



## Technical Bulletin # 129

**RE: Information regarding sulfamic acid and other acid types.**

**DATE: January 18, 2005**

### **Acetic**

Vinegar is usually 4-8% acetic acid by volume. Acetic acid is the acid that gives vinegar its sour taste. Dilute acetic acid in the form of vinegar is harmless and has been consumed as a condiment for millennia. The use of vinegar for regular cleaning of grout is not recommended. Portland cement will slowly disintegrate after repeated exposure to vinegar. After sometime, the grout will lose strength, soften and powder out of the joint.

### **Sulfamic**

Commonly available in powder form. Easily diluted up to maximum concentration in water of 6%. It cannot be mixed any stronger. For this reason, sulfamic acid is safe and recommended for most tile installations (not recommended for natural marble, limestone or travertine). Sulfamic acid is strong enough to dissolve efflorescence and mortar residue but not damage most ceramic or porcelain tile. Sulfamic acid does not produce toxic fumes, damage chrome or steel surfaces, bleach or burn grout joints, and does not cause hazardous or corrosive transport, handling or storage problems.

Use sulfamic acid (C-Clean 985) for the following:

- A) To remove grout haze and mortar residue: Sulfamic acid dissolves hardened Portland cement by converting the constituents of the cement into soluble salts which can be dissolved by water.
- B) To remove efflorescence. Sulfamic acid will react with efflorescence on grout. The reaction changes water insoluble calcium carbonate into soluble calcium hydroxide and carbon dioxide gas.
- C) To remove construction dirt/debris. Sulfamic acid will react with gypsum dust (drywall dirt) and will safely remove surface contaminants such as construction dirt/debris, wallboard compound/texture over-spray.

### **Phosphoric**

Found in some cola soft drinks at 2%. When properly diluted may be used to remove efflorescence and mortar residue. The resulting salts of Phosphoric acid, phosphates, are prohibited in some states. Phosphoric acid has been known to bleach pigment out of colored grouts, i.e. brown grouts turn orange, blue grouts turn yellow, etc.

### **Hydrochloric or Muriatic**

More aggressive than Phosphoric or Sulfamic. Commonly found as pool acid. Considered an unsafe acid due to its corrosive nature and toxic gas which is formed when in contact with cement. Improperly diluted Hydrochloric acid will damage the integrity of grout and its color, and may burn some glazed ceramic tile on contact. Can cause severe skin burns. Never recommended for any ceramic tile related application.

Hydrochloric or Muriatic acid left un-neutralized on surfaces will crystallize and re-activate when moisture/water is present possibly causing further reaction/damage.

### **Sulfuric**

Very aggressive acid. Will attack metals (drain pipes etc.) and organic matter such as skin and flesh. Incorrect dilution with water will lead to a rapid temperature increase and result in boil-over. Sulfuric acid is never recommended for any ceramic tile related application.

### **Nitric**

A colorless, corrosive, toxic acid which can cause severe burns. At room temperature it gives off red or yellow fumes. Reactions of nitric acid with cyanides, carbides, and metallic powders can be explosive. Reactions of nitric acid with many organic compounds are violent and self igniting. Never recommended for any ceramic tile related application. Technical Bulletin #129-TB-0105

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