



# AEROSPACE INFORMATION REPORT

**AIR4766™/1**

Issued	2005-02
Reaffirmed	2018-08

## Air Quality for Commercial Aircraft Cabin Particulate Contaminants

### FOREWORD

Particulate contamination is one of the factors affecting the air quality in aircraft cabins. The potential sources of particulate contaminants are:

- Ambient air depending on geographical location of the airport or airport activity.
- Engine bleed air: combustion products, semi-volatile and non-volatile materials from aircraft operation.
- Passenger activity: skin flakes, hair, possibly bacteria and viruses, environmental tobacco smoke, food.
- Aircraft material: fabric fibers from seat and carpet.
- Airline operation: insecticides, cleaning, maintenance activities.

High efficiency particulate air filters (HEPA filters) are effective for removing particulates, including tobacco smoke, aerosols, bacteria and viruses.

Particulate contaminant levels in the cabin air are usually low and safe under normal conditions.

However, pathogens (virus, bacteria, spores), allergens (cat fur, molds), semi to non-volatile chemicals, or tobacco smoke, may affect passenger and crew comfort or health.

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## 1. SCOPE:

This SAE Aerospace Information Report (AIR) covers airborne particulate contaminants that may be present in commercial aircraft cabin air during operation. Discussions cover sources of contaminants, methods of control and design recommendations. Air quality, ventilation requirements and standards are also discussed.

### 1.1 Purpose:

This document covers design information regarding particulate contaminants in commercial aircraft. This document provides information on Environmental Control System (ECS), particulate contamination (solid and liquid phases), bleed and recirculated air and control methods including ventilation used to design and maintain cabin air environments.

## 2. REFERENCES:

### 2.1 Applicable Documents:

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

#### 2.1.1 SAE Publications: Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

ARP85	Air Conditioning Systems for Subsonic Airplanes
ARP1270	Aircraft Cabin Pressurization Control Criteria
AIR1609	Aircraft Humidification
ARP4418	Procedure for Sampling and Measurement of Engine Generated Contaminants in Bleed Air Supplies from Aircraft Engines Under Normal Operating Conditions