

GENERAL USE



Formula 990 is a liquid inhibited acid designed for removing rust and scale from metal surfaces.

Due to its special inhibitor properties, **Formula 990** offers a wider margin of safety, as compared with “raw” acids.

FEATURES AND BENEFITS

- Effective rust and scale removal
- Special inhibitor offers maximum degree of protection to sound metal surfaces
- Inhibitor remains stable even at elevated temperatures
- Solutions of **Formula 990** retain their scale dissolving properties longer, and are not easily spent
- Formula 990 is free rinsing ... the inhibitor does not plate out on the clean metal surfaces

DIRECTIONS FOR USE

Circulation procedure

Formula 990 is used diluted with water at concentrations ranging from 5% to 25% by volume. Solutions can be used cold or heated, normally up to 140°F for increased activity. **Formula 990** can be used by *circulation, filling & soaking, immersion or brushed/wiped* on larger surfaces.

- a) The unit or equipment to be descaled should first be flushed out with a heated, low foaming, alkaline solution. Precleaning with an alkaline solution will remove organic soil deposits such as slime and algae which impede the chemical action of the **Formula 990** solution. If the system is free of any oils or organic soils, prewashing with an alkaline material can be eliminated.
- b) Drain and rinse unit thoroughly.
- c) Prepare an 10% to 15% solution of **Formula 990**, pump into system and circulated with an acid-proof pump or one that is expendable. The solution should be circulated from bottom up which insures complete coverage of all interior surfaces.

Titration

- After solution has circulated for 10 minutes, titrate for solution strength. The greatest amount of reaction and dissolution will take place within the first several minutes and, at the initial titration, a substantial lowering of concentration may be noted. Add additional **Formula 990** to restore the solution's strength. Periodically titrate the solution during circulation. When concentration remains steady after two consecutive readings, descaling can be considered complete. An alternative method of circulation is to recirculate the solution for two minutes and allow to soak for 8 minutes.
- d) Drain and rinse with clear water.
 - e) Neutralize with a dilute solution of an alkaline material. A concentration of ¼ to ½ ounce per gallon is adequate for neutralization.
 - f) Rinse with clear water. Check pH of rinse water to be sure it is neutral.

FORMULA 990

INHIBITED RUST & SCALE REMOVER

PHYSICAL PROPERTIES

Appearance	Clear dark brown liquid
Odor	Pungent
pH	<1
Freezing Point	About 25°F
Boiling Point	About 212°F
Flash Point (TCC)	Not applicable
Relative Density	1.165
Auto-Ignition Temperature	Not applicable
Water Solubility	Soluble
Viscosity	Less than 5 CP at room temperature

INCOMPATIBILITY

Cyanide, sulfides, sulfites, and formaldehyde.

WAREHOUSING PRECAUTIONS

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).

AVAILABLE SIZES

55 gallon Drum

FIRST AID MEASURES

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.

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

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.

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.

PERSONAL PROTECTION Security equipment



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IMPORTANT: Before using **FORMULA 990**, always be sure to read and follow precautions and directions for use appearing on the product container label and on the safety data sheet (S.D.S).



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