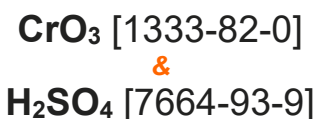


Spotlight On Safety

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ALTERNATIVES TO CHROMIC/SULFURIC ACID FOR CLEANING LABORATORY GLASSWARE



Commonly named Chromerge[®], the chromic acid/sulfuric acid cleaning solutions are strong oxidizers, corrosive and quite toxic. For these and other reasons, Environmental Health and Safety encourages the use of substitutes for chromic/sulfuric acid.

Requirements for Alternative

- Removes desired contaminants from glassware
- Is safe to handle (noncorrosive/ nonirritating to skin and eyes)
- Is not a hazardous waste after use (is not corrosive, pH <2 and pH >12.5, or has heavy metals)
- Is compatible with the containment device - many concentrated acids (60% sulfuric acid) will cause rapid destruction of high-density polyethylene (Nalgene[®]) (check with the manufacturer for chemical resistance information)

Commercially Available Substitutes

- Request Safety Data Sheets (SDS) for each, from the vendor supplying material
- Reactions may give off considerable heat when mixing any of the solutions listed below - mix slowly in a fume hood, wear goggles/ face shield, cool solutions completely before capping

Commercial Products available from vendors:

Fisher Scientific

- Versa-Clean Multipurpose Concentrate[®] Catalog No. 04-342 Removes grease, clays, dirt, etc., from plastics, glass, rubber, vinyl and other materials
- RBS-35 Concentrate[®] Catalog No. PI 27950 Surfactant cleaner, cleans glass, plastic, porcelain, or ferrous metal surfaces of grease, soil, etc.

Aldrich Chemical Co.

IncNochromix[®] Catalog No. 32869 Prepared in the same way as chromic acid, this crystalline material contains no heavy metals and requires concentrated sulfuric acid

International Products Corp.

Micro 90[®] Catalog No. 9031 Removes trace organics and metals from glassware for fluorimetry analysis, atomic absorption, and high-performance liquid chromatography

Making Your Own General Purpose Cleanerⁱ

- Sodium (Potassium) Hydroxide in alcohol - dissolve 120 g of sodium (or potassium) hydroxide in 120 ml water; allow to cool; dilute to one liter with 95% ethyl alcohol

References

ⁱ Gordon and Ford. 1972. The Chemists' Companion: A Handbook of Practical Data, Techniques and References, pp 428-429. John Wiley & Sons.