



TRU-CHEM
COMPANY, INC.

CHEMICAL PROCESSES FOR INDUSTRY

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T.C. 277 Liquid Alkaline Aluminum Etchant

DESCRIPTION

T.C. 277 is an efficient, highly alkaline etchant which combines uniform etching with light cleaning action. Depth of etch is easy to control.

T.C. 277 may also be used as a paint stripper; as a heavy-duty cleaner for railroad trucks, underframes and running gear; as a cleaner for paper mill stock systems and suction rolls; and for neutralizing acid wastes. Chelating agents minimize scale build-up in tank and on coils.

CHARACTERISTICS

Chemical composition	Blend of alkalis, low-foaming wetting agents and chelating agents
Physical form	As received: light amber liquid As used: clear
Odor	None
Specific gravity	1.53
Bulk density	12.8 pounds/gallon
Viscosity	50 cpm Spindle #1, Brookfield Viscometer, 60 rpm
Flash point	None
Foaming tendency	Initially slight; quickly subsides
Recommended diluent	Water
Maximum solubility	Infinite
Behavior in hard water	Sequesters
Rinseability	Good
Biodegradable	Yes
Normal operating temperatures	140° to 180°F
Normal working concentrations	4% to 25% by volume (depending on application)
pH at working concentrations	13.0
Effect of freezing	None, upon thawing
Freezing point	45°F
Effect of aging	None

Effect of long, high temperature storage	None
Effect of prolonged boiling	None
Effect on metals	None on steel, stainless steel, magnesium; etches zinc; tarnishes brass and copper; etches aluminum (rapid initial attack)

APPLICATION PROCEDURE

Aluminum Etching: If soil is light, precleaning is unnecessary. Where there is considerable soil and stencil ink, a separate cleaning step is needed. To prepare etching solution, add T.C. 277 slowly to cold water at these concentrations: for a light etch, 2% to 4% by volume; medium etch, 4% to 6% by volume; heavy etch, 6% to 8% by volume. Stir thoroughly. Heat solution to 140° to 160°F.

Degree of etching is affected by immersion time, solution concentration, temperature and the amount of aluminate build-up. A 6% concentration at 80°F will etch an 1100-H-14 alloy at the rate of approximately 0.03 mils per minute. If the temperature is increased to 180°F, the etch rate jumps to 0.66 mils per minute. As aluminum salts build up, etching rate decreases.

To establish uniform etching rates and to extend solution life, constant bleed-off and continuous input of T.C. 277 is recommended. Maintaining average aluminum content at 4 to 6 ounces per gallon will give optimum results. Follow application with a cold running water rinse.

Paint Stripping: Apply by immersion or hot flow-on. Use full strength or at 5% to 25% by volume, temperatures up to boiling.

Cleaning Railroad Trucks, Underframes, Running Gear: Use at 5% to 8% by volume through a high pressure sprayer. Let soak. Pressure rinse. For faster cleaning, heat to 140° to 180°F.

Cleaning in Paper Mills: For stock systems, use at 1% to 6% by volume; for suction rolls, use at 3% to 5% by volume. Follow by a thorough rinsing.

Neutralizing Acid Wastes: T.C. 277 is 100% efficient for neutralizing acid wastes. To determine the amount of T.C. 277 needed, take a small measured sample of the acid waste. Add T.C. 277 slowly, with good agitation, until the desired pH level is reached. Then add T.C. 277 to the bulk waste in the proportions determined above.

NOTES ON USE

This is a highly alkaline material and the usual handling procedures should be observed. Do not pour into hot or boiling water. Allow solution to return to room temperature before making additions.

Meets USDA and FDA requirements for use on food contact services.

Tanks and heating coils may be of ordinary cold rolled steel.

DISPOSAL

Generally not a problem. Some localities may require neutralization.

STORAGE

Indoor storage is desirable. Crystallizes below 45°F, but returns to normal upon thawing and mixing.