SAFETY DATA SHEET
Penetone Corporation, 125 Kingsland Ave., Clifton, NJ 07014

FORMULA 990™

SECTION 1: IDENTIFICATION

Product name: FORMULA 990
Recommended use: Scale and rust remover
Physical Description: Clear dark brown liquid with pungent odor
Generic Ingredients: Water, hydrochloric acid, and corrosion inhibitor

Manufacturer:
Penetone Corporation
125 Kingsland Ave.
Clifton, NJ 07014
800-631-1652 or 201-567-3000

Business Contact:
Customer Service
800-631-1652 x2602 or 2272
Product Safety
800-631-1652 x2211 or 2257

Emergency Phone Numbers: PENETONE 201-567-3000 CHEMTREC 800-424-9300

SECTION 2: HAZARDS IDENTIFICATION

GHS CLASSIFICATION:

Health:
Skin corrosion: 1B
Eye damage: 1

Specific target organ toxicity - single exposure: 3
Physical:
Corrosive to metals: 1

DANGER!
Causes Severe Skin Burns and Eye Damage.
May Cause Respiratory Irritation.
May Be Corrosive to Metals.

Precautionary Statements:

Prevention:
Do not breathe mists if inhalable mists occur during use. Use only outdoors or in a well ventilated area. Wear protective gloves, clothing, eye protection, and face protection. Wash hands and exposed skin thoroughly after handling. Keep only in original container.

If inhaled: Remove person to fresh air and keep comfortable for breathing. Immediately call a poison center, doctor, emergency room, or 911. Absorb spillage to prevent material damage.

Storage:
Store locked up. Store in a well ventilated place. Keep container tightly closed. Store in corrosive resistant container, plastic (HDPE) is recommended, or container with a resistant inner liner.

Disposal:
Dispose of contents/container in accordance with local, regional, and national regulations (see Sections 13 and 15 of SDS for disposal and reporting requirements).

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS#</th>
<th>Concentration Wt% (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>60-80</td>
</tr>
<tr>
<td>Hydrochloric Acid</td>
<td>7647-01-0</td>
<td>20-40</td>
</tr>
<tr>
<td>Alkoxylated Fatty polyamines and fatty amines</td>
<td>proprietary</td>
<td>&lt;1</td>
</tr>
</tbody>
</table>

(1) Exact percentages being withheld under trade secret provision of OHSA HCS 1910.1200(i)
SECTION 4: FIRST-AID MEASURES

General Description of Symptoms & First-Aid Measures
Most likely work-place exposure routes will be skin contact or inhalation.

For skin contact, tingling or burning sensation might be felt almost immediately. Reddening or minor irritation could also develop if product is not quickly washed off. If product is not quickly washed off or left in contact with skin for some time, skin burns will result.

Inhalation exposure may produce varied effects, particularly if exposure occurs above the recommended workplace exposure limits (see SECTION 8). Typical symptoms could include coughing, sneezing, and a tingling or burning sensation in the nose, throat, and lungs.

Note: This product is very corrosive to all tissue, and immediate action is required to avoid serious injury or permanent damage to exposed tissue.

Eyes
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a local Poison Control Center, doctor, physician or other competent medical authority for medical advice. Penetone recommends that after any eye exposure a physician be seen immediately.

Ingestion
If swallowed: Rinse mouth. DO NOT INDUCE VOMITING. Immediately call a poison center, doctor, physician or other competent medical authority for medical advice.

Inhalation
If inhaled: Remove person to fresh air and keep comfortable for breathing. Immediately call a local Poison Control Center, physician, or other competent medical authority for medical advice.

Skin
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. A mild soap may be used to wash skin. Wash contaminated clothing before reuse. Immediately call a local Poison Control Center, doctor, physician or other competent medical authority for medical advice.

Special Treatment / Other
None

SECTION 5: FIRE FIGHTING MEASURES

Flammable Properties
Classification: Non-flammable
Flash Point: None-to-boil
Autoignition Temperature: not determined
Lower Flammable Limit: Not applicable Upper Flammable Limit: Not applicable

Specific Hazards
Product is water based and water dilutable, and although not a fire hazard, open containers may give off hydrochloric acid vapors. Spilled product may react with metals to form flammable hydrogen gas.

Extinguishing Media
Use extinguishing agents appropriate for controlling surrounding fire.

Unsuitable: None.

Protection & Precautions for Firefighters
Protective Equipment & Clothing: Wear positive pressure self-contained breathing apparatus (SCBA). Structural
firefighters protective clothing will only provide limited protection.

Fire Fighting Guidance: Cool containers with flooding quantities of water until well after fire is out. Move containers from fire area if you can do it safely. Dike fire control water for later disposal; do not scatter material. Containers can expand and explode under fire conditions due to vapor buildup. Always stay away from containers engulfed in fire.

Hazardous Combustion Products: Hydrochloric acid.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Land Spill
Adsorb spillage to prevent material damage. Stop leak if you can do it safely. For large spills, dike and pump into properly labeled containers for reclamation or disposal. For small spill, soak up with absorbent material and place in properly labeled containers for disposal. Neutralize residue with dilute base and follow with a liberal covering of sodium bicarbonate or other acceptable drying agent.

Water Spill
This is a water based product and will completely mix/dissolve in water making recovery difficult. This product is acidic and may lower the pH of surface waters with low buffering capacity. Check with local environmental regulatory agencies for reporting requirements.

See SECTION 8 for EXPOSURE CONTROLS and PERSONAL PROTECTION.

SECTION 7: HANDLING & STORAGE

Handling
Avoid contact with eyes, skin and clothing. After handling, always wash hands thoroughly with soap and water. Avoid personal contact with any residue. Do not cut, weld, or reuse empty container.

Storage
Store locked up. Keep container tightly closed when not in use. Store in corrosive resistant container. Plastic (HDPE) is recommended. Do not store near strong bases. Do not store in direct sunlight. Avoid storing above 120°F (49°C).

SECTION 8: EXPOSURE CONTROLS and PERSONAL PROTECTION

Engineering Controls
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits.

Personal Protection
Inhalation A respiratory protection program that meets OSHA’s 29 CFR 1910.134 or ANSI Z88.2 requirements must be followed whenever workplace conditions warrant respirator use. Use of an organic vapor mask or respirator is recommended.

Skin Wear chemical resistant gloves such as: rubber, nitrile, neoprene, or latex when skin contact is possible. Protective clothing including gloves, apron, sleeves, boots, head and face protection should be worn depending on how the product is used. PPE should be cleaned thoroughly after each use.

Eyes Penetone recommends always wearing safety glasses as a minimum in any workplace. Conditions may warrant the use of chemical goggles and possibly a face shield. Consult your standard operating procedure or safety professional for advice. Use protective eye and face devices that comply with ANSI Z87.1-1987.
Additional Remarks
Selection of appropriate personal protective equipment should be based on an evaluation of the performance characteristics of the protective equipment relative to the task(s) to be performed, conditions present, duration of use, and the hazards and/or potential hazards that may be encountered during use.

Occupational Exposure Limits

<table>
<thead>
<tr>
<th>Component Name</th>
<th>Source</th>
<th>Value</th>
<th>Type</th>
<th>Notation</th>
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</thead>
<tbody>
<tr>
<td>Hydrochloric acid</td>
<td>ACGIH</td>
<td>2 ppm</td>
<td>C</td>
<td>A4</td>
</tr>
<tr>
<td>Hydrochloric acid</td>
<td>NIOSH</td>
<td>5 ppm</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Hydrochloric acid</td>
<td>OSHA</td>
<td>5 ppm</td>
<td>C</td>
<td></td>
</tr>
</tbody>
</table>

SECTION 9: PHYSICAL & CHEMICAL PROPERTIES

Appearance: clear dark brown liquid
Odor: pungent
Odor Threshold: not determined
pH: <1
Melting Point / Freezing: about 25°F
Boiling Point / Boiling Point Range: about 212°F
Flash Point: not applicable
Evaporation Rate: equal to water
Flammability: not applicable
Lower Flammable Limit: not applicable
Upper Flammable Limit: not applicable
Explosive Properties: not applicable
Vapor Pressure: equal to water
Relative Vapor Density: equal to water
Relative Density: 1.165
Solubility (Water): soluble in water
Partition Coefficient (K<sub>ow</sub>): not determined
Auto-ignition temperature: not applicable
Decomposition temperature: not applicable
Viscosity: less than 5 centipoise at room temperature

SECTION 10: STABILITY & REACTIVITY

Reactivity
Product will react with bases, such as metal oxides, metal hydroxides, amines, carbonates, and alkaline materials. Reaction with these products can be vigorous, with generation of heat, and potential splattering. Product will react with metals, generating highly flammable hydrogen gas.

Chemical Stability
Stable.

Hazardous Reactions
Mixing with bases will give off heat and may cause splattering. Hazardous polymerization will not occur.

Conditions to Avoid
Do not store near bases, metal oxides, metal hydroxides, strong bases, amines, carbonates, and alkaline materials.
Incompatible Materials
Product is incompatible with cyanide, sulfides, sulftes, and formaldehyde. Mixing with these materials may generate highly toxic gases.

Hazardous Decomposition Products
Highly corrosive hydrogen chloride fumes will be given off when heated.

SECTION 11: TOXICOLOGICAL INFORMATION

Product Summary
This product contains hydrochloric acid. Contact with skin and/or eyes, ingestion, or inhalation of spray mist is corrosive. Possible effects may include severe irritation, burns, and permanent damage to exposed tissues if immediate action is not taken.

Acute Toxicity:
- Dermal: LD50 >5,010 mg/kg (31.5% HCl) rabbit; LC50 1449 mg/kg mouse
- Inhalation: LC50 1.68 mg/l 1h rat; LC50 4.72 mg/l 1h rat
- Oral: LD50 700 mg/kg (31.5% HCl) rat

Skin Corrosion/Irritation
Corrosive to skin.

Serious Eye Damage/Irritation
Corrosive to eyes.

Sensitization - Respiratory or Skin
Dermal: non-sensitizer (mouse, mouse ear swelling test and human, patch test)

Germ Cell Mutagenicity
Various in vitro tests, including Ames using bacteria with and without metabolic activation, gene mutation assay using mammalian cells with and without metabolic activation, and chromosome aberration test using Chinese hamster ovary cells with and without metabolic activation gave positive and negative results in each test. In vivo test (Drosophila SLRL test) was positive.

Carcinogenicity
Rat, male, inhalation, 128 weeks, 6 hrs/day, 5 days/week: No carcinogenic effects observed at the doses tested. (Dose not indicated).

Hydrochloric acid is listed by ACGIH as Group 4: not classifiable as a human carcinogen and by IARC as Group 3: not classifiable as to its carcinogenicity to humans.

Reproductive / Developmental Toxicity
Rat, female, inhalation, NOAEL (teratogenicity): 0.45 mg/l, NOAEL (maternal): <0.45 mg/l. Exposure measured during premating and gestation. Fetotoxicity seen only with maternal toxicity. No teratogenic effects observed at doses tested.

Specific Target Organ Effects - Single Exposure
Single exposure above the recommended exposure limits may result in respiratory tract irritation.

Specific Target Organ Effects - Repeated or Prolonged Exposure
- 7 weeks, inhalation: NOAEL: 0.015 mg/l guinea pig, male
- 13 weeks, inhalation: NOAEL: 20 ppm, LOAEL: 50 ppm, guinea pig, male/female, 6 hrs/day, 5 days/week.

Aspiration Hazard
No data available. Because of the corrosiveness of product, it should be considered to pose an aspiration hazard.
SECTION 12: ECOLOGICAL INFORMATION

Product Summary
This material is acidic and will lower the pH of surface waters with low buffering capacity. Although the product considered nontoxic to aquatic organisms, harmful short term effects can be expected due to the pH shift.

Ecotoxicity
Mosquitofish LC50 282 mg/l (pH 6.0-8.2) 96h

Persistence and Degradability
Not applicable to inorganic substacnes.

Other Adverse Effects
None known.

SECTION 13: DISPOSAL CONSIDERATIONS

Product is a D002 Corrosive Hazardous Waste under RCRA definitions. Dispose of contents/container in accordance with all applicable federal, state, and local regulations.

Note: Contaminated product, soil, water, container residues and spill cleanup materials may be hazardous wastes. Appropriate hazardous waste designation is the responsibility of the user.

SECTION 14: TRANSPORT INFORMATION

ID No.: UN1789
Proper Shipping Name: HYDROCHLORIC ACID SOLUTION
Hazard Class: 8
Packing Group: II
Label: CORROSIVE
Marine Pollutant: no
RQ: 16,000 lbs (about 1600 gallons) of product for hydrogen chloride
Special Precautions: none

SECTION 15: REGULATORY INFORMATION

TSCA
The ingredients in this product are listed on the TSCA inventory.

RCRA HAZARD CLASS
D002 corrosive hazardous waste

SARA 311/312 REPORTABLE HAZARD CATEGORIES: Immediate (Acute) Health

REPORTING REQUIREMENTS (all quantities in pounds)

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS / 313 Code</th>
<th>Section 302 (EHS) TPQ</th>
<th>Section 304 EHS RQ</th>
<th>CERCLA RQ</th>
<th>Section 313</th>
<th>CAA 112(r) TQ</th>
<th>CWA / OPA</th>
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<tbody>
<tr>
<td>Hydrochloric acid</td>
<td>7647-01-0</td>
<td></td>
<td></td>
<td>5,000</td>
<td>313</td>
<td></td>
<td></td>
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</table>
NEW JERSEY RIGHT-TO-KNOW INFORMATION
This product contains water (CAS# 7732-18-5) and hydrochloric acid (CAS# 7647-01-0).

CALIFORNIA PROPOSITION 65 INFORMATION
This product does not contain any chemicals recognized by the state of California to cause cancer and/or birth defects or reproductive harm.

SCAQMD INFORMATION
Is there a photochemically reactive material present? No
What is the % by volume of photochemically reactive material? 0
What is the VOC content? 0
What is the vapor pressure of VOC's? 0

SECTION 16: OTHER INFORMATION

REVISION SUMMARY
Change in Section 1

SUPERSEDES ISSUE DATE
April 1, 2015

HAZARD RATING SYSTEMS:

<table>
<thead>
<tr>
<th>HMIS</th>
<th>NFPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEALTH</td>
<td>3</td>
</tr>
<tr>
<td>FLAMMABILITY</td>
<td>0</td>
</tr>
<tr>
<td>REACTIVITY</td>
<td>0</td>
</tr>
</tbody>
</table>

KEY
4 = Severe
3 = Serious
2 = Moderate
1 = Slight
0 = Minimal

FOR ADDITIONAL PRODUCT INFORMATION, CONTACT YOUR SALES ENGINEER
FOR ADDITIONAL HEALTH/SAFETY INFORMATION, CALL 201-567-3000

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