

UNITED STATES OF AMERICA  
DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION  
RENTON, WASHINGTON 98055-4056

In the matter of the petition of

**Franklin Products, Inc.**

For an exemption from § 25.853(a) of  
Title 14, Code of Federal Regulations.

**Regulatory Docket No. FAA-2001-8860**

**PARTIAL GRANT OF EXEMPTION**

By letter dated November 15, 2004, Ms. Janine Shailer, Documentation and Certification Manager, Franklin Products, Inc., 153 Water Street, P.O. Box 117, Torrington, Connecticut 06790-0117, petitioned the Federal Aviation Administration for a 10-year extension to its existing partial grant of exemption No. 6634B. That partial grant of exemption, issued on May 2, 2001, provided an exemption for 4 years from the vertical burn test requirements of § 25.853(a) for Franklin Products' seat cushion subassemblies manufactured with water-based adhesives that do not meet the requirements of that section of the regulations.

**The petitioner requests relief from the following regulation:**

**Section 25.853(a)**, Amendment 25-83, requires that materials in occupied compartments must meet the applicable (i.e., 12-second vertical burn test for seat cushions) test criteria prescribed in Part I of Appendix F, part 25.

**Related Sections of the regulations:**

**Section 25.853(c)** requires that seat cushions, in addition to meeting the (vertical burn) test requirements of § 25.853(a), must also meet the (oil burner) test requirements of Part II of Appendix F, part 25.

**The petitioner's supportive information is as follows:**

“Franklin Products, Inc. (FPI) respectfully requests an extension of the ‘Partial Grant of Exemption No. 6634.’ This grant provides partial exemption from the vertical burn test requirements of FAR 14 CFR § 25.853(a) Part I of Appendix F for FPI seat cushion sub assemblies constructed with adhesives that do not meet the requirements of the above referenced FAR.

“We request an extension of the Partial Grant of Exemption No. 6634 for a period of 10 years. This time is necessary to continue our work to find an appropriate adhesive that addresses our manufacturing needs and the FAA requirements without compromising the health and safety of our employees.” The increased scrutiny of health/safety and EPA issues related to the adhesives currently approved by the FAA will continue to direct our research.

“The original Partial Grant of Exemption was given to us in 1997. It was extended in 1999 and again in 2001. Throughout this time we have continued to search for an adhesive that is safe for the environment and our employees that also passes the 25.853(a) burn test. To date we have not identified an adhesive that meets these requirements.”

Even the recent bans on fire retardant chemicals, such as the one recently put forth by the European Union (EU) banning the use of Pentabromodiphenyl Ether (Penta- BDE) CAS# 32534-81-9 and Octabromodiphenyl Ether (Octa- BDE) CAS# 32536-52-0, have apparently not been sufficient to spur the adhesive companies to develop alternatives.

**“SOLVENT-BASED ADHESIVES:**

“We want to avoid the use of solvent-based adhesives because they contain chemicals such as Methylene Chloride -CAS# 75-09-5, 1,2 Epoxybutane- CAS# 106-88-7, or N-Propyl Bromide- CAS# 106-94-5. These FAA-approved solvent-based adhesives remain under scrutiny for health and environmental reasons.

1. “Methylene Chloride is considered a potential carcinogen. OSHA issued a final rule, in 1997, requiring compliance with an 8-hour TWA PEL of 25 ppm. It will be difficult if not impossible to maintain this restricted exposure in our type of manufacturing.
2. “1, 2 Epoxybutane presents a health hazard in that it has ‘demonstrated clear evidence of carcinogenicity in male rats exposed to 200 to 400ppm.’
3. “N-Propyl Bromide’s toxicity information includes this chronic data: ‘Long term exposure may cause lung, liver, kidney, central nervous system effects. Experiential reproductive effects are still being determined.’

**“NOTE:** In June of 2003 the EPA lowered its recommended exposure limit for N-Propyl Bromide from 100 ppm to 25 ppm.

“If OSHA, the EPA and the EU continue to severely restrict the use of these types of chemicals, adhesive manufacturers may eventually be motivated to develop more user and/or environmentally friendly adhesives.

**“WATER-BASED ADHESIVE USED AT FPI:**

“The adhesive we use does not have any known severe health hazard or environmental concern. It is the safest adhesive we have found to date that meets our manufacturing needs. It performs very well when tested to 14 CFR § 25.853(c).

“In reviewing the document DOT/FAA/CT-83/43, we find that the executive summary states ‘non-fire retardant urethane foam performed as well as the fire retarded type when encapsulated by fire-blocking material.’ The document also indicates on page 3 ‘...that while the materials should be selected based on the results of small-scale tests, it is recognized that the small-scale tests do not reflect the behavior of the material in its end use...’

“We understand that the requirement of § 25.853(a) must be met for all major components and that adhesives were added to this requirement in 1972 per the AC 25-17. However, document DOT/FAA/CT-83/43, issued in 1984, recognizes fire blocking as an appropriate method to provide the needed protection in the cabin. Notably, this method addresses the performance of the typical fire-retardant foams that would fail the 25.853(c) test if they were not fire-blocked. Though AC 25-17 provides guidance on an acceptable method of demonstrating compliance to the FAR, the later document should bare some weight in the judgment of compliance of the product in its end use.

**“TESTING TO 25.853(c) SUPPORTS THE WATER-BASED ADHESIVE:**

“We completed (186) 25.853(c) burn tests using water-based adhesive with a variety of foams, fire blockers and dress cover materials since our last request for exemption. We believe the test results provide significant evidence in support of our argument that use of this adhesive does not pose a risk to the flying public.

“Over 31% of the tests we conducted were comprised of ‘fire hard’ foams that were not fire blocked because they can pass the a-burn and c-burn requirements without a fireblock material. These test specimens were covered with non-fire blocking scrim materials bonded directly to the foams with the water-based adhesive. The specimens did not fail the c-burn testing even though the adhesive was not encapsulated by fireblock.

“Standard fire-retardant open and closed cell foams must be fire blocked regardless of the adhesive used because they cannot pass the c-burn. The test specimen foams were assembled with the water-based adhesive and encapsulated in fireblock materials bonded to the foams.

**“NOTE:** Often, the fireblock covers were bonded to the foams and bonded closed rather than sewn closed with Kevlar (flame resistant) thread. Again the specimen testing was highly successful.

“Our test results provide good evidence that we can and do meet the intent of the rule governing cabin safety; that we effectively address the required performance standards of the final product placed in the aircraft.

“In support of this request for extension I have attached the following documentation:

1. “A 25.853(c) oil burn test summary for 186 tests conducted during the last four years in which the water-based adhesive was successfully tested with a variety of foam, scrim, fireblock and dress cover materials.
2. “Results of our search for a compliant adhesive, which have been generally directed toward locating a water-based adhesive that passes the 25.853(a) burn test.

**“SUMMARY:**

“We are trying to do what is in the best interests of our airline customers, our employees, the environment, and the FAA. By most measures, the easiest course of action for us would be to use the bromide based adhesives. This would eliminate the need for an FAA exemption, eliminate ongoing research for other adhesives and allow us to focus fully on the commercial aspects of our business. We remain persistent in pursuing the exemption path however, as this course most effectively addresses the safety of our employees and the environment, and poses no risk to the flying public.”

**Public Comment**

A summary of this petition was not published in the Federal Register for public comment because this exemption is similar to previous petitions for which no public comments were received.

**The FAA’s analysis and summary of is as follows:**

Public Interest

The FAA considers that the partial grant of an exemption would provide an acceptable level of safety. Franklin Products, Inc. has been using water-based adhesives for 8 ½ years with no adverse effect on public safety.

The FAA is disappointed that the petitioner, in conjunction with various adhesives suppliers, has been unsuccessful during the previous partial grants of exemption to develop a fully compliant adhesive that is also commercially viable and complies with the pertinent FAA, Occupational Safety and Health Administration (OSHA), and Environmental Protection Agency (EPA) regulations. Nevertheless, the FAA is satisfied

that the petitioner is exercising due diligence in that ongoing effort and expects the petitioner to continue. A 10-year extension to the exemption is unusually long, and as such, the FAA cannot at this time grant such an extension. The FAA has determined that a 4-year extension is justifiable; however, if any future extension is requested, additional data will be required from the petitioner to justify that extension. In order to monitor the petitioner's progress, the FAA will require a report on the petitioner's efforts. The FAA considers that the vertical burn test requirements of § 25.853(a) are still appropriate for determining the acceptability of the aircraft materials and, as such, a permanent exemption is not appropriate.

In consideration of the foregoing, I find that a partial grant of exemption is in the public interest, and is determined to have no more than a negligible effect on the level of safety provided by the regulations. Therefore, pursuant to the authority contained in 49 U.S.C. §§ 40113 and 44701, delegated to me by the Administrator, Franklin Products, Inc., is hereby granted a four-year extension of the exemption from the vertical burn test requirements of § 25.853(a) for Franklin Products' seat cushion assemblies constructed with non-compliant water-based adhesives, with the following provision:

Within two years after the effective date of this exemption, the petitioner must submit a progress report on its efforts to develop § 25.853(a) compliant adhesives. At a minimum, the report must include the complete extent of the petitioner's efforts, the adhesives manufacturers involved, and information on how the industry as a whole is addressing this problem. The report should be sent to the Manager, Cabin Safety Branch, ANM-115, Transport Airplane Directorate, 1601 Lind Ave. SW, Renton WA 98055.

This exemption is effective until May 30, 2009, unless otherwise superseded.

In addition, Provision 4 of Exemption No. 6634 is withdrawn. Provision 4 requires labeling as "non-compliant" those seat cushion assemblies manufactured under the auspices of this exemption. All other provisions of Exemption No. 6634, together with its conditions and limitations, remain the same and are applicable to this exemption.

This amendment is part of, and will remain attached to, Exemption No. 6634.

Issued in Renton Washington, on May 26, 2005.

/S/  
Ali Bahrami  
Manager  
Transport Airplane Directorate  
Aircraft Certification Service