



Approval Standard for Welding Pads, Welding Blankets and Welding Curtains for Hot Work Operations

Class Number 4950

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Foreword

The FM Approvals certification mark is intended to verify that the products and services described will meet FM Approvals' stated conditions of performance, safety and quality useful to the ends of property conservation. The purpose of Approval Standards is to present the criteria for FM Approval of various types of products and services, as guidance for FM Approvals personnel, manufacturers, users and authorities having jurisdiction.

Products submitted for certification by FM Approvals shall demonstrate that they meet the intent of the Approval Standard, and that quality control in manufacturing shall ensure a consistently uniform and reliable product. Approval Standards strive to be performance-oriented. They are intended to facilitate technological development.

For examining equipment, materials and services, Approval Standards:

- a) must be useful to the ends of property conservation by preventing, limiting or not causing damage under the conditions stated by the Approval listing; and
- b) must be readily identifiable.

Continuance of Approval and listing depends on compliance with the Approval Agreement, satisfactory performance in the field, on successful re-examinations of equipment, materials, and services as appropriate, and on periodic follow-up audits of the manufacturing facility.

FM Approvals LLC reserves the right in its sole judgment to change or revise its standards, criteria, methods, or procedures.

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1. INTRODUCTION

1.1 Purpose

This standard states Approval requirements for welding pads, welding blankets and welding curtains for use in hot work operations. These items are intended to be used as fire resistant covers that prevent the ignition of combustibles due to welding, cutting and other hot work operations.

1.2 Scope

1.2.1 This standard sets performance requirements for welding pads, welding blankets and welding curtains used as a means of preventing the ignition of combustibles during welding, cutting and other hot work operations.

1.2.2 The fire performance of a fire resistant cover depends on the type of welding function to which it will be subjected. In general, welding pads, welding blankets and welding curtains are evaluated on their ability to:

- prevent burn through of the material and provide adequate protection for adjacent combustibles from possible sources of ignition;
- limit temperature transmission through the material to a degree that will prevent ignition to underlying combustibles;
- resist melting, dripping or deformation so as to prevent sparks from spreading outside of confined and protected areas;
- maintain their flexibility, durability and structural integrity when charred areas are subjected to 90° bends;
- maintain their fire and temperature rise resistance properties when subjected to accelerated weathering tests intended to simulate exposure to light and water (ultra violet [uv] and condensation, respectively) conditions.

1.2.3 This standard is not intended to determine the suitability for all end use conditions of a product. Conditions under which welding pads, welding blankets and welding curtains are used vary widely. For example, these materials may be subjected to environments not anticipated by this standard. It is the responsibility of the end user to determine the suitability of the welding pad, welding blanket or welding curtain for the specific hot work operation.

1.2.4 This standard does not address the issue of toxicity or out-gassing of the materials when they are subjected to molten or other fire conditions resulting from hot work operations.

1.2.5 The use of the materials evaluated to this standard does not take the place of or eliminate the need to observe other hot work precautions such as the issuance of hot work permits, fire watches or the need to practice other safety precautions recommended in FM Global Property Loss Prevention Data Sheet 10-3 or NFPA 51B.

1.3 Basis for Requirements

1.3.1 The requirements of this standard are based on experience, research and testing and/or the standards of FM Approvals and other organizations. The advice of manufacturers, users, trade associations and loss control specialists was also considered.

1.3.2 Meeting the requirements qualifies a product as an FM Approved welding pad, welding blanket or

welding curtain, as appropriate, for hot work operations. Requirements prohibit component substitution without prior authorization by FM Approvals.

- 1.3.3 The requirements of this standard reflect tests and practices used to examine characteristics of welding pads, welding blankets and welding curtains for hot work operations for the purpose of obtaining FM Approval. These requirements are intended primarily as guides and strict conformity is not always mandatory. Welding pads, welding blankets and welding curtains having characteristics not anticipated by this standard may be Approved if performance equal or superior to that required by this standard is demonstrated, or if the intent of the standard is met. Alternatively, welding pads, welding blankets and welding curtains that meet all the requirements identified in this standard may not be Approved if other conditions that adversely affect performance exist or if the intent of this standard is not met.

1.4 Basis for Approval

Approval is based upon satisfactory evaluation of the product and the manufacturer in the following major areas:

- 1.4.1 Examination and tests on production samples to evaluate
- the suitability of the product;
 - the proper operation and performance of the product as specified by the manufacturer and required by FM Approvals and,
 - the durability and reliability of the product.
- 1.4.2 An examination of the manufacturing facilities and audit of quality control procedures to evaluate the manufacturer's ability to consistently produce the product as examined and tested, and the marking procedures used to identify the product. These examinations are repeated as part of the FM Approvals follow-up Facilities and Procedures Audit program.

1.5 Basis for Continued Approval

Continued Approval is based upon:

- production or availability of the product as Approved;
- the continued use of acceptable quality control procedures;
- satisfactory field experience;
- compliance with the terms stipulated in the Approval Agreement; and
- re-examination, if deemed necessary, of production samples for continued conformity to requirements.

1.6 Effective Date

- 1.6.1 The effective date of an Approval Standard mandates that all products tested for Approval after the effective date shall satisfy the requirements of that standard. Products FM Approved under a previous edition shall comply with the new version by the effective date or else forfeit Approval. The effective date shall apply to the entire Approval Standard, or, where so indicated, only to specific paragraphs of the standard.
- 1.6.2 The effective date for this standard is July 30, 2014 for compliance with all requirements.

1.7 System of Units

Units of measurement are U.S. customary units. These are followed by their arithmetic equivalents in International System (SI) units, enclosed in parentheses. Appendix B lists the selected units for qualities dealt with in testing these products; conversions to SI units are included. Conversion of U.S. customary units is in accordance with ANSI/IEEE/ASTM SI 10-97, *Standard for Use of the International System of Units (SI): The Modern Metric System*.

1.8 Applicable Documents

The following are standards, test methods and practices referenced in this standard:

American Society for Testing and Materials (ASTM) G-53 -96, *Standard Practice for Operating Light and Water Exposure Apparatus (Fluorescent UV-Condensation Type) for Exposure of Nonmetallic Materials*

FM Global Property Loss Prevention Data Sheet 10-3, *Hot Work Management* (10/2006)

National Fire Protection Association (NFPA) 51B, *Standard for Fire Prevention During Welding, Cutting and Other Hot Work* (2003)

FM Approvals Test Procedure Class Number 4950: FM Approvals Fire and Thermal Resistance Test

FM Approvals Test Procedure Class Number 4950: FM Approvals Paper Ignition Test

FM Approvals Test Procedure Class Number 4950: FM Approvals Charring Embrittlement Test

FM Approvals Test Procedure Class Number 4950: Accelerated Weathering Test

1.9 Definitions

For purposes of this standard, the following terms apply:

<i>Charring</i>	the formation of a carbonaceous residue as the result of pyrolysis or incomplete combustion.
<i>Fill</i>	the yard running selvage to selvage at the right angle of the warp. Also commonly referred to as the cross machine direction.
<i>Hot work</i>	any work involving burning, welding, or similar operations that produces sparks, flames or heat that is capable of initiating fires or explosions.
<i>Ignition</i>	the initiation of continuance of combustion.
<i>Molten substance</i>	metals in their liquified, elevated temperature state, as well as related non-metallic substances such as slag, dross and salt, handled at elevated temperatures.