



ADDENDA

**ANSI/ASHRAE Addendum g to
ANSI/ASHRAE Standard 161-2007**

Air Quality within Commercial Aircraft

Approved by the ASHRAE Standards Committee on June 22, 2013; by the ASHRAE Board of Directors on June 26, 2013; and by the American National Standards Institute on June 27, 2013.

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ASHRAE obtains consensus through participation of its national and international members, associated societies, and public review.

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FOREWORD

This addendum adds a definition for *pack burn* and provides additional guidance regarding appropriate cleaning procedures for aircraft environmental control systems.

Note: In this addendum, changes to the current standard are indicated in the text by underlining (for additions) and ~~striketrough~~ (for deletions) unless the instructions specifically mention some other means of indicating the changes.

Addendum g to Standard 161-2007

Add the following definition to Section 3.

pack burn: the practice of operating the air-conditioning packs and/or pneumatic system at a high temperature setting intended to clean suspected contamination from the inside of the high pressure environmental control components.

Revise Section 8.2 under “Remedies” as follows.

~~(ii) Porous surfaces (e.g., acoustic liners) or high surface area components (e.g., ozone converters and air filters) where contaminants can be deposited and retained should either be replaced or cleaned, as appropriate, following ECS contamination. Pack burnout may temporarily remove odors but will not clean the surface (i.e., the secondary source) of contaminants because the temperatures are not high enough to remove oil or hydraulic fluid components, leaving a residue of tars and other hydrocarbons. Occupants should not be put at risk of being exposed to contaminants during a pack burnout. Passengers and crew should not be on board during a pack burnout. Maintenance workers should select PPE per NIOSH Publication 2005-100 if at risk of exposure to contaminants from pack burnout. The APUs and ducts, form system inlets to the airparks, should be inspected following ECS contamination, and if a buildup of residue is noted, then systems should be cleaned (e.g. high pressure washing, steam cleaning). At least as often as at major service intervals, a total system cleaning should be considered.~~

(ii) If a buildup of residue is noted in the APU/engines, air-conditioning packs, and ducts, then the affected components shall either be removed and cleaned, or replaced to prevent additional contamination. If the pack burn air is not dumped overboard, then passengers and crew shall not be on board during a pack burn. Maintenance workers shall be educated on the need to avoid exposure to contaminants in the bleed air system during pack burn and associated system inspection and cleaning procedures. When it is not possible to effectively clean airborne contaminants that deposit on high surface-area components such as acoustical duct lining, water separator coalescer bags, ozone converters, and heat exchangers, then those components shall be removed and either cleaned or replaced. See also Section A.3, “ECS Cleaning Procedures.”

(v) Ground-based air supply systems/equipment (including high and low pressure) shall be inspected and serviced at least every three months in order to prevent the contamination of aircraft systems and to ensure the integrity of the equipment.

Renumber the current item A3 in Informative Appendix A as A4 and renumber the subsections A3.1–A3.20 as A4.1–A4.20. Insert this language as A3.

A3. ECS CLEANING PROCEDURES

Procedures to remove contaminants from the ECS are provided in respective aircraft maintenance manuals and airline policy/procedures manuals. Such procedures may include duct replacement and duct cleaning, including pack burn procedures, described below.

A3.1 Pack burn. See also Section 8.2, “Remedies” (ii). When the source/location of contaminated air-supply systems is investigated, suitable, on-ground analytical instruments are recommended to assist maintenance employees. The APU/engines, air-conditioning packs, and ducts should be inspected following suspected ECS contamination and at major service intervals. For highly inaccessible system components upstream of the air-conditioning packs, a pack burn may help to clean some surfaces, but is not the preferred method of cleaning. It may temporarily remove odors, but even upstream of the packs, the temperatures are not necessarily high enough to remove some oil or hydraulic fluid components from the ducts, which may leave a residue of tar and other hydrocarbons. Also, to avoid additional contamination of the distribution ducting downstream of the air-conditioning packs, the packs and the ducting upstream should be isolated from the rest of the system and the high temperature air should be dumped overboard and not routed through the downstream distribution ducting and delivered to occupied areas.

POLICY STATEMENT DEFINING ASHRAE'S CONCERN FOR THE ENVIRONMENTAL IMPACT OF ITS ACTIVITIES

ASHRAE is concerned with the impact of its members' activities on both the indoor and outdoor environment. ASHRAE's members will strive to minimize any possible deleterious effect on the indoor and outdoor environment of the systems and components in their responsibility while maximizing the beneficial effects these systems provide, consistent with accepted standards and the practical state of the art.

ASHRAE's short-range goal is to ensure that the systems and components within its scope do not impact the indoor and outdoor environment to a greater extent than specified by the standards and guidelines as established by itself and other responsible bodies.

As an ongoing goal, ASHRAE will, through its Standards Committee and extensive technical committee structure, continue to generate up-to-date standards and guidelines where appropriate and adopt, recommend, and promote those new and revised standards developed by other responsible organizations.

Through its *Handbook*, appropriate chapters will contain up-to-date standards and design considerations as the material is systematically revised.

ASHRAE will take the lead with respect to dissemination of environmental information of its primary interest and will seek out and disseminate information from other responsible organizations that is pertinent, as guides to updating standards and guidelines.

The effects of the design and selection of equipment and systems will be considered within the scope of the system's intended use and expected misuse. The disposal of hazardous materials, if any, will also be considered.

ASHRAE's primary concern for environmental impact will be at the site where equipment within ASHRAE's scope operates. However, energy source selection and the possible environmental impact due to the energy source and energy transportation will be considered where possible. Recommendations concerning energy source selection should be made by its members.

