

# 5779

## Bio-Kleen®

### For Water Removal of Rosin Flux Residue

#### Product Description

Kester 5779 Bio-Kleen® formulation is a highly concentrated liquid cleaner which is added to water to form a non-foaming solution for removing rosin flux residue. Kester 5779 is 50-100% more concentrated than most other aqueous flux removers. This results in substantial savings in the amount of cleaner consumed. The use of this product permits soldering of electronics assemblies with non-corrosive rosin fluxes and eliminates the use of more expensive chlorinated and fluorinated solvents that are more toxic and pollute the environment.

Rosin that is used in rosin fluxes consists primarily of abietic acid. The mild alkaline chemicals in Kester Bio-Kleen products react with the rosin by a chemical conversion known as saponification to form soaps, such as activator salts, which are water soluble residue and can be rinsed away with water. The cleaning system, therefore functions by converting the rosin to soap and solubilizing the ionizable residue with clean water.

#### Performance Characteristics:

- Enhanced ability to solubilize flux residues
- Effective for both rosin and water-soluble flux chemistries

#### RoHS Compliance

This product meets the requirements of the RoHS (Restriction of Hazardous Substances) Directive, 2002/95/EC Article 4 for the stated banned substances.

#### Physical Properties

**Specific Gravity:** 0.982 ± 0.005  
Antoine Paar DMA 35 @ 25°C

**pH (4% solution, typical):** 11.3  
Hanna Instruments 8314 @ 25°C

**pH (concentrate):** 12.8  
Hanna Instruments 8314 @ 25°C

## Application Notes

Kester 5779 is specifically designed for use in automatic in-line spray cleaning machines. Excellent cleaning is accomplished with no-foaming and minimal odor. Kester 5779 contains a unique blend of very effective organic anti-foaming agents. This product does not contain silicon defoamers or other oils that does not rinse completely from a circuit board assembly. The additives in Kester 5779 prevent foaming of the rosin soap even in deionized water. No other foaming agents are required.

For applications involving the removal of rosin flux residues from circuit assemblies, a 4% solution of Kester 5779 should be used. For removing solder paste flux residues (both rosin and no clean) a 9% solution of Kester 5779 should be used. Modifications to the solution concentration may be required dependent upon particular production requirements. The concentration of the solution should be adjusted so that the solution is discarded and replaced at the end of an 8-hour shift. Adding concentrated Kester 5779 to the cleaning bath will extend the life of the solution. However, when the soap content increases excessively, the cleaning efficiency will be reduced.

| <b>Application</b>            | <b>Kester 5779</b>      |
|-------------------------------|-------------------------|
| In-line conveyORIZED machines | 2 - 6%                  |
| Soak Tanks                    | -                       |
| Dishwashers                   | -                       |
| Temperature range             | 60 - 71°C (140 - 160°F) |

If oil is being injected into the solder wave, the residual oil on the circuit board assembly should be compatible with aqueous cleaning. Petroleum oils are not water soluble and most water-soluble oils contain excessive surfactant that can cause foaming in the aqueous cleaner. Kester 5751 Tinning Oil is recommended since it does not foam in water.

### Cleaning:

Deionized water is recommended for the wash solution and rinse tank section of in-line spray cleaning equipment. Use of hard or high mineral content tap water will reduce cleaning efficiency and cause scale build up in the cleaning equipment. There will also be increased consumption of Kester 5779 because the saponifier will react with the minerals in hard tap water.

### Disposal:

Kester 5779 does not contain phosphates, dichromates, caustic soda, inorganic salts, terpenes or halogenated hydrocarbon solvents. The spent cleaning solution is biodegradable. However, the water may contain some lead. Local regulations should be consulted for limitations on such factor as pH, solids content, COD level and metals percentage.

### Storage and Shelf Life:

Shelf life is 2 years from date of manufacture when handled properly and held at 10-25°C (50-77°F).

### Health & Safety:

This product, during handling or use, may be hazardous to health or the environment. Read the Material Safety Data Sheet and warning label before using this product.

## Titration Procedure

### For monitoring #5779 Bio-Kleen® Solution

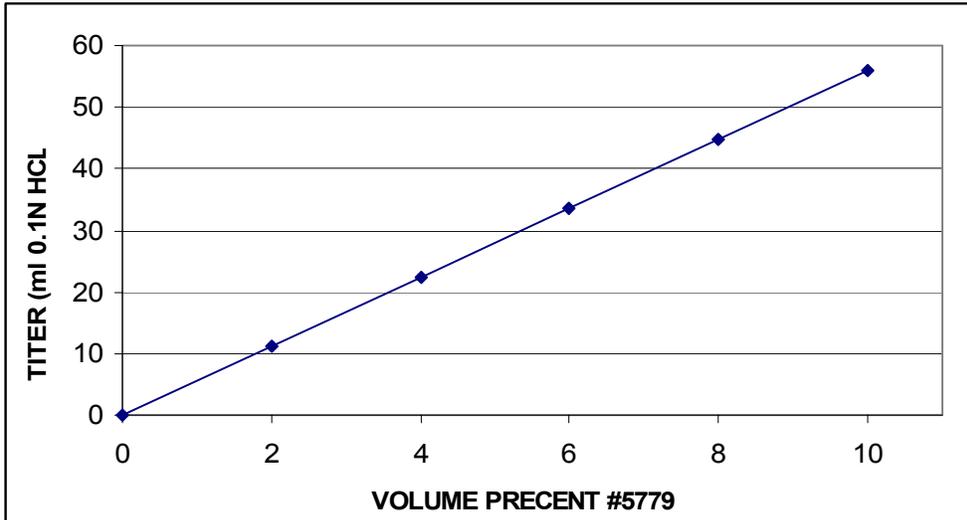
#### Process Control:

The effective concentration of Bio-Kleen solution is reduced by saponification of the rosin and by the addition of water to replace losses from drag-out. Periodic additions of Bio-Kleen may be necessary to maintain a constant solution concentration and cleaning efficiency during use. The outlined alkalinity-titration procedure provides a reliable method for monitoring changes in the concentration of the Bio-kleen solution.

#### Procedure:

1. From the wash solution, take a 50ml sample from below the surface with the pump shut off. Pipette 5-ml into a 200-ml Erlenmeyer flask.
2. Dilute with 50-ml of deionized water.
3. Add 5 drops of 0.05% phenolphthalein indicator solution. Titrate with 0.1 Normal hydrochloric acid to the first stable colorless or slight pink end point.
4. Add the correct amount of Bio-Kleen to maintain the wash solution at the desired concentration.

The graph below shows the acid titer for a corresponding concentration of Bio-Kleen.



When the rosin soap content in the wash tank of an in-line spray cleaning system becomes excessive, the cleaning efficiency will be reduced regardless of control of the solution concentration. The wash tank should be drained at that point replaced with fresh BIO-KLEEN solution.

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