PPC: 9444.1994(05)
EPA: 540-R-94-005f
NTIS: PB94-922 406

Technical Grade Solvent Formulations and the F003 Listing

The F003 listing in 40 CFR 261.31 includes all spent solvent mixtures/blends containing, before use, only [certain specified] spent non-halogenated solvents. This language implies that, to meet the hazardous waste listing, the solvent mixture must be pure before use (i.e., contain 100% F003-listed solvents). In the process of manufacturing some of these solvents however, small amounts of chemical impurities or contaminants may be generated, and remain with the product when distributed for use. For example, incomplete chemical reactions which take place during xylene manufacturing commonly generate minute quantities of benzene and toluene; rather than being 100% pure, the distributed solvent product may therefore contain 99.98% xylene and 0.02% benzene and toluene, or other similar concentrations of impurities. Would a solvent formulation consisting of 99.98% xylene and 0.02% benzene and toluene meet the F003 listing when used for its solvent properties and discarded?

A solvent formulation consisting of 99.98% xylene and 0.02% benzene and toluene meets the F003 listing when used for its solvent properties and discarded. The F003 listing covers pure solvent mixtures, as well as technical grade solvent formulations, which are used for their solvent properties. The term technical grade refers to all grades of a chemical which are marketed or recognized for general usage by the chemical industry. Solvent formulations containing de minimis percentages of manufacturing contaminants or impurities are considered technical grade products, provided that they are available for purchase and use in this form. Therefore, when determining if a given spent solvent mixture contains only the solvents specified in the F003 listing, generators should include in their evaluation each solvent constituent present in a mixture before use, provided that a particular solvent constituent is not a contaminant or present in de minimis concentrations (50 FR 53317; December 31, 1985). In other words, a technical grade solvent could contain small concentrations of contaminants or manufacturing impurities and still meet the F003 listing after being used for its solvent properties.

In the example presented above, the commercially available solvent that contains 99.98% xylene and 0.02% benzene and toluene (as impurities from the manufacturing process) qualifies as a technical grade formulation. The technical grade solvent formulation, once spent, meets the F003 listing despite containing, before use, less than 100% of the non-halogenated solvents specified in the listing description.

The purity of a technical grade formulation will vary from compound to compound and may range from highly purified to very impure. EPA has not established specific percentages or other criteria for use in determining when

contamination is considered de minimis; such a decision must be made on a case-by-case basis by the appropriate regulatory agency. (June 1994 Monthly Hotline Report)