

# **FIREPRO<sup>®</sup>**

# **FIRE TUBE**

Fire protection for process pipes and structural steel



## **FIREPRO® FIRE TUBE**

Fire Tube is a rigid, pre-formed cylindrical section of **ROCKWOOL**.

Fire Tube has been specially engineered to provide fire protection to circular section structural steel, and to process, sprinkler and service pipes.





### Advantages

- Available in a range of wall thicknesses to accommodate specific fail temperatures
- Manufactured to accommodate pipes and CHS sizes up to 610mm Ø
- Up to 4 hours fire resistance
- Excellent thermal and acoustic insulation
- A1 Non-combustible
- Water repellent

### Description

FIREPRO Fire Tube is a preformed cylindrical section which is manufactured using high density ROCKWOOL stone wool. Fire Tube is available in both plain and foil faced options.

Fire Tube is available to suit common steel structural column and pipe diameters in the range between 21mm - 610mm and is supplied in lengths of 1000mm.

Standard wall thicknesses\*: 25, 40, 50, 60 and 70mm (excludes 610 diameter)

### Applications

Fire Tube has been designed to provide fire protection of up to 4 hours and is suitable for use with:

- Structural steel
- Circular Hollow Sections (CHS)
- Solid bars
- Sprinkler pipes
- Process pipework

\* Other wall thicknesses may be available subject to quantity or can be accommodated on site by dual layering one tube over another.

## Performance

### Fire performance

Fire report CC 276856A details the expected fire resistance performance relating to critical steel temperatures of 50, 100, 150, 200, 250, 300, 350, 400 and 550°C for periods of up to 4 hours.

The required wall thickness of Fire Tube to provide a particular fire resistance for a specified period depends on the diameter, wall thickness and critical (fail) temperature of the steel column or pipe. However, in the case of pipes, the critical temperature is likely to depend on its contents.

### Structural steel fire protection

The section factors  $A/V$  ( $H_p/A$ ) for standard structural steel sections can be found in the ASFP Yellow Book or can be calculated for each element by dividing the perimeter (circumference) exposed to fire ( $A$ ) by the cross sectional area ( $V$ ). For circular sections (including pipes), the following, simplified formulae can be used to calculate the  $A/V$  section factors:-

- Solid sections:  $A/V = 4 / OD$
- Hollow sections:  $A/V = OD / (thk (OD - thk))$
- Where  $OD$  = outside diameter in m
- Where  $thk$  = wall thickness in m

### Worked example for hollow section

- Outside diameter: 219.1mm (0.2191m)
- Wall thickness: 8.0mm (0.008m)
- Circumference ( $A$ ): 0.6884m
- Cross sectional area ( $V$ ): 0.00531m<sup>2</sup>
- Section factor ( $A/V$ ): 130m<sup>-1</sup>

Tables 1 and 2 provide the wall thickness of Fire Tube necessary to restrict the core design temperature of circular steel elements (based on their limiting section factors) to 400°C and 550°C respectively, during exposure to cellulosic fire test. The design temperature is defined as the mean temperature at which a beam or column is assumed to be capable of supporting a specified load. Similar tables for critical temperatures of 50°C, 100°C, 150°C, 200°C, 250°C, 300°C and 350°C are also available from the ROCKWOOL Technical Solutions Team.

**Table 1**  
Critical steel temp  
400°C (for offshore  
and marine)

Fire Tube wall thickness (mm)	Maximum A/V section factors for 550°C critical temperature – fire resistance (mins)					
	30	60	90	120	180	240
25	250	91	37	24	X	X
30	250	130	48	29	X	X
40	250	250	74	43	23	X
50	250	250	111	59	31	21
60	250	250	165	79	39	26
70	250	250	250	105	48	31
75	250	250	250	120	53	34
80	250	250	250	137	58	37
90	250	250	250	182	70	43
100	250	250	250	246	84	50

**Table 2**  
Critical steel temp 550°C (for load-bearing structural building frameworks)

Fire Tube wall thickness (mm)	Maximum A/V section factors for 550°C critical temperature – fire resistance (mins)					
	30	60	90	120	180	240
25	250	250	83	44	23	X
30	250	250	111	56	28	19
40	250	250	193	84	40	26
50	250	250	250	121	53	34
60	250	250	250	172	68	42
70	250	250	250	245	85	52
75	250	250	250	250	95	57
80	250	250	250	250	106	62
90	250	250	250	250	129	73
100	250	250	250	250	158	86

**Pipework fire protection**

The critical failure temperature of a pipe will depend on the material it is made of, or its contents e.g. water or oil. Table 3 provides the minimum required wall thickness of Fire Tube for a variety of critical failure temperatures to provide 60 minutes fire resistance to a 219.1mm OD steel pipe with an 8mm wall thickness - Section factor (A/V) of 130m<sup>-1</sup>.

**Table 3**  
Critical steel temp 550°C (for load-bearing structural building frameworks)

Critical temperature of pipe material or contents	Wall thickness of Fire Tube (mm)
100°C	100
150°C	75
200°C	60
250°C	50
300°C	50
350°C	40
400°C	30
550°C	25

## Technical information

### Standards and approvals

Fire Tube conforms to BS 3958: Part 4, 'Bonded preformed mineral wool pipe sections'.

Full-scale independent test data has been verified and assessed by BRE Global in Fire report number: CC 276856A. The fire performance of Fire Tube has been reviewed by the Fire Test Study Group for inclusion in the ASFP Yellow Book, endorsed by the Steel Construction Institute.

This product has been authorised for use in LUL surface and sub-surface premises when installed in accordance with this datasheet - please refer to the LUL Approved Product Register website [www.LU-apr.co.uk](http://www.LU-apr.co.uk) for specific details.

### Product information

Property	Description
Length	1000mm
Internal Diameter Range	21 – 610mm
Thickness Range	25 – 100mm
Reaction to Fire Classification	Euroclass A1
Fire Resistance	Up to 4 hours

## Installation

FIREPRO Fire Tube is light and easy to cut to shape using a saw or a sharp knife.

Abutted sectional joints/ tube ends of the Fire Tube (including the partially split 'hinge' and the tube ends) are to be applied with FIREPRO® Glue prior to application. All joints should be held firmly together with temporary bands of steel wire, jubilee clips or plastic cable ties at 200mm centres until adhesive within joints and between Tube ends has fully cured.

If installed outdoors, Fire Tube must be protected from the weather. Prior to use, Fire Tube should be stored indoors or protected by a weather proof covering

## Specification clauses

FIREPRO Fire Tube is associated with the following NBS clauses:

P12 Fire stopping systems

- 375 Pipe collar: Insulated wrap

## Disclaimers

This product should only be utilised for applications as outlined in the relevant ROCKWOOL product datasheet and in accordance with the relevant ROCKWOOL Fire Resistance Testing. Additionally, the product must be installed in accordance with the current ROCKWOOL guidelines. For further information please visit [www.rockwool.co.uk](http://www.rockwool.co.uk) or contact our Technical Solutions Team on 01656 868490

## Supporting information

For further information relating to any aspect of the FirePro range, please refer to the applicable ROCKWOOL standard details at [www.rockwool.co.uk](http://www.rockwool.co.uk) or contact the ROCKWOOL technical solution team on 01656 868490 or [technical.solutions@rockwool.co.uk](mailto:technical.solutions@rockwool.co.uk).

## Sustainability

As an environmentally conscious company, ROCKWOOL promotes the sustainable production and use of insulation and is committed to a continuous process of environmental improvement.

All ROCKWOOL products provide outstanding thermal protection as well as four added benefits:



**Fire resistance**



**Acoustic comfort**



**Sustainable materials**



**Durability**

## Health & Safety

The safety of ROCKWOOL stone wool is confirmed by current UK and Republic of Ireland health & safety regulations and EU directive 97/69/EC: ROCKWOOL fibres are not classified as a possible human carcinogen.

A Material Safety Data Sheet is available and can be downloaded from [www.rockwool.co.uk](http://www.rockwool.co.uk) to assist in the preparation of risk assessments, as required by the Control of Substances Hazardous to Health Regulations (COSHH).

## Environment

Made from a renewable and plentiful naturally occurring resource, ROCKWOOL insulation saves fuel costs and energy in use and relies on trapped air for its thermal properties.

ROCKWOOL insulation does not contain (and has never contained) gases that have ozone depletion potential (ODP) or global warming potential (GWP).

ROCKWOOL is approximately 97% recyclable. For waste ROCKWOOL material that may be generated during installation or at end of life, we are happy to discuss the individual requirements of contractors and users considering returning these materials to our factory for recycling.



## Interested?

For further information, contact the Technical Solutions Team on 01656 868490 or email [technical.solutions@rockwool.co.uk](mailto:technical.solutions@rockwool.co.uk)

Visit [www.rockwool.co.uk](http://www.rockwool.co.uk) to view our complete range of products and services.

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**ROCKWOOL Limited**

Pencoed  
Bridgend  
CF35 6NY

Tel: 01656 862 621  
info@rockwool.co.uk  
rockwool.co.uk

