AEROSPACE INFORMATION REPORT

AIR5479™	REV. B

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Superseding AIR5479A

(R) Environmentally Compliant Processes for Landing Gear

RATIONALE

This report provides information regarding environmentally compliant processes for landing gear applications. This document will require periodic review in order to stay up to date with latest environmental regulations.

This revision updates Sources of Data, SAE Publications, ASTM Publications, and U.S. Government Publications sections to reflect current references. The Replacement for Cadmium section has been updated, Primer and Topcoat section has been combined, and Replacement of Chrome Plating section has been added to reflect the latest industry replacement processes.

AIR5479B has been reaffirmed to comply with the SAE Five-Year Review policy.

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1. SCOPE

This SAE Aerospace Information Report (AIR) describes the performance of plating's and coatings for landing gear that potentially provide environmental compliance benefits versus the current baseline processes. The hazardous systems addressed in this version of the document include cadmium plating, chromated primers, and high VOC (volatile organic compounds) topcoats.

The AIR applies to landing gear structures and mechanisms for all types of civil and military aircraft. The potential replacements apply to both Original Equipment Manufacturer (OEM) hardware and overhaul of in-service landing gears.

1.1 Background

This document addresses a number of materials and processes used in landing gear manufacturing and overhaul including cadmium, chromium, and Volatile Organic Compounds (VOC). Environmentally compliant requirements throughout the world are constantly changing and related materials and processes must be reviewed prior to usage. In the United States (US), these substances are controlled in three primary areas: (1) the Occupational Safety and Health Administration (OSHA) oversees exposure in the workplace, (2) the Environmental Protection Agency (EPA) oversees airborne emissions via the Clean Air Act, and (3) the EPA also oversees waterborne effluent via the Clean Water Act. The US Department of Defense (DoD) Emerging Contaminants Program works with the EPA and Environmental Council of States and has published the action list (see Table 1) for chemicals and materials that have pathways to enter the environment and present unacceptable risks to humans or the environment. In Europe, the European Union Reach (Registration, Evaluation and Authorization of Chemicals) requires companies to register data on +30000 chemicals with the European Chemicals Agency (ECHA) in Helsinki, Finland, seek authorization for the use of substances of very high concern (SVHC) and substitute these chemicals with safer alternatives for human health and the environment. SVHCs need to be authorized for specific uses if they appear in Annex XIV of the legislation..

Table 1 - Emerging contaminants action list - January 2016

Royal Demolition eXplosive (RDX), RDX = Cyclotrimethylenetrinitramine
Hexavalent Chromium (Cr^{6+})
Naphthalene
Beryllium
Sulfer Hexafluoride (SF_6)
Lead
Phthalates
1-Bromopropane
Tetrabromobisphenol_A (TBBA)