

Embraer comments to ECHA's ANNEX XV RESTRICTION REPORT

PROPOSAL FOR A RESTRICTION

SUBSTANCE NAME(S): Per- and polyfluoroalkyl substances (PFASs)

Embraer appreciates the opportunity to read and provide comments to the ECHA's ANNEX XV RESTRICTION REPORT. While proposed regulation of per- and polyfluoroalkyl substances (PFASs) is necessary for healthy and environmental reasons, it will also have relevant impacts on many industry sectors.

Many substances being potentially regulated under this proposal for a restriction are used in the aviation industry, either in the manufacturing process as a raw material or as end-use components, such as refrigerant fluids, fire extinguisher agents, semiconductor fabrication, lubricants and dry film lubricants (including additives/oils/grease/wax/solvents), seals, coatings, electrical engineering and information technology products, hydraulic fluids, corrosion inhibitors, heat transfer fluids, lifesaving equipment, (insulated) wires/cables, LCD/LED displays, optical fibers, industrial food and feed production equipment, fluorinated gases, foam-blowing agents, solvents, textiles, high performance membranes, metal plating additives, metal manufacturing additives.

Regarding the fire extinguisher agents, the aviation industry – including Embraer, other aircraft manufacturers and fire protection system suppliers – has worked for a long time to develop, approve and adopt halon replacement agent, which is a broadly fire extinguisher substance adopted for aircraft applications.

Halon has been used for decades in aviation industry due to its unique characteristics, efficiency, low toxicity, and because it is a clean agent leaving no residuals after discharging. However, halon was listed as an ozone depleting substance (ODS) in the Montreal Protocol on Substances that Deplete the Ozone Layer since 1994, and its production and use has been decommissioned in many industries and countries. Major entities, like ICAOⁱ and European Commissionⁱⁱ established halon replacement deadlines and, therefore, the halon use is permitted only under exceptions in certain aircraft fire protection systems.

Searching halon replacement agents for aircraft applications has consumed a long time and investments. In-flight fire events are critical and potentially catastrophic in aviation and fire protection systems must show compliance with specific regulations to demonstrate efficiency. Hence, candidate halon replacement agents must meet minimum performance standardsⁱⁱⁱ for each fire extinguishing application on aircraft (*i.e.* lavatory waste receptacles, portable fire extinguishers, cargo compartments and engine nacelle).

As a result of aforementioned efforts, halon has been replaced for the automatic fire extinguisher of aircraft lavatory waste receptacles and for the portable fire extinguishers carried onboard aircraft flight decks and passenger cabins; however, there is no viable alternatives found to the cargo

compartment fire suppression systems and engine nacelles fire suppression systems, that require much larger quantities of agent.

Many years of development, testing and certification process were demanded until halon replacement agents are approved and adopted. The HFC-227ea and HFC-236fa have been widely adopted as a halon replacement in automatic fire extinguisher of lavatory trash containers since 2011. Likewise, the 2-bromo-3,3,3-trifluoroprop-1-ene, also known as 2-BTP, has been chosen as the only halon replacement alternative for the portable fire extinguishers by major aircraft manufacturers and operators. However, these mentioned agents are potentially classified as PFAS under OECD definition and subjected to this proposal for a restriction. This is critical to aviation industry since no other agents were found viable after decades due to the restrictive criteria for the approval and use of fire extinguishing systems in aviation, whereas returning to use halon should not be an option due to the environmental regulations already implemented.

Despite individual efforts, industry also has worked collaboratively in consortiums and working groups to expedite searching and development of halon replacement solutions, but no approved and adopted solutions were found for cargo compartment fire suppression systems and engine nacelles fire suppression systems. Candidate systems have been assessed and tested for the minimum performance standards and applicable concerns; however, some of most promising agents would be potentially subjected to PFAS classification. Ultimately, it can discourage system developers to continue their investments on such substances. The risk of PFAS restriction on halon replacement agents in aviation industry has been recently noticed by major organizations related to halon replacement.

ECHA's ANNEX XV RESTRICTION REPORT proposes a limited derogation to use PFAS in fire extinguisher systems for aviation, until 13.5 years after entry into force. This proposal is not practical under aviation industry perspective, since no new alternatives to halon, capable to comply with either the Montreal Protocol and the PFAS restriction, could be found for each specific application and meeting their specific safety minimum performance standards in this period of time. In fact, much more time has been spent to find the existing alternatives for halon replacement; and the few ones found to be viable up to now are classified as PFAS in majority. ECHA's proposal, as is, would have a global impact to society and aviation industry, either in fire extinguishers currently used or in halon replacement systems under development.

Therefore, Embraer understands that a permanent exemption should be granted for such fire extinguisher agents and respectfully requests ECHA to reconsider the proposal for a restriction of PFASs used in fire protection systems for aviation, due to its criticality for safety and the absence of viable alternatives meeting both halon replacement and PFAS restriction demands.

ⁱ ICAO provisions in Annex 6 — Operation of Aircraft and Annex 8 — Airworthiness of Aircraft

ⁱⁱ Ozone Regulation EC No 1005/2009 as amended by (EU) 744/2010

ⁱⁱⁱ DOT/FAA/AR-96/122 Development of a Minimum Performance Standard for Lavatory Trash Receptacle Automatic Fire Extinguishers; DOT/FAA/AR-01/37 Development of a Minimum Performance Standard for Hand-Held Fire Extinguishers as a Replacement for Halon 1211 on Civilian Transport Category Aircraft; DOT/FAA/AR-96/80 User Preferred Fire Extinguishing Agents for Engine and Auxiliary Power Unit (APU) Compartments; DOT/FAA/TC-TN12/11 Minimum Performance Standard for Aircraft Cargo Compartment Halon Replacement Fire Suppression Systems (2012 Update)