.

Companies that handle corrosive chemicals must follow important safety and handling guidelines found in the chemicals SDS (Safety Data Sheet), as well as recommendations from the chemical manufacturer.

This guide provides information on 27 chemicals in common use and provides a summary of the uses, safety and best practices, storage and handling, compatible materials of construction, and applications notes particular to the chemical, if appropriate.

The information in this document is to be used only as a guide. Refer to the SDS for more detailed information, and consult the chemical manufacturer or supplier for additional information prior to use.

TABLE OF CONTENTS

Acetic Acid
$HC_2H_3O_2$

User Summary

Acetic acid is used in the production of plastics and wood glue, as a solvent for resins and paints, and in the manufacture of organic solvents like ethyl acetate. 99%+ is known as glacial acetic acid, which is flammable. Vinegar contains acetic acid.

Specific Gravity

10% = 1.01

20% = 1.03

50% = 1.06

80% = 1.07

99%+ = 1.05

Safety and Best Practices

Never add water to acetic acid. Keep away from flame, sparks, sources of heat, and incompatible materials which include reducing agents, metals, oxidizing agents, alkalis, and metals. PPE should include closed chemical goggles and face shields; gloves of appropriate material for the concentration level; and other appropriate protective clothing necessary to prevent any possibility of skin contact. A vapor respirator with the appropriate cartridge if area is not well ventilated.

Storage and Handling

Store in tightly sealed containers in a cool, well-ventilated location. In addition to proper PPE for handling, eye-wash stations should be available nearby. Glacial acetic acid solidifies (freezes) below 62°F (16.7°C). Store at temperatures above the freezing point to remain liquid.

Compatible Materials of Construction

At 68˚F (20˚C), chemical resistance can vary by concentration

CPVC (to 60%)
Polypropylene (to 80%)
PVDF
PPS
ETFE
PTFE
316 stainless steel
Alloy 625
Titanium
Carbon
High purity ceramic
Silicon carbide
EPDM
FFKM

Application Notes

Glacial acetic acid solidifies (freezes) below 62°F (16.7°C). Must be liquid to be pumped.

Glacial acetic acid has a flash point of 103°F (39°C), use explosion-proof electrical equipment and proper grounding/bonding to prevent electrostatic discharge.

FKM not compatible with acetic acid.

FINISH THOMPSON INC.

Finish Thompson Inc. - Headquarters
921 Greengarden Road
Erie, PA 16501 USA
(800) 934-9384
Tel: (814) 455-4478

FINISH**THOMPSON**.COM

Finish Thompson Inc. - Germany
Otto-Hahn-Strasse 16
Maintal, D-63477 Germany
Tel: 49 (0)6181-90878-0
Fax: 49 (0)6181-90878-18

email: **fti@finishthompson.com**

Aluminum Sulfate (Alum)
$Al_2(SO_4)_3$

User Summary

Sometimes called alum, aluminum sulfate is most commonly used in water treatment applications as a coagulant but is also used in the manufacture of paper and tanning leather.

Specific Gravity

50% = 1.61

27.8% = 1.33

Safety and Best Practices

Reacts with strong alkali. Incompatible with strong oxidizing agents, iron, copper, and copper alloys. Do not allow contact with common metals due to corrosivity. PPE should include closed chemical goggles and face shield; gloves of appropriate material for the concentration level; and other appropriate protective clothing necessary to prevent any possibility of skin contact.

Storage and Handling

Store in cool, dry locations, away from direct heat and sunlight. Do not store below 40°F (5°C). Use stainless steel or fiberglass tanks. Eye-wash fountains and safety showers should be readily available near handling areas.

Compatible Materials of Construction

At 68˚F (20˚C), chemical resistance can vary by concentration

CPVC	Titanium
Polypropylene	Carbon
PVDF	High purity ceramic
PPS	Silicon carbide
ETFE	EPDM
PTFE	FKM
316 stainless steel	FFKM
Alloy 625	

FINISH THOMPSON INC.

Finish Thompson Inc. - Headquarters
921 Greengarden Road
Erie, PA 16501 USA
(800) 934-9384
Tel: (814) 455-4478
FINISH**THOMPSON**.COM

Finish Thompson Inc. - Germany
Otto-Hahn-Strasse 16
Maintal, D-63477 Germany
Tel: 49 (0)6181-90878-0
Fax: 49 (0)6181-90878-18
email: **fti@finishthompson.com**

Ammonium Hydroxide
NH_4OH

User Summary

When dissolved in water, ammonia gas produces ammonium hydroxide. This chemical is used in the etching of printed circuit boards and as a cleaning agent in many household and industrial cleaners. The percentage of ammonia can reach as high as 30%.

Specific Gravity

10% to 30% = .975 to .89

Safety and Best Practices

Reacts with heavy metals and their salts to produce explosive hydrogen gas. May react violently with strong acids. Reacts with strong bases to produce ammonia gas. Causes irritation and burning of eyes, skin, and nose/throat. PPE should include closed chemical goggles and face shields; gloves of appropriate material for the concentration level; and other appropriate protective clothing necessary to prevent any possibility of skin contact and a respirator with the appropriate cartridge.

Storage and Handling

Store in tightly closed glass or plastic containers in a cool, well-ventilated area. Do not store in direct sunlight or near combustibles. Avoid contact with copper, aluminum, and galvanized metals.

Compatible Materials of Construction

At 68˚F (20˚C), chemical resistance can vary by concentration

CPVC	Titanium
Polypropylene	Carbon
PVDF	High purity ceramic
PPS	Silicon carbide
ETFE	EPDM
PTFE	FKM
316 stainless steel	FFKM
Alloy 625	

FINISH THOMPSON INC.

Finish Thompson Inc. - Headquarters
921 Greengarden Road
Erie, PA 16501 USA
(800) 934-9384
Tel: (814) 455-4478
FINISH**THOMPSON**.COM

Finish Thompson Inc. - Germany
Otto-Hahn-Strasse 16
Maintal, D-63477 Germany
Tel: 49 (0)6181-90878-0
Fax: 49 (0)6181-90878-18
email: **fti@finishthompson.com**

Chromic Acid
H_2CRO_4

User Summary

Chromic acid is a toxic substance and a carcinogen. It is widely used in chromium plating.

Specific Gravity

10% = 1.08

20% = 1.16

40% = 1.37

50% = 1.51

Safety and Best Practices

Incompatible/reactive with combustible materials, aluminum, metals, and other readily oxidizable materials (wood, paper, plastics) - risk of explosion. Risk of spontaneous ignition with organic material. Corrosive to metals. Reacts/unstable on exposure to water. Reacts violently with strong reducers and oils/fats. PPE should include closed chemical goggles and face shield; gloves of appropriate material for the concentration level; and other appropriate protective clothing necessary to prevent any possibility of skin contact.

Storage and Handling

Store in a dry, dark area that is well ventilated. Avoid plastic containers or those made with aluminum, iron, copper, nickel, or bronze. Eye wash and safety showers should be available in the vicinity of potential exposure.

Compatible Materials of Construction

At 68˚F (20˚C), chemical resistance can vary by concentration

CPVC
PVDF
PPS
ETFE
PTFE
316 stainless steel
Alloy 625
Titanium
High purity ceramic
Silicon carbide
FKM
FFKM

Application Notes

PVDF or ETFE are the preferred materials of construction.

FINISH THOMPSON INC.

Finish Thompson Inc. - Headquarters
921 Greengarden Road
Erie, PA 16501 USA
(800) 934-9384
Tel: (814) 455-4478

FINISH**THOMPSON**.COM

Finish Thompson Inc. - Germany
Otto-Hahn-Strasse 16
Maintal, D-63477 Germany
Tel: 49 (0)6181-90878-0
Fax: 49 (0)6181-90878-18

email: **fti@finishthompson.com**

Citric Acid
$C_6H_8O_7$

User Summary

Citric acid is used in the metal finishing industry as a buffering agent for passivation of stainless steel. It is also used for limescale removal in boilers and heat exchangers and as an ingredient in detergents and personal care products.

Specific Gravity

50% = 1.24

Safety and Best Practices	Storage and Handling
Stable under normal conditions. Incompatible with oxidizers, sulfuric and nitric acids. PPE should include closed chemical goggles and face shield; gloves of appropriate material for the concentration level; and other appropriate protective clothing necessary to prevent any possibility of skin contact.	Use only in well-ventilated areas. Avoid extreme heat and direct sunlight. Store in dry conditions in tightly sealed, ventilated containers, away from oxidizing agents, strong acids or bases. Do not store at temperatures above 86°F (30°C).

Compatible Materials of Construction

At 68˚F (20˚C), chemical resistance can vary by concentration

CPVC	Titanium
Polypropylene	Carbon
PVDF	High purity ceramic
PPS	Silicon carbide
ETFE	EPDM
PTFE	FKM
316 stainless steel	FFKM
Alloy 625	

FINISH THOMPSON INC.

Finish Thompson Inc. - Headquarters
921 Greengarden Road
Erie, PA 16501 USA
(800) 934-9384
Tel: (814) 455-4478
FINISH**THOMPSON**.COM

Finish Thompson Inc. - Germany
Otto-Hahn-Strasse 16
Maintal, D-63477 Germany
Tel: 49 (0)6181-90878-0
Fax: 49 (0)6181-90878-18
email: **fti@finishthompson.com**

DI Water
H_2O

User Summary

Deionized (DI) water is used in many industrial processes for spot-free rinsing. It is also used in the cosmetic and pharmaceutical industries and for laboratory purposes. High-purity water is important for these industries because it does not contain contaminants that could negatively affect the manufacturing processes. DI water is typically only used for commercial purposes.

Specific Gravity

1

Safety and Best Practices	Storage and Handling
Stable and non-reactive under normal conditions. Closed chemical goggles and appropriate gloves to prevent skin contact.	Store in cool, dry conditions in well-sealed containers. Store away from water-reactive substances like oxidizing agents, strong acids, or bases. Protect from freezing.

Compatible Materials of Construction

At 68˚F (20˚C), chemical resistance can vary by concentration

CPVC	Titanium
Polypropylene	Carbon
PVDF	High purity ceramic
PPS	Silicon carbide
ETFE	EPDM
PTFE	FKM
316 stainless steel	FFKM
Alloy 625	

FINISH THOMPSON INC.

Finish Thompson Inc. - Headquarters
921 Greengarden Road
Erie, PA 16501 USA
(800) 934-9384
Tel: (814) 455-4478
FINISH**THOMPSON**.COM

Finish Thompson Inc. - Germany
Otto-Hahn-Strasse 16
Maintal, D-63477 Germany
Tel: 49 (0)6181-90878-0
Fax: 49 (0)6181-90878-18
email: **fti@finishthompson.com**

Diesel Exhaust Fluid (DEF/AdBlue)

$CO(NH_2)_2 + H_2O$ (Urea + DI Water)

User Summary

DEF is a mixture of 32.5% urea and 67.5% deionized water. It is used to control nitrogen oxide emissions (air pollutants) in diesel engine powered vehicles and equipment. pH is 9.8 to 10.

Specific Gravity

1.1

Safety and Best Practices	Storage and Handling
Avoid contact with strong oxidizers (chlorine, peroxide, chromates, nitric acid, perchlorates, concentrated oxygen, and permanganates) which can generate heat, fire, or explosions or release toxic fumes. Incompatible with strong bases, strong acids, and alkalis. If operations produce mist or vapor, wear a respirator. Use splash chemical goggles or face shields and rubber gauntlet gloves.	Store in a dry, cool, well-ventilated place. Optimal storage temperature 40 to 80°F (5 to 30°C). Eyewash and safety shower should be nearby for use.

Compatible Materials of Construction	Application Notes
At 68˚F (20˚C), chemical resistance can vary by concentration Polypropylene 316 stainless steel Alloy 625 Titanium Carbon High purity ceramic Silicon carbide EPDM	Use EPDM elastomers

FINISH THOMPSON INC.

Finish Thompson Inc. - Headquarters
921 Greengarden Road
Erie, PA 16501 USA
(800) 934-9384
Tel: (814) 455-4478
FINISH**THOMPSON**.COM

Finish Thompson Inc. - Germany
Otto-Hahn-Strasse 16
Maintal, D-63477 Germany
Tel: 49 (0)6181-90878-0
Fax: 49 (0)6181-90878-18
email: **fti@finishthompson.com**

Ferric Chloride
$FeCl_3$

User Summary

Ferric chloride is one of the most commonly used coagulants for treating potable water and wastewater. It is typically available as a 37 to 42% solution.

Specific Gravity

1.38 - 1.49

Safety and Best Practices	Storage and Handling
Incompatible with metals and strong bases. Contact with metals may evolve flammable hydrogen gas. Rapidly corrodes most metals, except titanium. Decomposes upon heating to produce corrosive and/or toxic fumes. PPE should include closed chemical goggles and face shield; gloves of appropriate material for the concentration level; and other appropriate protective clothing necessary to prevent any possibility of skin contact.	Avoid exposure to direct sunlight and sources of ignition. Do not store in extreme hot or cold. Store in tightly closed fiberglass, plastic, or rubber-lined containers (no metal).

Compatible Materials of Construction

At 68˚F (20˚C), chemical resistance can vary by concentration

CPVC	Titanium
Polypropylene	Carbon
PVDF	High purity ceramic
PPS	Silicon carbide
ETFE	EPDM
PTFE	FKM
Alloy 625	FFKM

FINISH THOMPSON INC.

Finish Thompson Inc. - Headquarters
921 Greengarden Road
Erie, PA 16501 USA
(800) 934-9384
Tel: (814) 455-4478
FINISH**THOMPSON**.COM

Finish Thompson Inc. - Germany
Otto-Hahn-Strasse 16
Maintal, D-63477 Germany
Tel: 49 (0)6181-90878-0
Fax: 49 (0)6181-90878-18
email: **fti@finishthompson.com**

Ferric Sulfate
$Fe_2(SO_4)_3$

User Summary

Ferric Sulfate is used for both municipal and industrial water treatment. It is also very effective as a coagulant in oily water clarification and is excellent for turbidity control, as well as the removal of phosphorus, color, and suspended solids.

It is available in various percentages, from 10 to 60%.

Specific Gravity

10-60% - 1.5 – 1.6

Safety and Best Practices

Incompatible with metals and strong bases. Contact with metals may evolve flammable hydrogen gas. Not compatible with bases, such as potassium hydroxide, sodium hydroxide, calcium hydroxide (slaked lime), ammonia, carbonates or metals, such as aluminum, steel, and brass PPE should include closed chemical goggles and face shield; gloves of appropriate material for the concentration level; and other appropriate protective clothing necessary to prevent any possibility of skin contact.

Storage and Handling

Store in cool, well-ventilated area in tightly-closed containers. Always store in original labeled container, if possible, if not, use polyethylene, stainless steel or fiberglass tanks. Avoid exposure to water, sunlight, and combustible materials.

Compatible Materials of Construction

At 68˚F (20˚C), chemical resistance can vary by concentration

CPVC	Titanium
Polypropylene	Carbon
PVDF	High purity ceramic
PPS	Silicon carbide
ETFE	EPDM
PTFE	FKM
316 stainless steel	FFKM
Alloy 625	

FINISH THOMPSON INC.

Finish Thompson Inc. - Headquarters
921 Greengarden Road
Erie, PA 16501 USA
(800) 934-9384
Tel: (814) 455-4478
FINISH**THOMPSON**.COM

Finish Thompson Inc. - Germany
Otto-Hahn-Strasse 16
Maintal, D-63477 Germany
Tel: 49 (0)6181-90878-0
Fax: 49 (0)6181-90878-18
email: **fti@finishthompson.com**

Formic Acid
CH_2O_2

User Summary

Formic acid is used as a preservative and antibacterial agent in livestock feed and leather tanning and production. It is also used as an ingredient in toilet bowl cleaners and lime scale removers.

Specific Gravity

>95% - 1.22

85% - 1.19

Safety and Best Practices

Reacts violently with oxidizing agents, strong inorganic bases, and strong organic bases, causing fire and explosion hazard. Reacts with chemically active metals to form flammable hydrogen gas and metal salts. Reacts with cyanide salts to form toxic gas. Strong acids decompose formic acid to form carbon monoxide gas. PPE should include closed chemical goggles and face shield; gloves of appropriate material for the concentration level; and other appropriate protective clothing necessary to prevent any possibility of skin contact.

Storage and Handling

Store in tightly closed containers in cool, well-ventilated area. Keep away from sources of ignition. Prevent the build-up of electrostatic charge. Will corrode many plastics and metals.

Compatible Materials of Construction

At 68˚F (20˚C), chemical resistance can vary by concentration

CPVC	Alloy 625
Polypropylene	Titanium
PVDF	Carbon
PPS	High purity ceramic
ETFE	Silicon carbide
PTFE	EPDM
316 stainless steel	

FINISH THOMPSON INC.

Finish Thompson Inc. - Headquarters
921 Greengarden Road
Erie, PA 16501 USA
(800) 934-9384
Tel: (814) 455-4478
FINISH**THOMPSON**.COM

Finish Thompson Inc. - Germany
Otto-Hahn-Strasse 16
Maintal, D-63477 Germany
Tel: 49 (0)6181-90878-0
Fax: 49 (0)6181-90878-18
email: **fti@finishthompson.com**

Hydrochloric Acid
HCl

User Summary

Hydrochloric acid is generated when hydrogen chloride gas dissolves in water. Uses include steel pickling to remove rust, oil well acidizing, leather tanning, ion-exchange resin bed regeneration, production of calcium chloride, ore processing, and pH adjustment. Concentrations are typically up to 35% but can go as high as 38%.

Specific Gravity

2% = 1.01
10% = 1.05
15% = 1.08
20% = 1.1
25% = 1.13
37% = 1.18
38% = 1.19

Safety and Best Practices

Incompatible with most metals, cyanides, alkalis, sulfides, sulfites, metal oxides, and formaldehydes. Produces chloride gas from oxidizers. Contact with metals produces fumes of hydrogen chloride. PPE should include closed chemical goggles and face shields; gloves of appropriate material for the concentration level; and other appropriate protective clothing necessary to prevent any possibility of skin contact.

Storage and Handling

Store in cool location away from open flames and other sources of ignition. Keep area well-ventilated. Avoid direct sunlight.

Compatible Materials of Construction

At 68˚F (20˚C), chemical resistance can vary by concentration

CPVC	Carbon
Polypropylene	High purity ceramic
PVDF	Silicon carbide
ETFE	EPDM
PTFE	FKM
Alloy 625	FFKM

FINISH THOMPSON INC.

Finish Thompson Inc. - Headquarters
921 Greengarden Road
Erie, PA 16501 USA
(800) 934-9384
Tel: (814) 455-4478
FINISH**THOMPSON**.COM

Finish Thompson Inc. - Germany
Otto-Hahn-Strasse 16
Maintal, D-63477 Germany
Tel: 49 (0)6181-90878-0
Fax: 49 (0)6181-90878-18
email: **fti@finishthompson.com**

Hydrofluoric Acid
HF

User Summary

Hydrofluoric acid is used in the manufacture of semiconductors and fluorocarbons such as PTFE. It is also used as an etchant for glass, and to pickle stainless steel.

Specific Gravity

30% = 1.18

40% = 1.16

48% = 1.18

50% = 1.2

70% = 1.26

Safety and Best Practices

Reactive with most bases, acids, and oxidants. Attacks concrete, glass, ceramics and some forms of plastic, rubber, and coatings. Reacts with water or steam to create toxic, corrosive fumes. Corrodes metals, releasing flammable hydrogen. PPE should include closed chemical goggles and face shields; gloves of appropriate material for the concentration level; and other appropriate protective clothing necessary to prevent any possibility of skin contact and a respirator with the appropriate cartridge.

Storage and Handling

Handle inside a fume hood. Store in polyethylene, polypropylene, or Teflon containers, in a well-ventilated area separate from incompatible chemicals (bases, metals, organic compounds). Container explosion hazard when contaminated with water or when heated. Do not store for more than 2 years.

Compatible Materials of Construction

At 68˚F (20˚C), chemical resistance can vary by concentration

CPVC (to 30%)
PVDF
ETFE
PTFE
Alloy 625
High purity ceramic
Silicon carbide
FKM (to 50%)
FFKM

FINISH THOMPSON INC.

Finish Thompson Inc. - Headquarters
921 Greengarden Road
Erie, PA 16501 USA
(800) 934-9384
Tel: (814) 455-4478
FINISHTHOMPSON.COM

Finish Thompson Inc. - Germany
Otto-Hahn-Strasse 16
Maintal, D-63477 Germany
Tel: 49 (0)6181-90878-0
Fax: 49 (0)6181-90878-18
email: **fti@finishthompson.com**

Hydrofluosilicic Acid
H_2SiF_6

User Summary

Hydrofluosilicic acid is used primarily for adding fluoride to drinking water. Concentrations typically are 20 to 30%.

Specific Gravity

20% = 1.17

25% = 1.23

Safety and Best Practices

May react with water and moist air to form toxic and/or flammable hydrogen fluoride and hydrogen gases. Reacts violently with strong bases, amines, active metals, and cyanides. Not compatible with combustible materials, strong acids, and oxidizing agents. PPE should include closed chemical goggles and face shield; gloves of appropriate material for the concentration level; and other appropriate protective clothing necessary to prevent any possibility of skin contact and a respirator with the appropriate cartridge.

Storage and Handling

Store in tightly closed containers in a cool, well-ventilated area, away from moisture and air and out of direct sunlight. Attacks glass, silica, and stoneware. Corrosive to metals.

Compatible Materials of Construction

At 68˚F (20˚C), chemical resistance can vary by concentration

CPVC	Alloy 625
Polypropylene	High purity ceramic
PVDF	Silicon carbide
PPS	EPDM
ETFE	FKM
PTFE	FFKM
316 stainless steel	

FINISH THOMPSON INC.

Finish Thompson Inc. - Headquarters
921 Greengarden Road
Erie, PA 16501 USA
(800) 934-9384
Tel: (814) 455-4478
FINISH**THOMPSON**.COM

Finish Thompson Inc. - Germany
Otto-Hahn-Strasse 16
Maintal, D-63477 Germany
Tel: 49 (0)6181-90878-0
Fax: 49 (0)6181-90878-18
email: **fti@finishthompson.com**

Hydrogen Peroxide
H_2O_2

User Summary

Hydrogen peroxide is used in electronics manufacturing, pulp and paper plants, food processing, and the textile industry. Concentrations for industrial applications typically range from 30% to 70%.

Specific Gravity

5% = 1.0

30% = 1.19

50% = 1.19

90% = 1.4

Safety and Best Practices

Reacts violently with finely divided metals, reducing agents, combustibles, strong bases, oxidizing agents, organics, alcohols, ethers, ketones, aldehydes, and metals. Not compatible with ammonia, iodides, and sulfites. PPE should include closed chemical goggles and face shields; gloves of appropriate material for the concentration level; and other appropriate protective clothing necessary to prevent any possibility of skin contact.

DO NOT USE cotton, wool, or leather as these materials react rapidly with higher concentrations of hydrogen peroxide. If concentrations in excess of 10 ppm are expected, use NIOSH/DHHS approved self-contained breathing apparatus (SCBA) or other approved air-supplied respirator (ASR) equipment (e.g., a full-face airline respirator (ALR)). DO NOT USE any form of air-purifying respirator (APR) or filtering facepiece (dust mask), especially those containing oxidizable sorbents such as activated carbon.

Storage and Handling

Store hydrogen peroxide in the original vented container, upright, in a cool, ventilated area where it is protected from damage, or in bulk storage tanks made from approved materials of construction.

Do not store other chemicals, fuels, or combustible materials near hydrogen peroxide. Never return unused hydrogen peroxide to the storage container. When empty, rinse all peroxide containers thoroughly with clean water before discarding. Use only approved materials for pumps, piping, valves and hoses. If hydrogen peroxide drums are stored on pallets, wooden pallets should not be used. Refer to NFPA 430 (Code for storage of liquid and solid oxidizers).

Compatible Materials of Construction

At 68˚F (20˚C), chemical resistance can vary by concentration

Polypropylene (to 5%)	Alloy 625
PVDF	Titanium
PPS (to 30%)	High purity ceramic
ETFE	Silicon carbide
PTFE	FKM
316 stainless steel	FFKM

FINISH THOMPSON INC.

Finish Thompson Inc. - Headquarters
921 Greengarden Road
Erie, PA 16501 USA
(800) 934-9384
Tel: (814) 455-4478
FINISH**THOMPSON**.COM

Finish Thompson Inc. - Germany
Otto-Hahn-Strasse 16
Maintal, D-63477 Germany
Tel: 49 (0)6181-90878-0
Fax: 49 (0)6181-90878-18
email: **fti@finishthompson.com**

Nitric Acid (not fuming)
HNO_3

User Summary

A powerful oxidizer, nitric acid is used to manufacture fertilizer and certain polymers and dyes. It is also used in passivating stainless steel. Concentrations for industrial applications can range from 10% to 80%.

Specific Gravity

10% = 1.05
25% = 1.15
35% = 1.21
40% = 1.25
50% = 1.31
70% = 1.41
90% = 1.48

Safety and Best Practices

Highly reactive with alkalis; reactive with reducing agents, organic and combustible materials, and metals. Reacts violently with alcohol, terpene, and charcoal.

PPE should include closed chemical goggles and face shields; gloves of appropriate material for the concentration level; and other appropriate protective clothing necessary to prevent any possibility of skin contact.

Use an appropriate respirator if exposure limits are exceeded or if irritation or other symptoms are experienced. Use an acid gas cartridge, which is specifically approved for nitric acid, or a supplied air respirator.

Storage and Handling

Store in cool, dry conditions in well-sealed containers. Preferred containers for storage and transport are stainless steel. Provide ventilation for containers. Avoid open flame, extreme heat, ignition sources, combustible materials and incompatible materials.

Compatible Materials of Construction

At 68˚F (20˚C), chemical resistance can vary by concentration

CPVC (to 70%)	Alloy 625 (to 50%)
PVDF	Titanium
PPS (to 30%)	High purity ceramic
ETFE	Silicon carbide
PTFE	FKM
316 stainless steel	FFKM

FINISH THOMPSON INC.

Finish Thompson Inc. - Headquarters
921 Greengarden Road
Erie, PA 16501 USA
(800) 934-9384
Tel: (814) 455-4478
FINISH**THOMPSON**.COM

Finish Thompson Inc. - Germany
Otto-Hahn-Strasse 16
Maintal, D-63477 Germany
Tel: 49 (0)6181-90878-0
Fax: 49 (0)6181-90878-18
email: **fti@finishthompson.com**

Peracetic Acid
$C_2H_4O_3$

User Summary

Peracetic acid is a mixture of acetic acid and hydrogen peroxide in a water solution.

Peracetic acid degradation products are non-toxic and are easily dissolved in water. Peracetic acid is a powerful oxidant.

Used mainly in the food industry as a cleanser and disinfectant, peracetic acid is also used as a chemical disinfectant in healthcare, to control bacteria in cooling towers and to prevent biofilm in pulp industries. The typical concentration range is 1 to 15% and is diluted before use.

Specific Gravity

5% = 1.1

15% = 1.15

Safety and Best Practices

Reacts violently with organic or combustible materials, olefins, hydrogen peroxide, acetic anhydride, and reducing agents. Not compatible with alkalis, heavy metals such as iron, copper, chromium, aluminum, cobalt, metal salts, and strong acids.

PPE should include closed chemical goggles and face shields; gloves of appropriate material for the concentration level; and other appropriate protective clothing necessary to prevent any possibility of skin contact.

Use appropriate respirator if exposure limits are exceeded or if irritation or other symptoms are experienced. Use an acid gas cartridge, which is specifically approved for peracetic acid or a supplied-air respirator.

Storage and Handling

At concentrations of 15 percent or higher, explosion-proof equipment is recommended.

Provide local exhaust ventilation; exhaust directly to outside; Eyewash and fountains should be readily available in the work area. Store in cool, well-ventilated area in tightly-closed containers. Avoid shock or friction.

Compatible Materials of Construction

At 68˚F (20˚C), chemical resistance can vary by concentration

CPVC	Titanium
Polypropylene (to 15%)	High purity ceramic
PVDF (to 40%)	Silicon carbide
ETFE	EPDM
PTFE	FKM
316 stainless steel	FFKM
Alloy 625	

FINISH THOMPSON INC.

Finish Thompson Inc. - Headquarters
921 Greengarden Road
Erie, PA 16501 USA
(800) 934-9384
Tel: (814) 455-4478
FINISH**THOMPSON**.COM

Finish Thompson Inc. - Germany
Otto-Hahn-Strasse 16
Maintal, D-63477 Germany
Tel: 49 (0)6181-90878-0
Fax: 49 (0)6181-90878-18
email: **fti@finishthompson.com**

Phosphoric Acid
H_3PO_4

User Summary

Phosphoric acid is also known as orthophosphoric acid. It is the 2nd largest inorganic acid produced after sulfuric acid. It is used in food flavoring, beverages, cosmetics, and skincare products. It is added to drinking water to prevent lead from older lead pipes from leaching into the water. Industrially, it is used mainly in the production of phosphate fertilizers. It is also used as a cleaner before aluminum anodizing, for rust removal in various household cleaning products such as toilet bowl cleanser.

Specific Gravity

10% = 1.05

25% = 1.15

50% = 1.34

70% = 1.53

85% = 1.69

Safety and Best Practices

Hydrogen gas released when in contact with most metals. Not compatible with strong bases, combustibles or flammables, organics, alcohols, sodium hypochlorite, strong acids, amines, epoxides, most metals, and metal salts.

PPE should include closed chemical goggles and face shield; gloves of appropriate material for the concentration level; and other appropriate protective clothing necessary to prevent any possibility of skin contact.

Where the potential exists for exposure over 1 mg/m^3, use a NIOSH approved supplied-air respirator with a full facepiece operated in a pressure-demand or other positive pressure mode.

Storage and Handling

Store in cool, dry conditions in well-sealed containers. Containers should be 316L stainless steel, high-density polyethylene, rubber-lined carbon steel or glass. Provide ventilation for containers. Avoid direct sunlight, extreme heat and ignition sources. Separate from incompatible materials.

Compatible Materials of Construction

At 68˚F (20˚C), chemical resistance can vary by concentration

PPS	Carbon
ETFE	High purity ceramic
PTFE	Silicon carbide
316 stainless steel	EPDM
Alloy 625	FKM
Titanium (to 40%)	FFKM

FINISH THOMPSON INC.

Finish Thompson Inc. - Headquarters
921 Greengarden Road
Erie, PA 16501 USA
(800) 934-9384
Tel: (814) 455-4478
FINISH**THOMPSON**.COM

Finish Thompson Inc. - Germany
Otto-Hahn-Strasse 16
Maintal, D-63477 Germany
Tel: 49 (0)6181-90878-0
Fax: 49 (0)6181-90878-18
email: **fti@finishthompson.com**

Polyaluminum Chloride (PAC)

$Al_2Cl(OH)_5$

User Summary

Like all coagulants, PAC works by extracting and then clumping together dissolved, colloidal, and suspended matter. The resulting floc is then trapped by a filter.

Used mainly in the treatment of drinking and wastewater, polyaluminum chloride is also used in pulp and paper processing. It is a more efficient coagulant than aluminum sulfate.

Specific Gravity

10% = 1.21

18% = 1.39

Safety and Best Practices

Incompatible with alkalis and bases. Corrosive to common metals such as aluminum, copper, iron and galvanized surfaces. Reacts with chlorates and chlorites, hypochlorites, sulphites, strong bases.

PPE should include closed chemical goggles and face shield; gloves of appropriate material for the concentration level; and other appropriate protective clothing necessary to prevent any possibility of skin contact.

When workers are exposed to concentrations above the exposure limit, they must use appropriate, certified respirators.

Storage and Handling

Keep container tightly closed. Store in cool, dry location away from direct heat. Protect from freezing. Store in plastic or lined containers. Do not store in unlined metal containers.

Compatible Materials of Construction

At 68˚F (20˚C), chemical resistance can vary by concentration

CPVC	Titanium
Polypropylene	Carbon
PVDF	High purity ceramic
PPS	Silicon carbide
ETFE	EPDM
PTFE	FKM
Alloy 625	FFKM

FINISH THOMPSON INC.

Finish Thompson Inc. - Headquarters
921 Greengarden Road
Erie, PA 16501 USA
(800) 934-9384
Tel: (814) 455-4478
FINISHTHOMPSON.COM

Finish Thompson Inc. - Germany
Otto-Hahn-Strasse 16
Maintal, D-63477 Germany
Tel: 49 (0)6181-90878-0
Fax: 49 (0)6181-90878-18
email: **fti@finishthompson.com**

Potassium Hydroxide (Caustic Potash)
KOH

User Summary

A strong base, potassium hydroxide is used in the manufacture various products.

The largest users of caustic potash are agricultural chemicals (potassium is one of the "Big 3" nutrients nitrogen, phosphorus, and potassium) and potassium chemical industries. Other uses for caustic potash are soaps and detergents and battery manufacturing. In small amounts, it is also used in various cosmetics and skin-care products.

Specific Gravity

25% = 1.24

35% = 1.34

50% = 1.51

Safety and Best Practices

Reacts violently with strong acids. Not compatible with reducing agents, water, halogenated hydrocarbons, organics, nitrocarbons, and ammonium salts.

Avoid contact with aluminum, brass, bronze, copper, lead, tin, zinc, or other alkali-sensitive metals or alloys, which may form flammable and explosive hydrogen gas. Contact with water will generate considerable heat.

PPE should include closed chemical goggles and face shields; gloves of appropriate material for the concentration level; and other appropriate protective clothing necessary to prevent any possibility of skin contact.

Caustic potash causes leather to disintegrate quite rapidly, wear rubber boots.

When workers are exposed to concentrations above the exposure limit, they must use appropriate, certified respirators.

Storage and Handling

Store in a cool, dry location in tightly closed containers. Ensure storage area is well ventilated. Protect from moisture and excess heat.

50% liquid caustic potash begins to crystallize/freeze at 40°F.

The ideal storage temperature for caustic potash in carbon steel is 80 to 100°F.

Compatible Materials of Construction

At 68˚F (20˚C), chemical resistance can vary by concentration

CPVC
Polypropylene
PPS
ETFE
PTFE
316 stainless steel
Alloy 625
Titanium
Carbon
High purity ceramic
Silicon carbide
EPDM
FFKM

Application Notes

50% solution freezes at 40˚ F (4.4˚ C)

FINISH THOMPSON INC.

Finish Thompson Inc. - Headquarters
921 Greengarden Road
Erie, PA 16501 USA
(800) 934-9384
Tel: (814) 455-4478
FINISH**THOMPSON**.COM

Finish Thompson Inc. - Germany
Otto-Hahn-Strasse 16
Maintal, D-63477 Germany
Tel: 49 (0)6181-90878-0
Fax: 49 (0)6181-90878-18
email: **fti@finishthompson.com**

Potassium Permanganate $KMnO_4$

User Summary

Potassium permanganate is an excellent oxidizing agent employed in water and wastewater treatment, aquaculture, metal processing, chemical manufacturing & processing, and air & gas purification. It is used to oxidize dissolved iron, manganese, and hydrogen sulfide into solid particles that are filtered out of the water. It is also used as a bleaching and coloring agent in tanning and textile industries. The typical concentration for liquid solutions is 5%.

Specific Gravity

4% = 1.02

Safety and Best Practices

This product is an oxidizer and will react with reducing agents and organic compounds such as paper or wood to produce heat and could potentially catch fire.

Incompatible with acids, such as sulfuric, nitric, hydrochloric, phosphoric, hydrofluorosilicic acid, sulfonic, acetic, citric, oxalic, and formic. Reducing agents, such as hydrogen, sodium borohydride, sulfur dioxide, thiosulphates, hydrazine, phosphates, carbon, and oxalic, formic and ascorbic acid. Powdered zinc and copper.

PPE should include closed chemical goggles and face shield; gloves of appropriate material for the concentration level; and other appropriate protective clothing necessary to prevent any possibility of skin contact.

When workers are exposed to concentrations above the exposure limit, they must use appropriate, certified respirators.

Storage and Handling

Store in a cool, dry, well-ventilated area, out of direct sunlight, away from heat sources and incompatible materials. Always store in original labeled container. Keep containers tightly closed when not in use and when empty.

Compatible Materials of Construction

At 68˚F (20˚C), chemical resistance can vary by concentration

CPVC	PTFE	High purity ceramic
Polypropylene	316 stainless steel	Silicon carbide
PVDF	Alloy 625	EPDM
PPS	Titanium	FKM
ETFE	Carbon	FFKM

FINISH THOMPSON INC.

Finish Thompson Inc. - Headquarters
921 Greengarden Road
Erie, PA 16501 USA
(800) 934-9384
Tel: (814) 455-4478
FINISHTHOMPSON.COM

Finish Thompson Inc. - Germany
Otto-Hahn-Strasse 16
Maintal, D-63477 Germany
Tel: 49 (0)6181-90878-0
Fax: 49 (0)6181-90878-18
email: **fti@finishthompson.com**

Sodium Bisulfate
$NaHSO_4$

User Summary

Solutions of sodium bisulfate are acidic. Typical metal finishing uses include pickling, scale removal, rust removal, and etching. Food-grade versions are used in a variety of food products.

Specific Gravity*

20% = 1.2

50% = 1.4

* Source: sciencelab.com

Safety and Best Practices

Incompatible with ammonia, oxidizing materials, strong acids, strong bases and hypochlorites.

PPE should include closed chemical goggles and face shields; gloves of appropriate material for the concentration level; and other appropriate protective clothing necessary to prevent any possibility of skin contact.

When workers are exposed to concentrations above the exposure limit, they must use appropriate, certified respirators.

Storage and Handling

Keep containers tightly closed in a dry, cool, well-ventilated location away from heat, moisture and incompatible materials.

Compatible Materials of Construction

At 68˚F (20˚C), chemical resistance can vary by concentration

CPVC	Titanium
Polypropylene	Carbon
PVDF	High purity ceramic
PPS	Silicon carbide
ETFE	EPDM
PTFE	FKM
316 stainless steel	FFKM
Alloy 625	

FINISH THOMPSON INC.

Finish Thompson Inc. - Headquarters
921 Greengarden Road
Erie, PA 16501 USA
(800) 934-9384
Tel: (814) 455-4478
FINISH**THOMPSON**.COM

Finish Thompson Inc. - Germany
Otto-Hahn-Strasse 16
Maintal, D-63477 Germany
Tel: 49 (0)6181-90878-0
Fax: 49 (0)6181-90878-18
email: **fti@finishthompson.com**

Sodium Bisulfite
$NaHSO_3$

User Summary

Solutions of sodium bisulfite are used in the pulp & paper, power, and water treatment industries, including the dechlorination of municipal wastewater. It is also used as a food additive and preservative and in the purification and decolorization processes during the production of various chemicals.

Specific Gravity*

40% = 1.33

* Source: pubchem.ncbi.nlm.nih.gov

Safety and Best Practices

Reacts with oxidizing agents and strong acids to release sulfur dioxide gas and may cause exothermic reactions. Corrosive to aluminum. Decomposes in heat releasing sulfur dioxide gas. Use gloves and eye protection with side shields or chemical goggles when handling.

Oxidizing agents may cause exothermic reactions. Both acidification and heating accelerate the release of Sulfur dioxide fumes.

PPE should include closed chemical goggles and face shield; gloves of appropriate material for the concentration level; and other appropriate protective clothing necessary to prevent any possibility of skin contact.

A NIOSH/MSHA approved air-purifying respirator equipped with acid gas/fume, dust, mist cartridges for concentrations up to 50 mg/m^3 or 20 ppm as sulfur dioxide. A powered air purifying respirator with acid gas cartridges for up to 50 ppm sulfur dioxide. A full-facepiece air supplied respirator if concentrations are for up to and higher than 100 ppm sulfur dioxide.

Storage and Handling

Store in tightly closed containers in cool, well-ventilated area out of direct sunlight. Keep away from metals, moisture and incompatible materials.

Do not freeze. Store above 50°F to avoid crystallization. Protect containers against physical damage. Tanks should be vented into an alkaline fume recovery system or scrubber. Store in corrosion-resistant container.

Compatible Materials of Construction

At 68°F (20°C), chemical resistance can vary by concentration

CPVC	PTFE	Titanium
Polypropylene	316 stainless steel	Carbon
PVDF	Alloy 625	EPDM
PPS	High purity ceramic	FKM
ETFE	Silicon carbide	FFKM

Application Notes

Crystallizes below 50°F

FINISH THOMPSON INC.

Finish Thompson Inc. - Headquarters
921 Greengarden Road
Erie, PA 16501 USA
(800) 934-9384
Tel: (814) 455-4478
FINISHTHOMPSON.COM

Finish Thompson Inc. - Germany
Otto-Hahn-Strasse 16
Maintal, D-63477 Germany
Tel: 49 (0)6181-90878-0
Fax: 49 (0)6181-90878-18
email: **fti@finishthompson.com**

Sodium Hydroxide (Caustic Soda) NaOH

User Summary

Sodium hydroxide is a powerful base and is also known as lye or caustic soda. It is third on the list of the top ten chemicals produced in the United States. As one of the most commonly used products, it can be found in processes in a variety of industries.

The largest users of sodium hydroxide are the pulp and paper, detergent, and chemical industries.

It is also used in the metal cleaning and treatment, water treatment, soap manufacturing, oven and drain cleaners and in the food/beverage industries as a pH adjustment, chemical peeling of fruits and vegetables as well as manufacture of a wide variety of chemicals and in the petroleum industry. 50% liquid versions are very common.

Specific Gravity

10% = 1.11
15% = 1.16
25% = 1.27
30% = 1.33
50% = 1.52

FINISH THOMPSON INC.

Safety and Best Practices

When dissolved in water or neutralized with acid it releases substantial amounts of heat (exothermic reaction), which may prove sufficient to ignite combustible materials.

Incompatible with water, acids, oxidizing agents, chlorinated or flammable liquids, organic halogens, metals such as aluminum, copper, tin, zinc, and lead (exposure to these metals form flammable hydrogen gas).

Attacks some forms of plastics and rubbers.

PPE should include closed chemical goggles and face shield; gloves of appropriate material for the concentration level; and other appropriate protective clothing necessary to prevent any possibility of skin contact.

When workers are exposed to concentrations above the exposure limit, they must use appropriate, certified respirators.

Storage and Handling

Store in cool, dry location. Avoid storage near extreme heat, open flame, or ignition sources. Sodium hydroxide should be stored in containers that are resistant to the chemical's corrosive nature.

These include high density polyethylene (HDPE), cross-linked polyethylene (XLPE), carbon steel, and fiber-reinforced plastic (FRP).

Methods should be utilized to maintain solution temperature above 70˚F for both indoor and outdoor containers to ensure fluid viscosity and prevent precipitation (crystallization) of the solution. A temperature of 85˚ to 100˚F (29˚ - 38˚C) is recommended. Sodium hydroxide has a high freeze point (~56˚F) for a 50% solution.

Compatible Materials of Construction

At 68˚F (20˚C), chemical resistance can vary by concentration

CPVC
Polypropylene
PPS
ETFE
PTFE
316 stainless steel
Alloy 625
Titanium
Carbon
High purity ceramic
Silicon carbide
EPDM
FFKM

Application Notes

Sodium hydroxide has a high freeze point, ~56˚F (13.3˚C) for a 50% solution.

Finish Thompson Inc. - Headquarters
921 Greengarden Road
Erie, PA 16501 USA
(800) 934-9384
Tel: (814) 455-4478
FINISH**THOMPSON**.COM

Finish Thompson Inc. - Germany
Otto-Hahn-Strasse 16
Maintal, D-63477 Germany
Tel: 49 (0)6181-90878-0
Fax: 49 (0)6181-90878-18
email: **fti@finishthompson.com**

Sodium Hypochlorite NaClO

User Summary

Sodium hypochlorite is a solution made from reacting chlorine with a sodium hydroxide solution. It is commonly referred to as bleach. It has a variety of uses and is an excellent disinfectant/antimicrobial agent. Sodium hypochlorite is used on a large scale.

It is used in laundries, swimming pools, drinking water and wastewater systems, on food and non-food contact surfaces, in odor control systems to neutralize hydrogen sulfide gas, cooling towers, textile and many more. Typical household bleach is 3 to 8% with around 5% being the most common percentage. Industrial and commercial percentages range from 12.5 to 17%.

Specific Gravity

5% = 1.1
12.5% = 1.21

Safety and Best Practices

Not combustible, but is a strong oxidizer which enhances the combustion of other substances. May react violently with strong acids, acid compounds, and ammonia compounds to release chlorine and other toxic gases. May react violently with organic materials, amines, and organic polymers to form explosive compounds and chlorine gas. Not compatible with metals and hydrogen peroxide.

Metals cause the release of oxygen, generally not violently but can cause potential for over-pressurization in a closed system.

Hydrogen peroxide releases oxygen and may occur violently.

PPE should include closed chemical goggles and face shield; gloves of appropriate material for the concentration level; and other appropriate protective clothing necessary to prevent any possibility of skin contact.

When workers are exposed to concentrations above the exposure limit, they must use appropriate, certified respirators.

Storage and Handling

SAll sodium hypochlorite solutions continually decompose after they are produced. Decomposition cannot be avoided, but the rate of degradation can be slowed.

The stability and shelf life of a sodium hypochlorite solutions depends on five major factors:

- Concentration, pH, temperature of the solution, concentration of certain impurities and exposure to ultra-violet light.
- Low concentration sodium hypochlorite solutions decompose slower than high concentration solutions.

A 15% percent sodium hypochlorite solution will decompose approximately 10 times faster than 5% solutions at 77˚F (25˚C).

Many bulk users purchase at high concentration to reduce shipping costs and then dilute to 5 or 6% with high quality water free of impurities which could speed up decomposition.

For drums and totes/IBC's, store under cover in a dry, clean, cool, well-ventilated place away from sunlight. Store away from oxidizing materials. Store in original vented container.

Bulk storage tanks are most commonly constructed of high-density polyethylene, cross-linked polyethylene, FRP (fiberglass reinforced plastic or chlorobutyl rubber-lined steel.

Compatible Materials of Construction

At 68˚F (20˚C), chemical resistance can vary by concentration

CPVC
Polypropylene, unfilled
PVDF
ETFE
PTFE
Alloy 625
Titanium
High purity ceramic
Silicon carbide
EPDM
FKM
FFKM

Application Notes

All sodium hypochlorite solutions continually decompose on standing after they are produced.

Decomposition cannot be avoided, but the rate of degradation can be slowed.

FINISH THOMPSON INC.

Finish Thompson Inc. - Headquarters
921 Greengarden Road
Erie, PA 16501 USA
(800) 934-9384
Tel: (814) 455-4478
FINISH**THOMPSON**.COM

Finish Thompson Inc. - Germany
Otto-Hahn-Strasse 16
Maintal, D-63477 Germany
Tel: 49 (0)6181-90878-0
Fax: 49 (0)6181-90878-18
email: **fti@finishthompson.com**

Sodium Methoxide (Methylate)

CH_3NaO

User Summary

When not dissolved in methanol, sodium methoxide is a white solid. It is frequently used as a reagent in many industries. Applications include fuels and fuel additives, intermediates, process regulators, and processing aids. Sodium methoxide is also used as a catalyst for the treatment of edible fats and oils and in the manufacture of chemicals and pharmaceuticals. One of the largest uses is as a catalyst for biodiesel production.

25 to 30% liquid solutions are common with the sodium methoxide dissolved in methanol.

Specific Gravity*

30% in methanol - .97

* Source: chemistrylearner.com

Safety and Best Practices

For versions dissolved in methanol:
Highly flammable liquid and vapor. Vapors are heavier than air and may spread along floors. Heating may cause a fire or explosion.

Proper grounding procedures to avoid static electricity should be followed. Ground/bond container and receiving equipment. Use explosion-proof electrical equipment. Use non-sparking tools.

Keep container tightly closed. Store under dry nitrogen or argon in sealed containers. Keep in a cool place.

Never allow product to get in contact with water during storage. Reacts violently with water.

Reacts with water to form sodium hydroxide, a corrosive material, and methyl alcohol, a flammable liquid. The heat from this reaction may be sufficient to ignite surrounding combustible material or the sodium methylate itself if the water is present in only small amounts.

Risk of explosion with:
Oxidizing agents, perchloric acid, perchlorates, salts of oxyhalogenic acids, chromium (VI) oxide, halogen oxides, nitrogen oxides, nonmetallic oxides, chromosulfuric acid, chlorates, hydrides, zinc diethyl, halogens, powdered magnesium, hydrogen peroxide, nitric acid, sulfuric acid, permanganic acid, sodium hypochlorite,

Exothermic reaction with:
Acid halides, acid anhydrides, reducing agents, acids, bromine, chlorine, chloroform, magnesium, tetrachloromethane, titanium tetrachloride,

Risk of ignition or formation of flammable gases with: Fluorine, oxides of phosphorus, Raney-nickel

Generates dangerous gases or fumes in contact with: Alkaline earth metals, alkali metals

PPE should include closed chemical goggles and face shield; gloves of appropriate material for the concentration level; and flame retardant antistatic protective clothing necessary to prevent any possibility of skin contact.

When workers are exposed to concentrations above the exposure limit, they must use appropriate, certified respirators.

Decomposes and ignites upon exposure to moist air or water. Reacts with metals to produce explosive hydrogen gas. Reacts violently with strong acids. Not compatible with chlorinated solvents and oxidizing agents. Wear protective gloves and clothing to avoid skin contact. Use safety chemical goggles for eye protection.

Storage and Handling

Contact the chemical supplier for specific recommendations for the appropriate type of materials of construction for tanks and containers for proper, safe storage.

Drums and totes should be stored in a dry, well-ventilated area, protected from heat and direct sunlight. Partial containers should be blanketed with nitrogen to avoid moisture exposure, and empty containers should not be reused.

Moisture decreases the quality of the product and cold air can cause the product to precipitate out of solution in methanol.

Store in cool, well-ventilated area in tightly closed containers away from heat and plastics. Use explosion-proof electrical equipment where handling or storing.

Compatible Materials of Construction

At 68˚F (20˚C), chemical resistance can vary by concentration

CPVC	Titanium
Polypropylene	Carbon
ETFE	High purity ceramic
PTFE	Silicon carbide
316 stainless steel	EPDM
Alloy 625	FFKM

FINISH THOMPSON INC.

Finish Thompson Inc. - Headquarters
921 Greengarden Road
Erie, PA 16501 USA
(800) 934-9384
Tel: (814) 455-4478
FINISHTHOMPSON.COM

Finish Thompson Inc. - Germany
Otto-Hahn-Strasse 16
Maintal, D-63477 Germany
Tel: 49 (0)6181-90878-0
Fax: 49 (0)6181-90878-18
email: **fti@finishthompson.com**

Sulfamic Acid
H_3NSO_3

User Summary

Sulfamic acid is an odorless crystalline solid. It is also available in diluted liquid versions. It is a safe, powerful acid that is commonly used in dye manufacturing, the production of other chemicals, in electroplating, for stabilizing chlorine in pools, and as a bleaching agent. Sulfamic acid is also used for cleaning industrial equipment, and for descaling and dissolving limescale, calcium deposits and hard water mineral build-ups.

Specific Gravity*

15% solution = 1.035

30% solution = 1.084

100% = 2.15

* Source: pubchem.ncbi.nlm.nih.gov

Safety and Best Practices

When diluting/dissolving, always have the water ready first, then slowly stir in the product. Avoid dust formation.

Reacts violently with chlorine, nitric acid, and strong bases. Not compatible with oxidizing agents, ammonia, amines, and isocyanates. Reacts with water to release heat and produce ammonium bisulfate.

PPE should include closed chemical goggles and face shields; gloves of appropriate material for the concentration level; and other appropriate protective clothing necessary to prevent any possibility of skin contact.

When workers are exposed to concentrations above the exposure limit, they must use appropriate, certified respirators.

Storage and Handling

Store in well-ventilated, cool area in tightly closed containers. Aqueous solutions are unstable and slowly hydrolyze to ammonium bisulfate. Don't dry sweep solid version. Use vacuum to minimize dust.

Compatible Materials of Construction

At 68˚F (20˚C), chemical resistance can vary by concentration

Polypropylene	316 stainless steel	Silicon carbide
PVDF	Alloy 625	EPDM
ETFE	Carbon	FKM
PTFE	High purity ceramic	FFKM

FINISH THOMPSON INC.

Finish Thompson Inc. - Headquarters
921 Greengarden Road
Erie, PA 16501 USA
(800) 934-9384
Tel: (814) 455-4478
FINISH**THOMPSON**.COM

Finish Thompson Inc. - Germany
Otto-Hahn-Strasse 16
Maintal, D-63477 Germany
Tel: 49 (0)6181-90878-0
Fax: 49 (0)6181-90878-18
email: **fti@finishthompson.com**

Sulfuric Acid
H_2SO_4

User Summary

Sulfuric acid is a heavy, oily, strong, liquid mineral acid. It is completely soluble in water, and clear and colorless in pure form but is commonly dyed dark brown to help alert people to the hazard.

This corrosive, strong acid offers oxidizing properties at high concentrations. It is used in chemical manufacturing, oil refining, drug production, and mineral processing. In various concentrations, sulfuric acid is used for applications in the manufacture of dyes, fertilizers, explosives, and detergents, as well as lead-acid storage batteries.

Specific Gravity*

3% = 1.03	80% = 1.73
10% = 1.07	85% = 1.78
20% = 1.14	90% = 1.81
30% = 1.22	93% = 1.83
33% = 1.24	95% = 1.83
50% = 1.4	96% = 1.84
60% = 1.5	98% = 1.84
70% = 1.61	

Safety and Best Practices

Sulfuric acid is nonflammable, but is highly reactive. It reacts violently with water and organic materials which results in high evolution of heat.

Always add acid to water to prevent or reduce boiling and spattering.

It is extremely hazardous in contact with many materials, particularly strong oxidizers, carbides, chlorates, cyanides, fulminates, nitrates, perchlorates, powdered metals, reducing agents, and sulfides.

In higher concentrations, ignition may occur on contact with combustible materials such as wood, cardboard, sawdust, and oily rags.

Sulfuric acid, especially in lower concentrations, attacks many metals to release flammable hydrogen gas.

Precautions must be taken to avoid ignition sources near sulfuric acid and containers or tanks containing it.

Concentrated sulfuric acid can rapidly dehydrate body tissues and cause severe chemical and thermal burns.

PPE should include closed chemical goggles and face shield; gloves of appropriate material for the concentration level; and other appropriate protective clothing necessary to prevent any possibility of skin contact.

When workers are exposed to concentrations above the exposure limit, they must use appropriate, certified respirators.

Storage and Handling

Sulfuric acid is extremely heavy, especially higher concentrations and will test the mechanical integrity of storage tanks. Ensure any tanks that will be used to store sulfuric acid are rated for the loads involved. Consult the acid supplier for specific recommendations.

Steel can be used on high sulfuric acid concentrations 93% to 98%. At other concentrations, it will need to be protected with some form of internal lining/liner. The tank must be vented due to the potential for hydrogen gas formation inside the tank due to the reaction with steel.

High density polyethylene and high-density crosslinked polyethylene tanks eliminate hydrogen gas formation from the tank.

Fiberglass reinforced plastics with appropriate coatings can be used in lower concentrations, 70% and lower.

Frequently, the weaker the sulfuric acid strength, the more corrosive it is to most metals.

Keep away from incompatibles such as oxidizing agents, reducing agents, combustible materials, organic materials, metals, acids, alkalis, moisture.

Compatible Materials of Construction

At 68˚F (20˚C), chemical resistance can vary by concentration

CPVC	PTFE	Silicon carbide
Polypropylene (to 60%)	Alloy 625	EPDM (to 90%)
PVDF	Carbon	FKM
PPS (to 75%)	High purity ceramic	FFKM
ETFE		

FINISH THOMPSON INC.

Finish Thompson Inc. - Headquarters
921 Greengarden Road
Erie, PA 16501 USA
(800) 934-9384
Tel: (814) 455-4478
FINISH**THOMPSON**.COM

Finish Thompson Inc. - Germany
Otto-Hahn-Strasse 16
Maintal, D-63477 Germany
Tel: 49 (0)6181-90878-0
Fax: 49 (0)6181-90878-18
email: **fti@finishthompson.com**

Pumping Solutions for Corrosive Chemicals

PRODUCT	ADVANTAGES
DB Series 	**Mag-drive design** – Eliminates seal so there are no leaks **Corrosion resistance** – Engineered for the harshest chemicals and environments **Run-dry capability** – Protects against operator error and system disruption
SP Series 	**Self-priming** – Lightning-fast priming, with ability to lift fluids from 18 ft (5.5m) in 90 seconds **Diverse performance** – Can lift fluid from 25 ft (7.6 m) below the pump or pull liquid out of the top of a tank **Sealless design** – Strongest neodymium magnets eliminate seal issues
MSDB 	**Performance** – Heads up to 300 ft (91.5 m); minimum flow rate of 1 gmp (.23 m3/hr; maximum flow rate of 69 gpm (15.7 m3/hr) **No mechanical seal** – Powerful mag-drive system eliminates troublesome seal
UC 	**Leak-free operation** – Neodymium magnets drive the impeller through a ETFE-lined barrier for dependable, sealless operation **Optimal alignment** – ANSI dimensional design includes fully supported shaft to create optimal alignment and prevent premature wear **Corrosion protection** – Inner drive magnets completely encapsulated in ETFE to withstand harsh chemicals
VKC 	**Sealless vertical design** – Eliminates the need for wetted shaft bearings **Sealed airtight column** – Protects against corrosion and reduces environmental emissions **No back impeller** – Single impeller prevents aeration and eliminates microbubbles
Drum Pumps 	**Versatility** – Wide range of tube lengths for use in drums, barrels, totes, IBCs, and other containers **Convenience** – Built-in hose and cord clips on select models **Durable construction** – PP, PVDF, or 316SS tubes available

FINISH**THOMPSON**.COM

FINISH THOMPSON INC.

email: **fti@finishthompson.com**

Finish Thompson Inc. - Headquarters
921 Greengarden Road
Erie, PA 16501 USA
Tel: (814) 455-4478
Fax: (814) 455-8518

FTI Gmbh - Europe Center
Otto-Hahn-Strasse 16
Maintal, D-63477 Germany
Tel: 49 (0)6181-90878-0
Fax: 49 (0)6181-90878-18

Filter Pump
A division of Finish Thompson, Inc.
7932 Ajay Drive
Sun Valley, CA 91352
Tel: (818) 504-2391

Finish Thompson Inc. (FTI), an international leader in the corrosive chemical transfer industry, has been dedicated to its customers' needs since 1951. For nearly 75 years, FTI has fostered a culture of foresight and adaptability to stay in touch with industry trends and growth. Today, we manufacture more than 20 different lines of pumps, including drum and barrel pumps, centrifugal pumps, and air-operated double diaphragm (AODD) pumps. FTI is proud to serve distributors and customers on six continents and support more than 40 different industries across the globe.

Visit the FTI newsroom for more information, and connect with us on LinkedIn, Facebook, Instagram, and Twitter.

01-2024