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Title: Results of the Test Program for Replacement of AK-225G Solvent for Cleaning NASA Propulsion Oxygen Systems

Abstract:

Since the 1990's, when the Class I Ozone Depleting Substance (ODS) chlorofluorocarbon-113 (CFC-113) was banned, NASA's propulsion test facilities at Marshall Space Flight Center (MSFC) and Stennis Space Center (SSC) have relied upon the solvent AsahiKlin AK-225 (hydrochlorofluorocarbon-225ca/cb or HCFC-225ca/cb) and, more recently AK-225G (the single isomer form, HCFC-225cb) to safely clean and verify the cleanliness of large scale propulsion oxygen systems. Effective January 1, 2015, the production, import, export, and new use of Class II Ozone Depleting Substances, including AK-225G, was prohibited in the United States by the Clean Air Act. In 2012 through 2014, NASA test labs at MSFC, SSC, and Johnson Space Center's White Sands Test Facility (WSTF) collaborated to seek out, test, and qualify a solvent replacement for AK-225G that is both an effective cleaner and safe for use with oxygen systems. This paper summarizes the tests performed, results, and lessons learned.