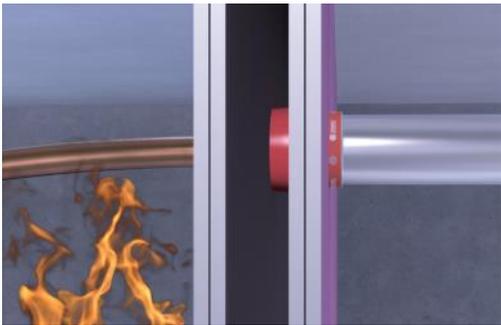




TENMAT

FIRE PROTECTION SOLUTIONS



MECHANICAL

FIRE STOPPING SOLUTIONS



INNOVATION

SAFETY

TENMAT is a leading manufacturer of unique, high performance intumescent materials and solutions with over 30 years of passive fire protection experience.

SERVICE

TENMAT manufacture innovative life safety products and we are committed to meeting our customers' needs and exceeding the latest quality standards worldwide.

QUALITY

A Leading Manufacturer for the Construction Industry

TENMAT's advanced passive fire protection materials are widely recognised as the industry standard for demanding applications within the construction industry.

Commitment to Quality

TENMAT operates an ISO 9001:2008 Quality Management System for the design, development and manufacture of specialised high performance engineering materials and components.

MECHANICAL

When voids are made through fire rated walls, floors, or ceilings, for installation of Mechanical Service Penetrations, the integrity of the structure is compromised.

TENMAT manufactures innovative Passive Fire Protection solutions for Mechanical Service Penetrations. The range of products utilise **TENMAT**'s advanced intumescent materials, that rapidly expand upon exposure to fire, sealing the penetration to prevent the spread of fire, smoke, and hot gases, and reinstating the fire rating of the structure.



FF109 Pipe Fire Sleeve

CE Marked Fire Sleeves for metal/plastic pipes
Up to 120 minutes fire rating

[More Information on Page 3-4](#)

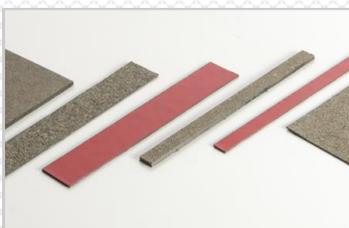


Firefly OverSleeve

Universal intumescent wrap/sleeve for metal/plastic/insulated pipes
Up to 120 minutes fire rating

[More Information on Page 5-6](#)

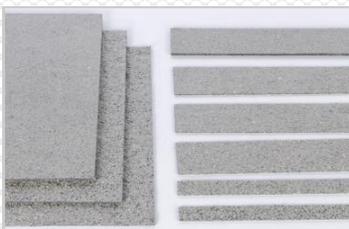
Intumescent Materials For Fire Wrap and Fire Collar applications:



FF160

Industry leading performance with extreme expansion and pressure generation

[More Information on Page 7](#)



FF107

Flexible intumescent material with exceptional expansion and speed of reaction

[More Information on Page 8](#)



FF109

Medium expansion compressible intumescent suited to vacuum form into shapes

[More Information on Page 8](#)



Examples of Projects & Test Data

Pipe Fire Sleeve and OverSleeve are third party fire tested
Widely accepted by Building Control and NHBC

[More Information on Page 9](#)

FF109 Pipe Fire Sleeves

Key Features:

- Up to EI120 Minutes Fire Rated in Partitions
- Up to EI240 Minutes Fire Rated in Blockwork
- CE Marked
- Acoustic, Thermal and Vapour seal



TENMAT's FIREFLY 109 CE Marked Pipe Fire Sleeves provide up to 4 Hours Fire Resistance to various plastic and metal pipes.

The Fire Sleeves have been fire tested to EN 1366-3:2009 & BS 476. The European Technical Approval (ETA-12/0332) and EC Certificate 1224-CPR-0341 enables the range to be CE Marked and used throughout the EU. The EN fire testing included pipes tested with Uncapped/Uncapped (U/U) pipe end configuration as required for ventilated systems.

The *FIREFLY* 109 Pipe Fire Sleeves are particularly suitable for use in plasterboard partitions, but can be used in blockwork walls and floors.

The Sleeves do not require any additional metal sleeving. The unique intumescent material is vacuum formed to shape which ensures controlled sealing of the plastic pipe.

Product Dimensions

| Internal Diameters Available | | | |
|------------------------------|-------|--------|--------|
| 17 mm | 48 mm | 80 mm | 127 mm |
| 21 mm | 54 mm | 89 mm | 140 mm |
| 27 mm | 60 mm | 102 mm | 159 mm |
| 34 mm | 67 mm | 108 mm | 169 mm |
| 42 mm | 76 mm | 114 mm | |

- Sleeves are supplied 300 mm long as standard
- Shorter lengths may be available on request
- Nominal wall thickness—25 mm

Examples of Approved Applications

Independently Third Party Assessed:

30 Minute Partitions

- Single Board from 72mm upwards

60 Minute Partitions

- Single & Double Board Systems
- Single Layer Ablative Coated Fire Batt

120 Minute Partitions

- Double Board Systems
- Double Layer Ablative Coated Fire Batt

CE Mark Approved:

3rd Party Assessed and Audited

BS 476 and BS EN 1366-3 Fire Tested

Including Uncapped/Uncapped testing

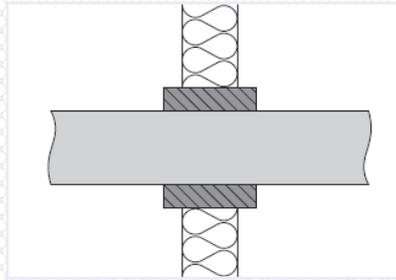
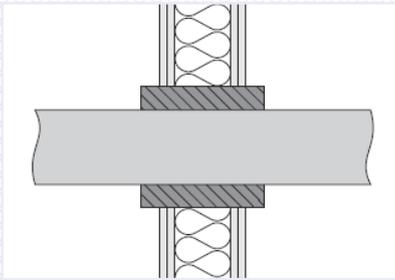
Fire Tested & Assessed for Blockwork

Up to 4 Hour Tested

Example Approved Applications

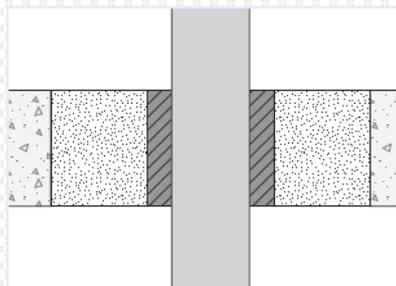
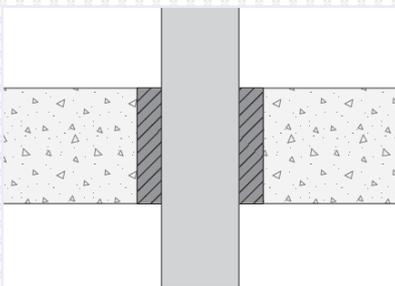
For details of further applications please contact **TENMAT**.

TENMAT's Pipe Fire Sleeve is approved for a wide range of applications, outlined on page 3. All details for approved applications can be seen in the ETA, fire test and assessment reports which are available to download from our website.



Wall Penetrations:

- Plasterboard (Approved with or without cavity insulation)
- Concrete/Masonry Wall
- Ablative Coated Fire Batt



Floor Penetrations:

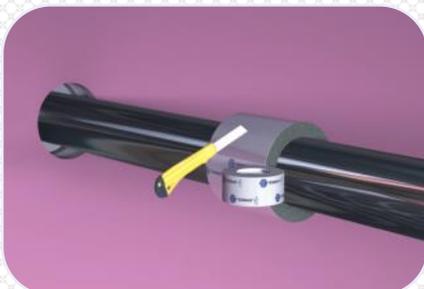
- Concrete floor
- Concrete floor with Firestop Compound

General Fitting Instructions

For detailed fitting instructions for various applications please contact **TENMAT**.



- Use the Fire Sleeve as a template when cutting the partition to provide a snug fit around the Fire Sleeve
- Cut sleeve to length if required
- Make a slit along sleeve length to allow fitting around pre-installed pipes



- Fit sleeve around pipe
- Slit should be resealed with Aluminium Foil Repair Tape provided
- Slide Fire Sleeve until required minimum protrusion either side of partition is obtained (see below)



- The Fire Sleeve must protrude each side of the partition by 25mm minimum for combustible pipes or flush for non-combustible pipes (can be fitted flush for combustible pipes through floors)*
- Plasterboard should be a snug fit, however any gaps (up to 5 mm) should be sealed with intumescent sealant

* Check with **TENMAT**/test data

Firefly OverSleeve

Key Features:

- 120 Minutes Fire Rated
- Low profile
- Can be retrofitted
- One Product Solution—suits wide range of insulation types, pipe materials, and diameters
- No cut back of insulation—maintains vapour seal



The **TENMAT FIREFLY** OverSleeve is a universal, one-product-fits-all solution for the firestopping of insulated metal pipes. The thin and flexible intumescent is quickly and simply wrapped directly on top of pipe insulation without the need to cut back, ensuring that thermal and vapour seal performance is maintained. The red branded foil can be easily checked and identified on site to confirm that firestopping is in place.

The unique *FIREFLY* intumescent material rapidly expands to crush and seal off the insulation to provide up to 120 minutes fire resistance to pipes ranging from 15mm up to 219mm diameter.

Product Dimensions

| Length | Width | Thickness | Contents of Pack as Supplied |
|---------|--------|-----------|----------------------------------|
| 1000 mm | 180 mm | 3 mm | 5 metre strips, plus repair tape |

General Fitting Instructions

For detailed fitting instructions for various applications please contact **TENMAT**.



- The *FIREFLY* OverSleeve can be retrofitted over insulated metal pipes.
- Cut the *FIREFLY* OverSleeve to the correct length for the pipe diameter, and wrap around pipe.
- Seal edges together using repair tape provided. Ensure no gap between meeting edges of OverSleeve.
- Slide *FIREFLY* OverSleeve into place.
- Seal around the *FIREFLY* OverSleeve at the wall, using intumescent acrylic sealant.
- *FIREFLY* OverSleeve must protrude by min. 25 mm in partitions/solid walls, and 60 mm in ablative coated fire batts.

Examples of Approved Applications

BS EN 1363-1: 1999 and BS EN 1366-3: 2009 Fire Tested

- Copper and Steel Pipes
- Phenolic Foam or Glass Mineral Wool Insulated Pipes
- Pipe sizes ranging 15 mm—219 mm
- Insulation thickness 15 mm—50 mm
- Suitable for Drywall/Plasterboard Partitions, Ablative Coated Fire Batts and Solid Walls



Fire Test Data

For further details please contact **TENMAT**.

| Pipe Type | Pipe Diameter (mm) | Pipe Wall Thickness | Insulation Type | Insulation Thickness | Fire Rating | | Wall Type |
|--------------|--------------------|---------------------|--------------------|----------------------|------------------|-------------------|----------------------|
| | | | | | Integrity (mins) | Insulation (mins) | |
| Copper/Steel | 15 | 1.0-14.2 | Phenolic Foam | 15-40mm | 120 | 120 | Partition/Solid Wall |
| Copper/Steel | 15-42 | 1.2-14.2 | Phenolic Foam | 20-40mm | 120 | 120 | Partition/Solid Wall |
| Copper/Steel | 42-67 | 1.2-14.2 | Phenolic Foam | 20mm | 120 | 60 | Partition/Solid Wall |
| Copper/Steel | 42-108 | 1.2-14.2 | Phenolic Foam | 40mm | 120 | 90 | Partition/Solid Wall |
| Copper/Steel | 42-108 | 1.2-14.2 | Phenolic Foam | 25-40mm | 120 | 60 | Partition/Solid Wall |
| Steel | 108-165 | 5-14.2 | Phenolic Foam | 40mm | 120 | 90 | Partition/Solid Wall |
| Steel | 108-165 | 5-14.2 | Phenolic Foam | 25-40mm | 120 | 60 | Partition/Solid Wall |
| Steel | 165-219 | 6.35-14.2 | Phenolic Foam | 25mm | 120 | 60 | Partition/Solid Wall |
| Steel | 165-219 | 6.35-14.2 | Phenolic Foam | 25-50mm | 90 | 90 | Partition/Solid Wall |
| Copper/Steel | 15 | 1.0-14.2 | Glass Mineral Wool | 20-30mm | 120 | 120 | Partition/Solid Wall |
| Copper/Steel | 15-42 | 1.2-14.2 | Glass Mineral Wool | 25-50mm | 120 | 90 | Partition/Solid Wall |
| Copper/Steel | 15-42 | 1.2-14.2 | Glass Mineral Wool | 50mm | 120 | 120 | Partition/Solid Wall |
| Copper/Steel | 42-67 | 1.2-14.2 | Glass Mineral Wool | 25mm | 120 | 60 | Partition/Solid Wall |
| Copper/Steel | 15 | 1.0-14.2 | Phenolic Foam | 15mm | 120 | 45 | Ablative Fire Batt |
| Copper/Steel | 15-42 | 1.2-14.2 | Phenolic Foam | 15-20mm | 120 | 45 | Ablative Fire Batt |
| Copper/Steel | 15-42 | 1.2-14.2 | Phenolic Foam | 20-40mm | 90 | 45 | Ablative Fire Batt |
| Copper/Steel | 42-67 | 1.2-14.2 | Phenolic Foam | 20mm | 90 | 45 | Ablative Fire Batt |
| Copper/Steel | 15-108 | 1.2-14.2 | Phenolic Foam | 20-40mm | 60 | 45 | Ablative Fire Batt |

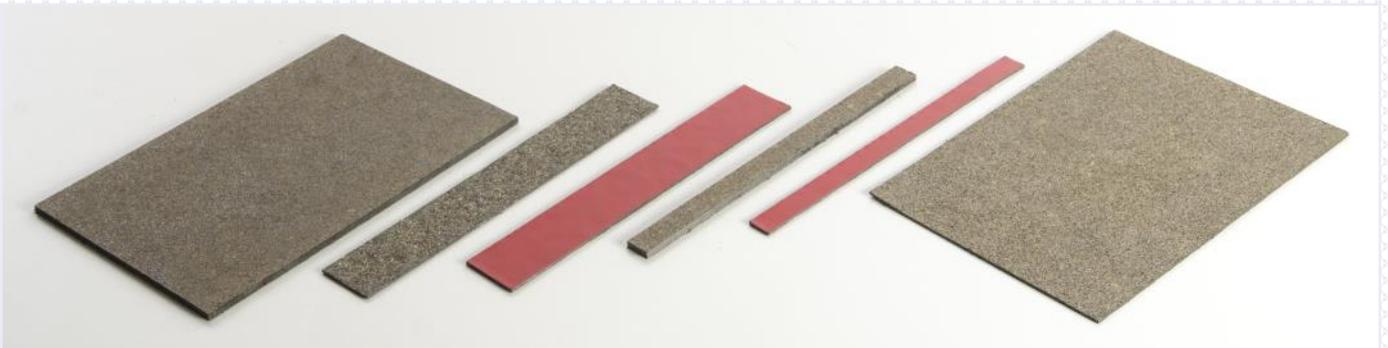
Intumescent Materials

TENMAT's range of Intumescent Materials are all developed and manufactured at our headquarters in Trafford Park, Manchester, UK.

To meet tomorrow's needs for innovative solutions, **TENMAT** operates a state-of-the-art in-house R&D laboratory and continuously develops highest quality products, with 30 years of experience in passive fire protection.

Our manufacturing plant allows us to manufacture materials in sheet form, from thicknesses of 0.5 mm to 60 mm, with dimensions of up to 1050 mm x 2100 mm. We can also vacuum form materials into 3D shapes.

The distinction in mechanical properties and reaction to fire characteristics between the different **TENMAT** grades of intumescents allows for a wide range of possible applications and uses, such as pipe sleeves, inserts for fire collars, and wraps.



FIREFLY 160

- High performance
- 60:1 volume expansion
- 40:1 thickness expansion
- Solid char structure
- Fast reaction
- Multi directional expansion

TENMAT FIREFLY 160 is an industry leading intumescent material developed to provide outstanding expansion characteristics combined with exceptionally solid and durable char structure.

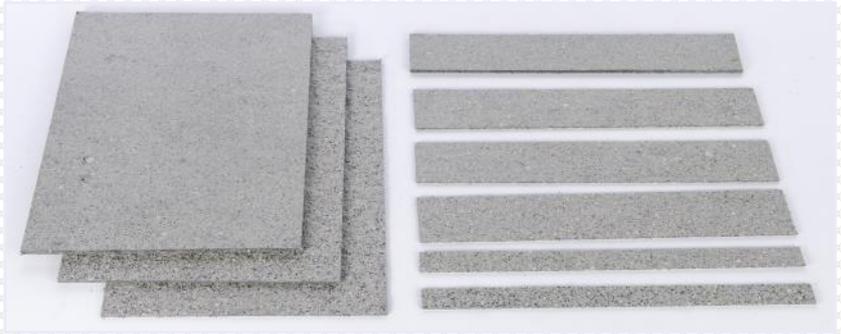
TENMAT FIREFLY 160 retains the fast reaction and high pressure generation characteristics whilst also offering a high level of controlled multi-directional expansion. The resulting performance is ideally suited to the more onerous European (EN) Fire Testing of Pipe Penetrations where Uncapped/Uncapped (U/U) testing is required.

It is suitable for a wide range of applications including penetration seals for pipes, pipe and duct fire wraps, fire collars, fire barriers and a variety of other construction joint and gap sealing applications where the high expansion characteristics lead to economical material usage.

| Property | Units | Typical Value |
|--|---------------------|---------------|
| Density | kg / m ³ | 1100 |
| Free Expansion Ratio (@ 400 °C, 15 mins) | Thickness Volume | 40:1 60:1 |
| Activation Temperature (under 50 psi load) | °C | 200 |

FIREFLY 107

- 30:1 Free Expansion
- Fast reaction
- High pressure generation
- Flexible



| Property | Units | Typical Value |
|--|---------------------|---------------|
| Density | kg / m ³ | 630 |
| Free Expansion Ratio (@ 400 °C, 15 mins) | | 30:1 |
| Activation Temperature (under 50 psi load) | °C | 180-200 |
| Pressure Generation Expansion (@ 400 °C) | Bar | 17.0 |

TENMAT FIREFLY 107 is an exceptionally powerful intumescent which combines fast reaction with high expansion and pressure generation, producing a solid char of good integrity. It is suitable for a wide range of applications including penetration seals for pipes, fire wraps, fire collars, cladding and rainscreen cavity fire barriers and other construction joint and gap sealing applications where the high expansion characteristics lead to economical material usage.

FIREFLY 109

- 5:1 Free Expansion
- Highly compressible
- Expands in controlled manner
- Can be vacuum formed into shapes



| Property | Units | Typical Value |
|--|---------------------|---------------|
| Density | kg / m ³ | 200 |
| Free Expansion Ratio (@ 400 °C, 15 mins) | | 5:1 |
| Activation Temperature (under 50 psi load) | °C | 200 |

TENMAT FIREFLY 109 is a highly compressible intumescent material which expands to form a resilient and stable char. The material is available in sheets or alternatively in formed shapes.

TENMAT FIREFLY 109 is a lower density material with lower expansion characteristics; this allows the material to function in a controlled manner without the need for additional restraints. Applications include pipe, cable basket, vent duct, or downlight penetration seals.

Examples of Projects

Commercial/Residential

- The Leadenhall Building
- London Olympic Village
- One Tower Bridge

Medical/Healthcare

- Royal Stoke University Hospital
- Salford Royal Hospital



The Leadenhall Building (Cheesegrater)

Test Data

FF109 Pipe Fire Sleeve

| Report Type | Fire Test Lab | Report Number | Construction | Fire Rating |
|-----------------------------|----------------------|---------------|-------------------------------|---------------|
| Certificate | BM Trada | 1224-CPR-0341 | Various | CE Marked |
| European Technical Approval | BM Trada | ETA 12/0332 | Various | Up to 240 |
| Classification | Chiltern | CR12001 A | Plasterboard | 30-120 |
| Classification | Chiltern | CR12001 B | Plasterboard/Concrete | 90-240 |
| Classification | Chiltern | CR12001 C | Plasterboard/Concrete | 120-240 |
| Assessment | Exova Warringtonfire | 33654700.2 | Plasterboard, Concrete, Floor | 60-120 |
| Assessment | IFC Group | PAR/13814/02 | Ablative Coated Fire Batt | 120 |
| Fire Test | Chiltern | A03187 Rev F | Various | 10-120 |
| Fire Test | Chiltern | RF11067 | Plasterboard | 30-120 |
| Fire Test | Chiltern | IF11082 Rev A | Concrete | 120 |
| Fire Test | Chiltern | IF11059A | Concrete | 90-120 |
| Fire Test | Chiltern | IF11049 | Concrete | 120 |
| Fire Test | Chiltern | IF09045 Rev A | Concrete | 240 |
| Fire Test | Chiltern | IF04040a | Blockwork Floor | 120 |
| Fire Test | Chiltern | IF03030 | Plasterboard | 120 |
| Fire Test | Chiltern | IF02087A | Masonry Floor | 120 |
| Fire Test | Chiltern | IF02087B | Plasterboard | 120 |
| Fire Test | Chiltern | IF02045 AR1 | Ablative Coated Fire Batt | 60-120 |
| Acoustic Test | BRE | 239037 | Plasterboard | Pass |
| Thermal Test | BBA | BC 0474 | N/A | 0.035 W/(m·K) |

Firefly OverSleeve

| Report Type | Fire Test Lab | Report Number | Construction | Fire Rating |
|-------------|---------------|----------------|---|-------------|
| Fire Test | Exova | BMT/FEP/F15079 | Plasterboard, Ablative Coated Fire Batt | Up to 120 |

LEADERS IN INNOVATION

TENMAT's ongoing commitment to the development of new products and solutions in the field of composite and engineering materials has been recognised in 2012 and 2013 by receiving the highest official award in Great Britain, the prestigious Queen's Award for Enterprise in the categories Innovation and International Trade.

Custom Component Manufacture

TENMAT materials can be supplied as semi-finished products or, if required by the customer, our ISO9001-2008 certified machine shop can produce fully machined items to specification.

Materials Expertise

With over 100 years of experience in Composite Engineering Materials, **TENMAT** offers customers information on material developments, characteristics, suitability, and applications.

Technical Ingenuity

TENMAT has been proven to consistently produce industry leading advanced composites, developed in our in-house R&D Technical Laboratories.

Problem Solvers

The diverse range of high performance composite materials manufactured by **TENMAT**, offer the engineer a wide array of solutions to improve wear resistance, withstand extreme temperatures, resist high impacts, and survive in harsh, corrosive environments. Our Technical Services department is available to provide guidance on material selection, part design and technical solutions.

Component Design

If design services, drawings and fitting instructions are required, **TENMAT** will work with customers in developing the most suitable solution to their particular problem.





FEROFORM **RAILKO** *FEROGLIDE* *FEROBIDE*

REFRAVER **REFEL** **ARCLEX**

FIREFLY **NITRASIL** **SINDANYO**

TENMAT is committed to the highest standards in customer service and our international staff is looking forward to assist you.

CORPORATE HQ

TENMAT Ltd.

Ashburton Rd West
Trafford Park
Manchester M17 1TD
England
Tel.: +44(0)161 872 2181
Fax: +44(0)161 872 7596
Email: info@tenmat.com
Web: www.tenmat.com

NORTH AMERICA

TENMAT Inc.

23 Copper Drive
Newport, DE 19804
USA
Tel.: +1 302-633-6600
Fax: +1 302-633-6838
Email: info@tenmatus.com
Web: www.tenmatus.com

SCANDINAVIA

TENMAT

Stureplan 13
111 45 Stockholm
Sweden
Tel: +46 (0) 8 612 68 50
Fax: +44 (0) 161 872 7596
Email: info@tenmat.com
Web: www.tenmat.com

Visit us on the web at www.TENMAT.com

ITALY

TENMAT

Via Dante, 2/48
16121 Genova
Italy
Tel.: +39 (0) 10 5451343
Fax: +39 (0) 10 5760553
Email: info@tenmat.it
Web: www.tenmat.it

FRANCE

TENMAT

56 Avenue Foch
77370 Nangis
France
Tel.: +33 (0) 1 60 585656
Fax: +33 (0) 1 64 083617
Email: info@tenmat.fr
Web: www.tenmat.fr

GERMANY

TENMAT

Tel.: +49 (0) 7151 1338468
Fax: +44 (0) 161 872 7596
Email: info@tenmat.de
Web: www.tenmat.de