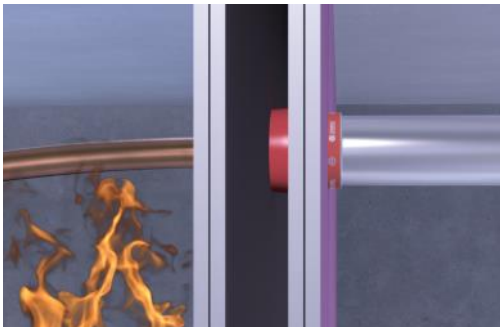
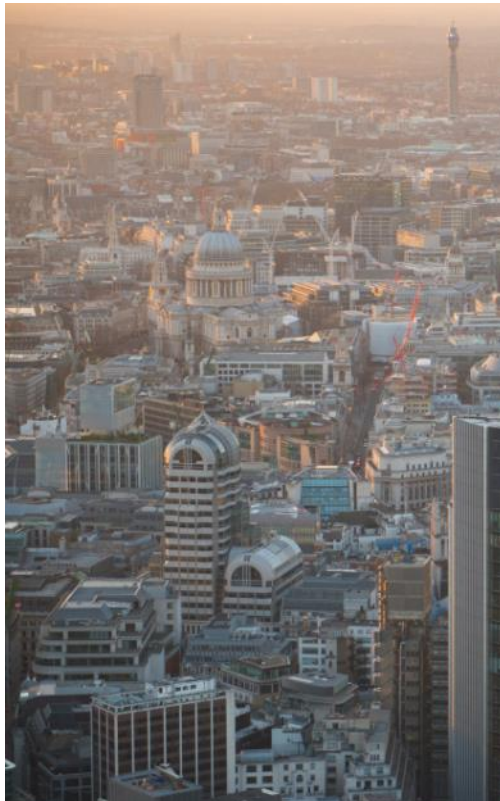


# **TENMAT** FIRE PROTECTION SOLUTIONS



## 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](#)

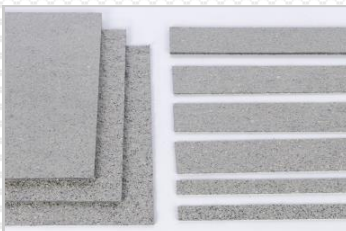
**Intumescent Materials** For Fire Wrap and Fire Collar applications:



## 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

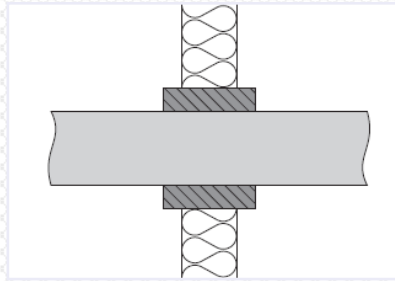
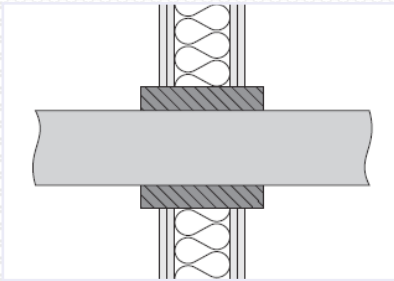
### Fire Tested & Assessed for Blockwork

Up to 4 Hour Tested

## Example Approved Applications

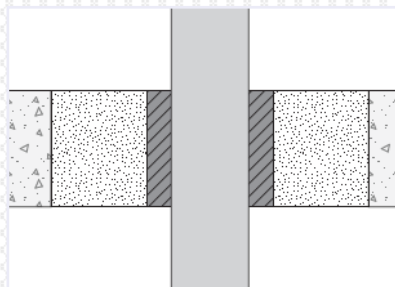
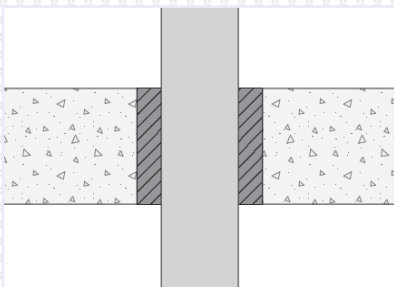
For details of further applications please contact **TENMAT**.

**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

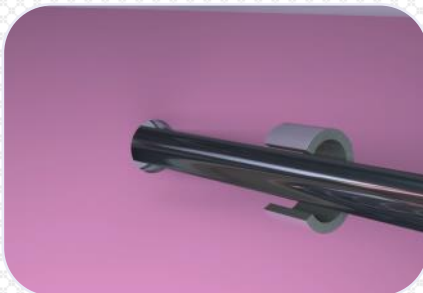


### Floor Penetrations:

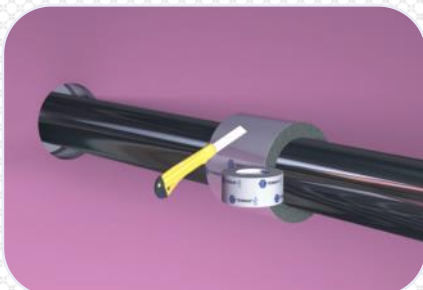
- Concrete floor
- Concrete floor with Firestop Compound

## 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.

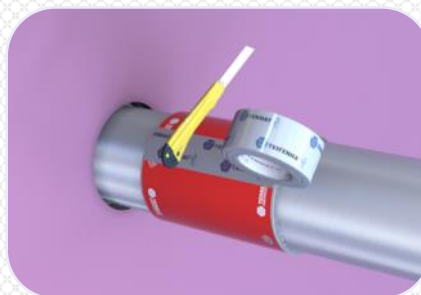
The unique *FIREFLY* intumescent material rapidly expands to crush and seal off the insulation to provide up to 120 minutes fire resistance to pipes ranging from 15mm up to 219mm diameter.

## 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

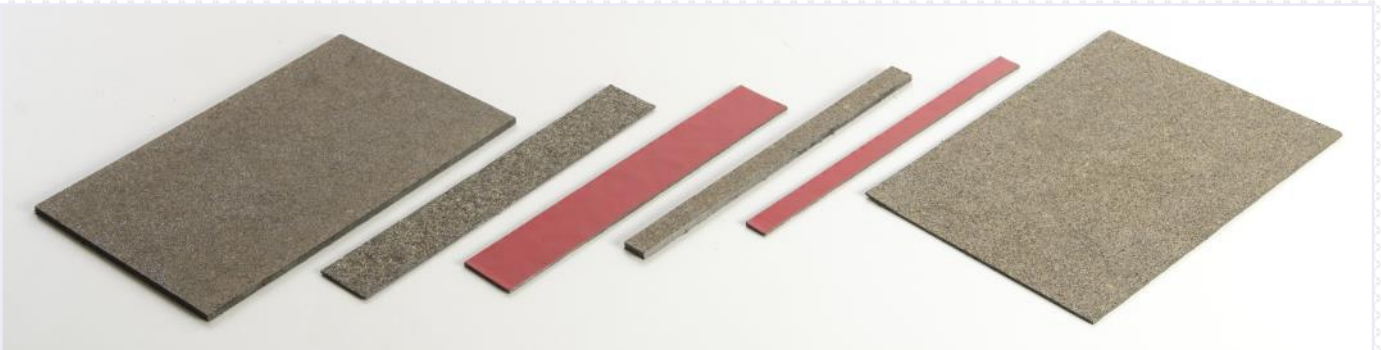
# Intumescent Materials

**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.

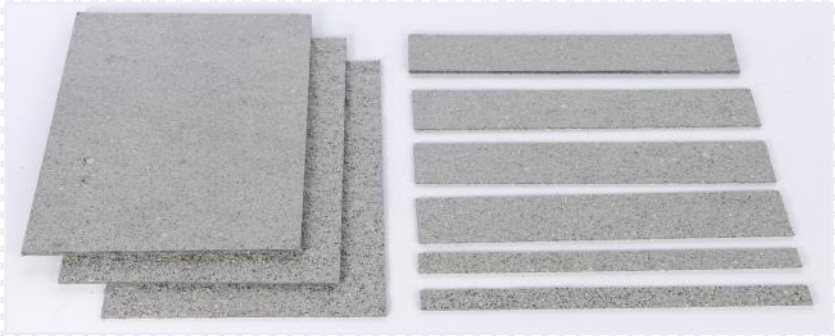
It is suitable for a wide range of applications including penetration seals for pipes, pipe and duct fire wraps, fire collars, fire barriers and a variety of other construction joint and gap sealing applications where the high expansion characteristics lead to economical material usage.

Property	Units	Typical Value
Density	kg / m <sup>3</sup>	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 <sup>3</sup>	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 <sup>3</sup>	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.

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