

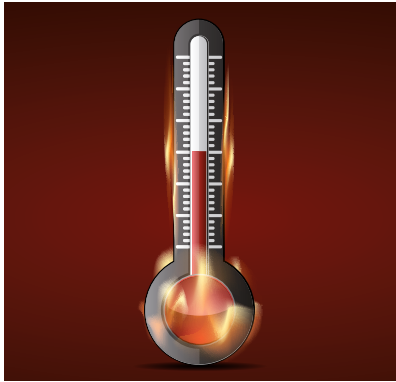
# maxit fire protection plaster certified fire resistance

maxit ip 160 |  
certified fire protection plaster

## maxit ip 160 – certified fire protection plaster



## maxit ip 160 certified fire protection plaster



### Protection:

In the event of fire, load-bearing structural elements are quickly subjected to extreme temperatures. As a result, they may fail and even collapse. **maxit ip 160** is a spray mortar system to stop fire spread. It effectively protects concrete and steel structures as well as building structures made of other materials from the destructive effects of such temperatures.

**maxit ip 160** does this with the thinnest layer thickness. This has been proven in a wide variety of fire tests and fire scenarios, depending on the area of application. For example according to the RWS fire curve for tunnel fires with longer exposure times and temperatures up to 1350 °C.



### Application:

Using **maxit multi 280** as a bonding agent, **maxit ip 160** is applied by wet spraying directly on the structural elements, following their profiles. It usually requires no mechanical plaster lathing or reinforcement mesh. The surface can be left unfinished, smoothed or float-felted. For a more decorative appearance, the surface can be further enhanced using **maxit multi 270 S**. It is possible to apply further layers of plaster, insulation, tiles or protective coatings. **maxit ip 160** is a CS II render suitable for exterior application and when using the application methods described above, it also meets the requirements of tunnel construction. In addition, **maxit ip 160** is ideal for use in high moisture areas such as multi-storey car parks, facades, underground car parks, basements.

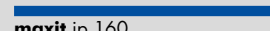
### Comparison of layer thickness



Sprayed concrete



Fire protection plaster according to DIN 4102 T4



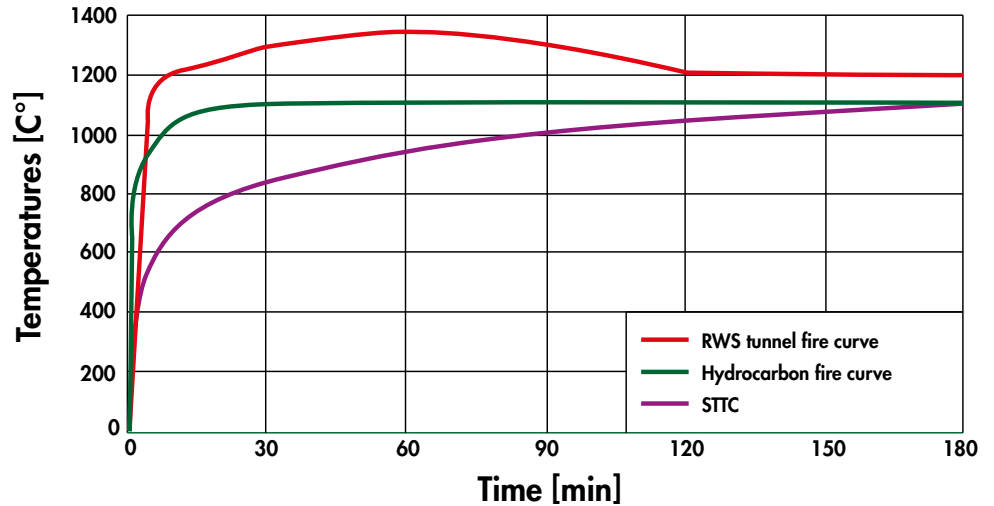
**maxit ip 160**

### Your benefits:

- ✓ suitable for indoor and outdoor use
- ✓ minimum layer thickness
- ✓ low consumption rates
- ✓ minimal restriction of enclosed space
- ✓ maximum fire protection insulation
- ✓ supplied as ready-mixed mortar in bags and bulk silos
- ✓ fast application
- ✓ fast finishing
- ✓ high tensile and compressive strength
- ✓ perfectly smoothable and shapeable
- ✓ suitable for subsequent skim coating or painting
- ✓ high load-bearing capacity for subsequent installation of e.g. insulation or tiles
- ✓ tested for the RWS curve with a prolonged exposure time to fire of at least 180 minutes
- ✓ tested according to DIN 4102 T4 and DIN EN 13381
- ✓ complies with DIN EN 998-1, DIN 18550 and DIN 4102 T4

## Application areas

## Fire curves



### Structural engineering

**maxit** ip 160 has been designed for the fire protection cladding and strengthening of load-bearing structural elements made of steel, concrete, brick, timber frame, wood and other building materials in new or existing buildings.

Depending on the structural element and the required fire resistance, **maxit** ip 160 is applied in different thicknesses.

Steel members are fire-rated based on the section factor (surface area of the member per unit length ( $A_m$ ) divided by the volume per unit length ( $V$ )) of the respective steel profile in accordance with DIN 4102 T4 and DIN EN 13381-4 (see data sheet).

Structural elements made of concrete and other building materials are rated based on the equivalent fire rating for concrete according to DIN 13381-3 and table 5.1 of DIN 4102 T4 (see data sheet and chart on page 4).



### Industrial construction

Plants in the chemical and petrochemical industry are sometimes subject to more stringent fire protection requirements than in civil engineering, depending on the combustibility of the substances and media present, e.g. hydrocarbons (see chart above).

#### Particularly challenging:

→ free-standing, weathered outdoor installations

**maxit** ip 160 is particularly suitable for interior and exterior use due to its classification as CS II plaster/render.

**maxit** ip 160 is easy to smooth and its resistance can be further increased by additional measures such as top coats, reinforcing fabrics or protective coatings.



### Tunnel construction

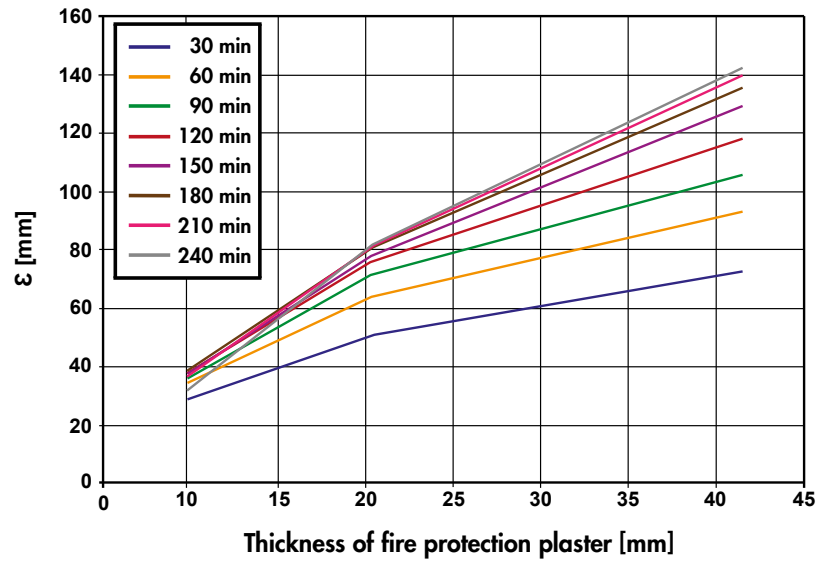
In the event of tunnel fires, the vapour pressure building up inside concrete structures due to the rapidly rising and extremely high temperatures can lead to concrete fractures, spalling and even greater destruction.

The test criteria of the RWS fire curve, which simulates such a tunnel fire in a fire test, are correspondingly demanding. Temperatures up to 1350 °C occur. **maxit** ip 160 passed this test with a thin layer thickness and a longer exposure time to fire without any damage (see chart above).

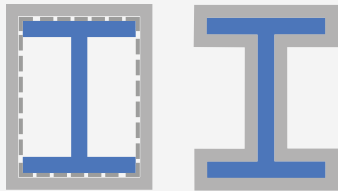
**maxit** ip 160 features excellent inherent properties, which also suggests its suitability for use in tunnels. In addition to its characteristic values such as tensile strength, compressive strength, capillary water absorption capacity and water-vapour permeability, the multiple surface design possibilities, including smoothing, felt-floating, top-coating and also the application of special coatings, testify to this.

# Fire protection cladding - Structural designs

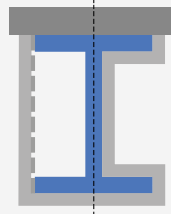
## Equivalent concrete thickness



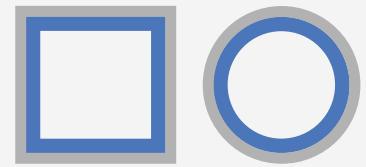
**Steel columns**  
(box or profile protection)



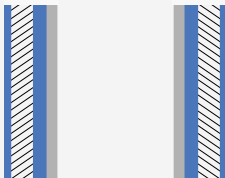
**Steel beams**  
(box or profile protection)



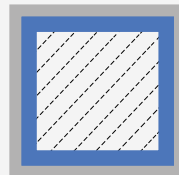
**Hollow sections**



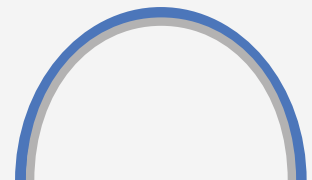
**Concrete walls, masonry or timber framing**



**Concrete column**

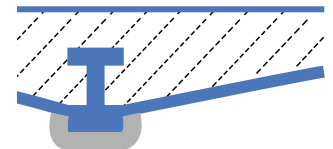


**Tunnel coating**

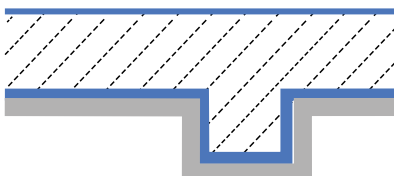


**Vaulted ceilings**

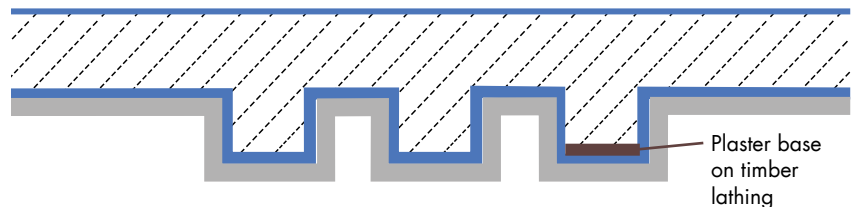
made of concrete or bricks with exposed steel flanges



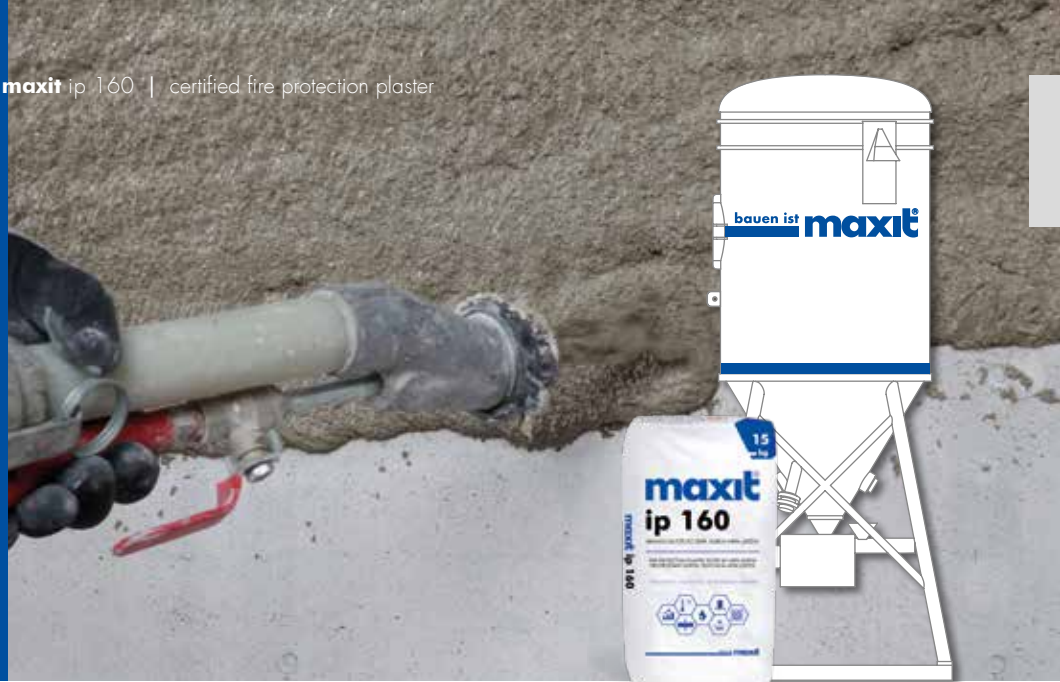
**Concrete ceiling and joists**



**Ribbed concrete floor**



## Product information



### Product description

**maxit ip 160** is a mineral-based fire protection plaster that can be used as specified in the European Technical Assessment ETA-19/0667 and DIN 4102 T4, Section 5.1.4, point 3-6.

**maxit ip 160** consists of cement, slaked lime, vermiculite, perlite and additional aggregates, and meets the requirements of plastering mortar group PII according to DIN 18550, CS II according to DIN EN 998-1

**maxit ip 160** has been tested by MFPA Leipzig according to DIN EN 13381-3/-4 in conjunction with DIN EN 1363-1, with a thermal load exposure of up to 240 minutes according to the standard time-temperature (STT) curve and up to 180 minutes according to the RWS tunnel fire test criteria.

### Product properties

**maxit ip 160** is a flexible, easy-to-apply fire protection plaster that is also suitable for creating textured finishes. In addition to its high resistance to heat, its low weight and thin layer thicknesses are impressive.

### Uses

For upgrading the fire protection of concrete constructions, load-bearing structural elements made of steel, concrete, masonry and other building materials.

### Silo and mixing equipment

Supplied in bags and as silos. Can be applied manually or with any standard rendering machine or mixing pump, such as M3, Duo mix, G4 or S48.

Recommended equipment:

- Supply hose DN 35 (length up to 15 m)
- Spray hose DN 25
- Mixing shaft
- Rotor und Stator D6/3, D4/1

### Substrates

**maxit ip 160** fire protection plaster is applied in accordance with the test report **without plaster lathing** and with a mineral bonding layer (**maxit multi 280**) to

- concrete ceilings
- concrete walls
- masonry walls
- brick ceilings
- concrete columns
- steel columns
- steel beams

**maxit ip 160** fire protection plaster is applied **with plaster lathing** and if necessary with a mineral bonding layer to

- timber-framed walls
- wooden substrates
- arbitrary substrates

Adequate adhesion to the plaster base in accordance with DIN 18550 and DIN 4102-4 is prerequisite for fire protection effectiveness.

### Application instructions

**maxit ip 160** fire protection plaster is applied by qualified contractors. The application of plaster lathing, if necessary, is to be carried out in accordance with DIN 4121 and DIN 4102-4. Particulars, minimum dimensions and minimum plaster thicknesses for concrete elements subject to the fire resistance class are to be determined in each individual case by qualified planners.

### Costs

**maxit ip 160** fire protection plaster is always an economical way of upgrading fire protection. The expense is always measured by the degree of improvement in fire protection and therefore the necessary thickness and quantity of fire protection plaster in accordance with DIN 4102-4. In addition, the use of a bonding layer or plaster lathing as well as the total surface area of the object must be taken into account.

### Please note

The fire resistance duration and thus the fire resistance class of a component depend essentially on the following factors:

- fire exposure, one- or multiple-sided
- building material or composite used
- structural element dimensions, cross-sectional dimension, slenderness, axis distances etc.
- structural design, connections, supports, brackets, mounts, joints, fasteners and jointing materials etc.
- static system (statically determinate or indeterminate support, loads carried via 1 or 2 axes, clamps etc.)
- degree of utilisation of the strength of the building materials used due to external loads and arrangement of cladding (sheathing, plasters, false ceilings, facing shells etc.)
- further applications according to industrial and tunnel construction guidelines in the planning stage

### Important notice

Planning and consulting activities relating to fire protection are the sole responsibility of the qualified planner.

The current technical data sheet must be observed at all costs and is available at [www.maxit.de](http://www.maxit.de).



## Design options using **maxit** ip 160 fire protection plaster



Skim-coated surfaces



Following the contour accurately



Ceiling beams with box protection



Reprofiled ribbed ceiling



Steel structures as a design element



Left unfinished...



...and yet good-looking



Somewhat more rustic: surface slightly trowelled



Capitals adapted to ceiling stucco



Sprayed structural steel section left unfinished



Steel column with corner beads



Sprayed concrete column left unfinished



Ceiling and joists | felt-floated surface



Architecturally sophisticated



**maxit nord**

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