



Standard Practice for Handling an Acid Degreaser or Still¹

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1. Scope

1.1 This practice covers the procedures required for recognizing and handling an acid vapor degreaser or still.

1.2 If the degreaser(s) is equipped with a still, follow the procedure in this practice for all of the equipment.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

D 2110 Test Method for pH of Water Extractions of Halogenated Organic Solvents and Their Admixtures²

D 2942 Test Method for Total Acid Acceptance of Halogenated Organic Solvents (Nonreflux Method)²

D 4276 Practice for Confined Area Entry²

2.2 Federal Standards:

29 CFR 1910.146, Permit-Required Confined Spaces³

3. Terminology

3.1 Definition:

3.1.1 *acid degreaser, n*—an acid degreaser is the result of the decomposition of the degreasing solvent to acid products.

4. Significance and Use

4.1 This practice describes the symptoms and causes of an acid degreaser as well as methods for correcting the problem.

4.2 This practice is intended as a reference for use by persons responsible for the operation or maintenance of vapor degreasers or stills.⁴

4.3 This practice is not intended to cover every possible situation.

5. Symptoms of an Acid Degreaser/Still

5.1 An acid condition in a vapor degreaser may be recog-

nized by one or more of the following symptoms:

5.1.1 A strong acid odor.

5.1.2 A dense white smoke in the vapor zone.

5.1.3 An unusually dark brown to black-colored solvent in the degreaser sumps.

5.1.4 Dark spots and pitting of aluminum parts after degreasing.

5.1.5 Rusting of mild steel parts immediately after removal from the degreaser.

5.1.6 New formation of green deposits on copper condensing coils or chiller coils.

5.1.7 Newly formed blush rusting of stainless steel degreaser components, especially welded seams.

5.1.8 Low pH of solvent as determined by Test Method D 2110 by water extraction or a low acid acceptance of the solvent as determined by Test Method D 2942, or both.

6. Possible Causes of an Acid Degreaser

6.1 It is rare for a solvent vapor degreaser to go acid when properly operated and maintained. An acid degreaser can result from any one or a combination of the following causes:

6.2 *Lack of Proper Maintenance*—If a degreaser is not cleaned out on a regular basis, the accumulations of soluble and insoluble contaminants, especially reactive white metal chips (for example, aluminum), can cause both thermal and chemical breakdown of the solvent resulting in the generation of hydrochloric acid.

6.3 Deterioration of Heating Surfaces:

6.3.1 *Damaged Heating Elements*—Deterioration of either gas or electrical heating elements can cause arcing or hot spots resulting in an acid condition of the solvent. The deterioration may be due to damage, corrosion or accumulation of contaminants on the heating surface.

6.3.2 *Exposed Heating Surfaces*—Exposure of gas and electric heating surfaces to the air can cause solvent decomposition. Heating elements exposure is caused by a low solvent level that is not detected by low liquid level controls.

6.4 *Excessive Amounts of Water*—Hydrolysis of certain solvents and impurities can be a factor in the formation of an acid condition. Free water can also remove stabilizer.

6.5 *Chlorinated and Sulfonated Oils*—Some chlorinated and sulfonated oils used in deep drawing processes begin to break down at 150°F (65°C), liberating acidic components. When in contact with boiling solvents such as trichloroethylene, and perchloroethylene that have boiling points above 150°F, an acid condition can develop.

¹ This practice is under the jurisdiction of ASTM Committee D-26 on Halogenated Organic Solvents and Fire Extinguishing Agents and is the direct responsibility of Subcommittee D26.02 on Vapor Degreasing.

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² *Annual Book of ASTM Standards*, Vol 15.05.

³ Available from the Superintendent of Documents, U. S. Government Printing Office, Washington, DC 20402.

⁴ See *Manual on Vapor Degreasing*, ASTM, Philadelphia, PA, 1989.