



# Fire Protection Products

## 3M™ Interam™ Endothermic Mat E-5A-4

Technical Data Sheet

October / 2019

### Product Description

When properly installed, 3M™ Interam™ Endothermic Mat E-5A-4 provides a uniform covering that, when exposed to high temperatures, releases chemically-bound water to cool the outer surfaces of the wrap material and significantly retard heat transfer. Helps protect structural steel, critical electrical and communication systems, fuel oil piping, and large membrane penetrations in walls. 3M™ Interam™ Endothermic Mat E-5A-4 is non-flame supporting with low-smoke evolution. The mat is flexible which aids in installation and allows it to more easily be applied on complex shapes and around corners.

### Product Features

- Provides up to 4 hour fire protection for structural steel applications<sup>1</sup> in accordance with ASTM E119
- Provides up to 3 hour fire protection for electrical circuit applications<sup>1,2</sup> in accordance with ASTM E1725 and UL practice 1724
- Provides up to 2 hour protection for fuel-oil piping in accordance with UL 1489<sup>1</sup>
- Provides up to 2 hour equal F-rating and T-Rating in large membrane penetrations of rated wall assemblies<sup>1</sup>
- Provides protection against large hydrocarbon pool fires in accordance with ASTM E1529 (UL 1709)<sup>1</sup>
- Provides protection to structural, vessel, and electrical systems from the ISO 22899-1 jet fire exposure
- Chemically-bound water helps cool protective item(s) in the event of a fire
- Suitable for indoor or outdoor installations<sup>3</sup>
- Non-flame supporting and low-smoke evolution per ASTM E84
- Flexible – can be installed on complex shapes and around corners
- Easy-to-cut for various shapes and sizes
- Doesn't contribute to corrosion of steel or other metals
- For use in new or retrofit applications
- Easy-to-clean

<sup>1</sup> Specific fire-ratings are achieved via single layer or multiple layering of mat per listed system requirements. Per system details, additional layers of mat increase the hourly-rating of the installation.

<sup>2</sup> Under normal operating conditions, the mat's ambient conductivity allows heat, such as that generated by power cables, to dissipate rather than be trapped by it.

<sup>3</sup> Passes UL environmental aging and exposure for humidity, salt spray, wet-freeze-dry, acid spray, and solvent spray without the use of additional cladding or coverings.

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### Applications

3M™ Interam Endothermic Mat E-5A-4 is a flexible and space-saving wrap system that protects against fire spread and smoke contamination in a wide range of new or retrofit applications requiring full envelope protection, including: structural steel, electrical circuitry (e.g. raceways, cables, cable trays, junction boxes, conduits, distributed antenna systems, fire pumps), steam lines, fuel oil pipe, and membrane penetrations (e.g. spaces containing electrical panels, elevator call boxes, safe deposit boxes, medical gas boxes). Consult system details, contact your local 3M sales representative or call 1-800-328-1687 to inquire about application-specific installation guides). For further information, visit [3M.com/emat](http://3M.com/emat).

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### Specifications

Installation shall be in strict accordance with manufacturer's written instructions, as shown on approved shop drawings. 3M™ Interam™ Endothermic Mat E-5A-4 shall be a flexible, endothermic (i.e. heat absorbing) mat with low smoke evolution capable of being layered for 1-, 2-, 3- and 4-hour structural steel applications; 1-, 2- and 3-hour electrical system applications; 1- and 2-hour fuel-oil piping applications. The product shall be capable of achieving an equal F-Rating and T-Rating when applied to metallic utility boxes which penetrate the membrane of a fire-resistive wall assembly. When properly installed, 3M™ Interam™ Endothermic Mat E-5A-4 helps protect the encapsulated item(s) against heat penetration and flame spread. 3M™ Interam™ Endothermic Mat E-5A-4 shall be listed by independent test agencies such as UL, ULC, Intertek, or FM. Suitability for the intended application should be determined prior to installation.

#### **Typically Specified Master Format**

Section 05 12 00 – Structural Steel Framing

Section 07 80 00 – Fire and Smoke Protection

Section 07 81 00 – Applied Fireproofing

Section 07 84 00 – Firestopping

Section 23 11 00 – Facility Fuel Piping

Section 26 01 00 – Operation and Maintenance of Electrical Systems

Section 27 20 00 – Data communications

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### Standardized Test Methods and 3<sup>rd</sup> Party Certifications

ASTM, UL, ULC and ISO Standard Test Methods:  
ASTM E84 (UL 723) Surface Burning Characteristics of Building Materials  
ASTM E119 (UL 263) Fire Tests of Building Construction and Materials  
ASTM E1529 (UL 1709) Determining Effects of Large Hydrocarbon Pool Fires on Structural Members and Assemblies  
ASTM E1725 (UL 1724) Fire Tests of Fire-Resistive Barrier Systems for Electrical System Components  
ASTM E814 (UL 1479) Standard Test Method for Fire Tests of Penetration Firestop Systems  
CAN/ULC-S115 Standard Method of Fire Tests of Firestop Systems  
UL 1489 Fire Protection of Fuel-Oil Piping Systems  
ISO 22899-1 Jet Fire Testing  
IEEE P848 Ampacity Derating Factor for Fire-Protected Cable Systems  
R-Value at ambient  
Blast Testing  
Radiation Testing  
IEEE 344 Seismic Testing  
Acoustic Testing  
ASTM C871 Chemical Analysis  
ASTM E662 Smoke Density  
ASTM E162 Flame Spread  
BSS 7239 Toxic Gas Generation  
EN ISO 11925 Determination of Ignitability  
EN 13501-1 Classification of Reaction to Fire  
EN 13823:2010 Determination of Reaction to Fire  
ASTM E84 (UL 723) Surface Burning Characteristics

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### Performance and Typical Physical Properties

|  |   |                            |
|--|---|----------------------------|
| Color                                      | Silver exterior, white interior                                       |                            |
| Mat Lamination                             | 3 mil. aluminum/scrim   |                            |
| Mat Thickness                              | 0.408 in. (10.3 mm)   |                            |
| Roll Dimensions                            | 24.5 in. x 20 ft. roll (622 mm x 6.09 m)                              |                            |
| Roll Weight                                | 74.6 lbs. (33.8 kg)   |                            |
| Weight/Unit Area                           | 1.83 lbs/ft <sup>2</sup> (8.93 kg/m <sup>2</sup> )                    |                            |
| Bulk Density                               | 54 lbs/ft <sup>3</sup> (865 kg/m <sup>3</sup> )                       |                            |
| Mat Area/Roll                              | 40.8 ft <sup>2</sup> (3.79 m <sup>2</sup> )                           |                            |
| Surface Burning Characteristics (ASTM E84) | Flame Spread: 0.7<br>Smoke Developed Index: 0<br>Fuel Contribution: 0 |                            |
| Thermal Conductivity                       | 0.087 BTU/ft-hr-°F @ 200°F  | (0.151 W/m-°C @ 93°C)      |
|  | 0.101 BTU/ft-hr-°F @ 350 °F   | (0.175 W/m-°C @ 177 C)     |
|  | 0.058 BTU/ft-hr-°F @ 600 °F   | (0.100 W/m-°C @ 316 C)     |
|  | 0.068 BTU/ft-hr-°F @ 750 °F   | (0.118 W/m-°C @ 399 C)     |
|  | 0.081 BTU/ft-hr-°F @ 900 °F   | (0.140 W/m-°C @ 482 C)     |
| Mean Specific Heat                         | 0.331 BTU/lb-°F @ 75-400°F  | (1385 J/kg-°C @ 24-200 °C) |
|  | 0.276 BTU/lb-°F @ 75-1650°F   | (1155 J/kg-°C @ 24-900 °C) |
| Loss on Ignition:                          | 28%   |                            |
| Tensile Strength (with aluminum foil):     | 110 psi (758 KPa)   |                            |
| R Value at Ambient                         | 0.7 Hr ft <sup>2</sup> °F/Btu   |                            |
| Thermal Conductivity at Ambient            | 0.667 Btu-in/hr ft <sup>2</sup> °F                                    | (0.0962 W/(m K))           |

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### Installation Techniques

*Consult a 3M Authorized Fire Protection Products Distributor or Sales Representative for Applicable Listed Third Party (e.g. UL, ULC, Intertek, FM) drawings and system details. Refer to application-specific 3M™ Interam™ Endothermic Mat E-5A-4 Installation Guides for installation information.*

Recommended tools/materials: For a typical mat installation, the following tools may be of assistance: razor knife, large scissors or electric scissors (to cut mat), T-Square or similar straight edge (to help with straight cuts of mat), tape measure (to measure mat required), marking pen (to identify layers of mat), 3M™ Aluminum Foil Tape 425 (to seal cut edges of mat), rubber roller (to ensure good adhesion of tape), Scotch® Filament Tape 898 (to temporarily hold mat pieces in place - optional), stainless steel bands 1/2 in. wide x .020 in. min thick (12.7 mm x .5 mm) and band clips to help secure mat, band tensioners, 3M™ Fire Barrier Sealant CP 25WB+ (to fill seams).

Installation Considerations: Determine the appropriate number of layers required for your application. Ensure proper covering and protection of joints, seams, overlaps and any area that requires special cutting and fitting. Ensure proper use of banding to mechanically restrain the mat system. Refer to listed system details for sealant, banding requirements, layer requirements and other installation procedures.

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### Maintenance

No maintenance is expected to be required when installed in accordance with listed system details. Once installed, if any section of the 3M™ Interam™ Endothermic Mat E-5A-4 is damaged, the following procedure will apply: for damage to the outer metallic covering, install 3M™ Aluminum Foil Tape 425 to overlap a min. 2" (50.8 mm) in all directions. For more extensive damage (including damage to the mat material), contact 3M Fire Protection Products at 1-800-328-1687

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### Storage and Shelf Life

3M™ Interam™ Endothermic Mat E-5A-4 is stable under normal storage conditions, store in a dry warehouse environment in original, unopened container. Normal stock and stock rotation practices are recommended.

Product shelf life is indefinite when stored indoors.

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### Availability

Available from 3M Authorized Fire Protection Products Distributors. For additional technical and purchasing information, call 1-800-328-1687 or visit [3M.com/firestop](http://3M.com/firestop) and [3M.com/emat](http://3M.com/emat).

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### Safe Handling

Consult Safety Data Sheet prior to handling and disposing of 3M™ Interam™ Endothermic Mat E-5A-4.

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### Technical Information

The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.

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# 3M Fire Protection Products

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### Warranty, Limited Remedy and Disclaimer

Warranty: 3M warrants that the Product will be free from defects in material and manufacture during the Extended Warranty Period. If the Product does not conform to this warranty during the Extended Warranty Period, then 3M will, as the sole and exclusive remedy, provide replacement Product (or, if replacement material is unavailable, refund the Product purchase price) for the Project. 3M MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ARISING OUT OF A COURSE OF DEALING, CUSTOM, OR USAGE OF TRADE.

This warranty is void if the Product is not installed: (1) in accordance with the applicable UL or Intertek listings; (2) in accordance with the applicable Product data sheet and installation instructions; (3) in accordance with the specifications for the Project; and (4) by a 3M trained Installer. This warranty does not cover damage or failure caused by Product misuse, improper Product storage, improper Product installation, Product or Project abuse, natural disasters, or other force majeure events.

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### Limitation of Liability

EXCEPT FOR THE LIMITED EXTENDED WARRANTY AND REMEDY STATED ABOVE, AND EXCEPT TO THE EXTENT PROHIBITED BY LAW, 3M WILL NOT BE LIABLE FOR ANY LOSS OR DAMAGE ARISING FROM OR RELATING TO THE PRODUCT, WHETHER DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL, (INCLUDING, BUT NOT LIMITED TO, LOST PROFITS OR BUSINESS OPPORTUNITY), REGARDLESS OF THE LEGAL OR EQUITABLE THEORY ASSERTED, INCLUDING, BUT NOT LIMITED TO, WARRANTY, CONTRACT, NEGLIGENCE, OR STRICT LIABILITY.

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### Product Selection and Use

Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. As a result, customer is solely responsible for evaluating the 3M product and determining whether it is appropriate and suitable for customer's application, including conducting a workplace hazard assessment and reviewing all applicable regulations and standards (e.g., OSHA, ANSI, etc.). Failure to properly evaluate, select, and use a 3M product and appropriate safety products, or to meet all applicable safety regulations, may result in injury, sickness, death, and/or harm to property.



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