protect your values

svt FIRE PROTECTION

PYRO-SAFE FLAMMOTECT-A

ablative cable coating

Cables

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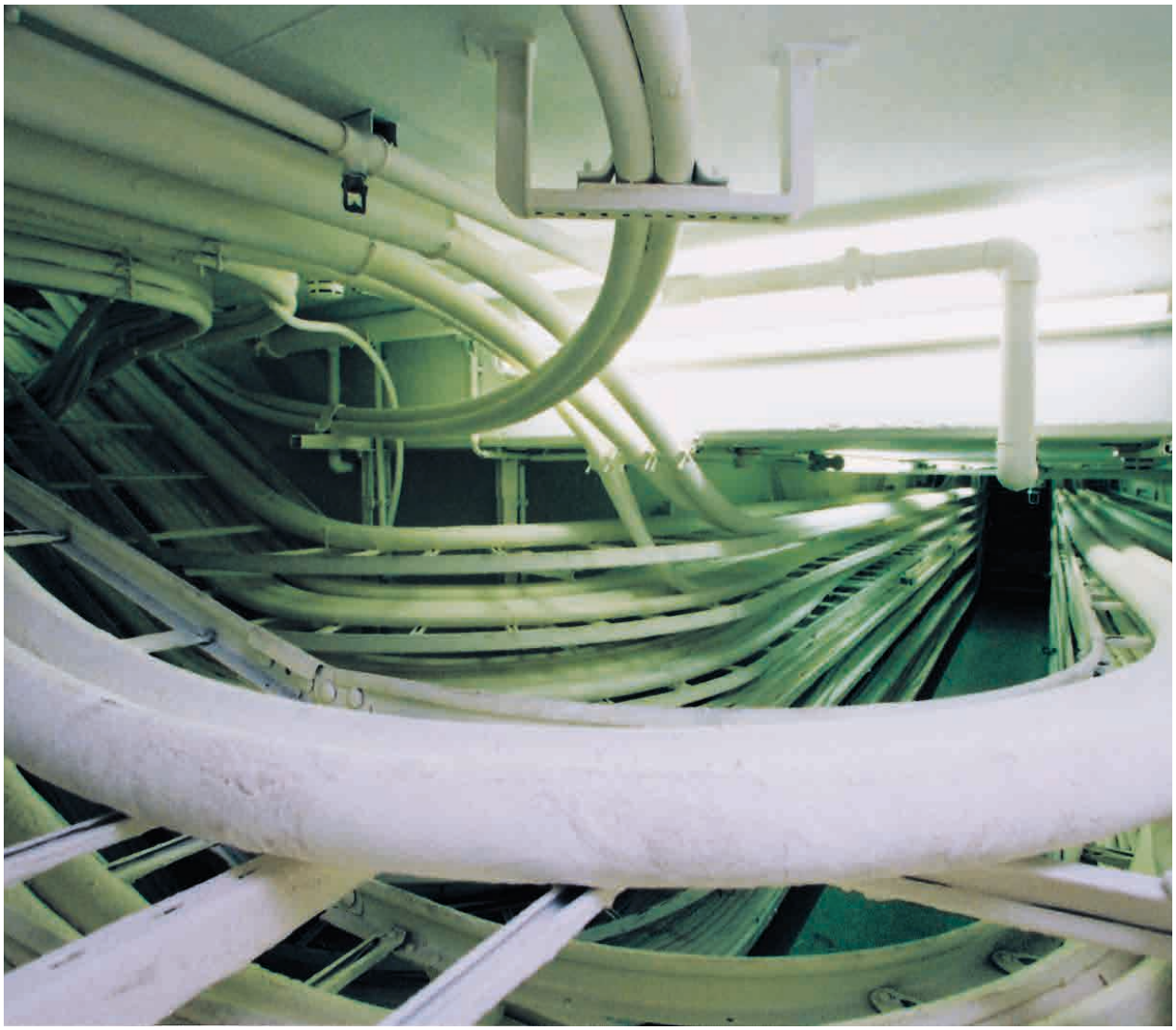
Cable systems

Fire protection for cable systems

Cable systems of various sizes and types are found in buildings today.
These systems are numerous in public buildings, industrial facilities and power stations etc., as are their uses.
Cable systems run over all floors and supply almost every room. They are usually located on cable support systems behind floors and wall coverings.

Their fundamental role is the distribution and interconnection of energy supplies along with data and communication technology.
Alongside the cables used purely for supplying energy, it is the wiring used for information and communication technology which has significantly increased in quantity.
Thanks to the cable structure, all kinds of different material compositions are found in these systems. Many insulations and cable sheaths are flammable.



Cable systems

Fire protection for cable systems

From a fire prevention perspective, unprotected cable systems are a potential hazard which should not be underestimated.
In the event of a fire, electrical cables and cable trays can act like a fuse, allowing the fire to spread in an uncontrolled manner.

The combustible cable jacket may result in burning droplets, and also a release of toxic fumes which can lead to life-threatening smoke inhalation.
These fumes can be highly corrosive and can have a destructive impact on technical facilities and other materials.

In order to eliminate fire hazards, cable systems can be successfully protected with a fire retardant coating.
These kinds of measures are mandatory in many countries.

An effective and economic product for protecting cables against fire has been developed by svt in the form of its ablative fireproof coating PYRO-SAFE FLAMMOTECT-A.

PYRO-SAFE FLAMMOTECT-A

Ablative fire protection coating

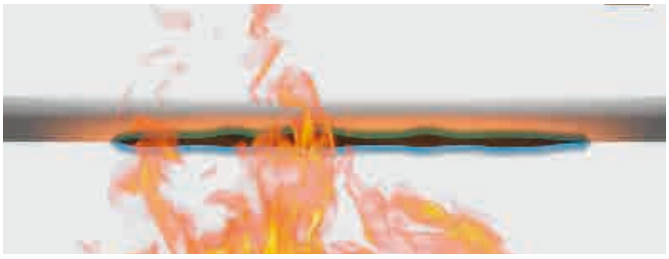
One product - many applications!

PYRO-SAFE FLAMMOTECT-A is available in three different viscosities. These fire protection products cover a wide application area, e.g. the fireproof coating for cables and cable systems. PYRO-SAFE FLAMMOTECT-A is impressively simple and straightforward to use, has excellent drying properties and is a cost-effective solution.

Product benefits

- available in three viscosities
- **suitable for indoor and outdoor applications**
- resistant against moisture, freeze-thaw cycles, UV radiation and various oils and chemicals
- tested in salt water
- high elasticity in processed form - no spalling of the coating material under mechanical loads
- various proofs for use in nuclear power plants
- an electrical derating is not required
- solvent free, contains no halogens
- does not contain asbestos, lead, mercury, hexavalent chromium or polybrominated biphenyl
- does not release toxic fumes
- no explosion protection required for the application
- does not impact on other construction materials such as polyethylene (PE) and polyvinyl chloride (PVC)
- Tensile strength (DIN 53455) and evaluation using a sample piece
- non-hazardous material in accordance with GefStoffV [Gefahrstoffverordnung: German regulation on hazardous substances]

Fire protection



The cooling effect of ablative coatings is the result of e.g. the release of chemically bonded water. In the event of fire, at about 200 °C, elements in this coating separate off into water, cooling the surface of the material and diluting the concentration of flammable gases. This reduces the intensity of the impact of the fire on the coated material. Once the chemical processes are complete, the components in the coating also form a microporous, inorganic barrier layer which provides additional surface protection through thermal insulation.

- functions in a highly endothermic manner
- forms a ceramifying protective coating

PYRO-SAFE FLAMMOTECT-A

Ablative fire protection coating

Product properties

PYRO-SAFE FLAMMOTECT-A	Coating	solid emulsion
Colour	white	
Density (+ 20 °C)	1.34 – 1.48 g/cm³	
Volatile components (VOC)	< 50 g/l (GS-11, Green Seal Standard)	
Viscosity (+20 °C) [mPas]	6,000 – 10,000	25,000 – 40,000
Handling (min. + 5 °C/ < 85 % relative humidity)	• brush • roller • airless spray gun (nozzle bore > 0.019 inch = 0.48 mm)	• brush • spatula • airless spray gun (nozzle bore > 0.019 inch = 0.48 mm)
Consumption Solid material (weight) Example consumption* wet film thickness** dry film thickness**	66 – 86 % 1,000 g/m² ca. 900 µm ca 500 µm	
Drying time dust dry reworkable thoroughly dry (at +23 °C/relative humidity 65% ± 3 %)	min. 4 hours min. 8 hours min. 4 days	
Product code	*01155101 / 01155105*	*01155106 / 01155107*

* Consumption depends on the approval requirements. ** Material losses must be taken into account during application.

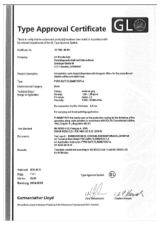
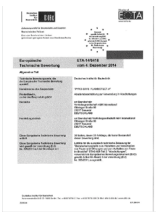
PYRO-SAFE FLAMMOTECT-A coating is an endothermic, weather-resistant fire protection coating. It is particularly suitable for thin layer applications and can be applied with a brush, roller or airless spray gun.

PYRO-SAFE FLAMMOTECT-A solid emulsion is particularly well suited for applications which require thick layers. This fire-resistant mixture is best applied using a brush, roller or airless spray gun.

PYRO-SAFE FLAMMOTECT-A

Ablative fire protection coating

Certifications and tests

DET NORSKE VERITAS 1864	**Det Norske Veritas** DNV-Certificate No. E-12945 Type tests according to: IEC 60332-3 cat. A/ IEC 60332-3-22 (60 Min.) certified dry film thickness 0.5 mm as per DNV No. E-12945	
GL	**GL-Certificate** GL-Certificate No. 13 798 99 HH (IEC 60 Min.) Test Standards IEC 60332-3, Cat.A:2000-10; EN 50266-2-2, Category A; 2000-09 DIN EN 50266-2-2/ VDE 0482 Section 266-2-2: 2000-09 certified dry film thickness of 0.5 mm as per IEC 60332-3	
FM APPROVED Manufacturer/Hersteller: svt Brandschutz Vertriebsgesellschaft mbH International Gluesinger Strasse 86 D-21217 Seevetal	**FM Approvals - Certificate of Compliance** Approval Identification: 3037058 certified dry film thickness of 1.6 mm as per FM Approval Class 3971	
CE	**ETA-14/0418** Fire behaviour class E in accordance with EN 13501-1	
CLASSIFIED UL	**UL classified** System No. C-AJ-0156, System No. C-AJ-1666, System No. C-AJ-4108, System No. F-A-1149,	
svt Werk 01 Z-19.11-1324 Baustoffklasse: normal entflammbar DIN 4102-B2	**General building control approval Z-19.11-1324** (normal flammability) building material class DIN 4102-B2 as per DIN 4102-1	
warrington certifire certification APPROVED CF 5173	**Certificate of approval** No. CF 5173 Product: svt PYRO-SAFE Flammotect Bulkhead - Fires stop coating system	

PYRO-SAFE FLAMMOTECT-A

Ablative fire protection coating

Chemical resistance in accordance with DIN EN ISO 2812-1

PYRO-SAFE FLAMMOTECT-A's resistance to chemicals has been established in accordance with DIN EN ISO 2812-1 (coating materials – determining resistance to liquids – Part 1: Immersion method).
PYRO-SAFE FLAMMOTECT-A is recognised to be a highly resistant fire protection coating and has already been frequently used on cabling systems as a protective layer against atmospheric influences.

The series of tests includes the most common chemicals found in sensitive or at risk areas. The test frame ranges from inadvertent contact (usually no longer than 30 minutes) to permanent exposure lasting (28 days).

80 % of the length of each sample piece was directly exposed to the relevant chemical. After exposure, the samples were cleaned in distilled water, dried for 24 hours and then the integrity of the coating was assessed.

Assessment criteria

The performance of the coating is completly given. No modifications have occurred.	+++
The performance of the coating is given. Small modifications can be identified.	++
The performance of the coating is still given. Optical and insignificant mechanical modifications have occured.	+
The performance of the coating is not given any longer. The optical and mechanical modifications result in a reduction of function.	-
The performance of the coating is not given any longer. The chemicals have partially destroyed the coating.	--

PYRO-SAFE FLAMMOTECT-A

Ablative fire protection coating

Chemical	Concentration	short-term exposure	long-term exposure
boric acid	5 %	+ + +	+ + +
acetic acid	undilated	- -	- -
acetic acid	10 %	+ + +	-
nitric acid	undilated	+ + +	- -
nitric acid	10 %	+ + +	- -
nitric acid	1 %	+ + +	+ + +
hydrochloric acid	undilated	+ + +	- -
hydrochloric acid	10 %	+ + +	+ +
hydrochloric acid	1 %	+ + +	+ + +
sulfuric acid	undilated	+ + +	- -
sulfuric acid	10 %	+ + +	+ + +
sulfuric acid	1 %	+ + +	+ + +
phosphoric acid	undilated	+	- -
phosphoric acid	10 %	+ +	- -
phosphoric acid	1 %	+ + +	- -
potassium chloride	10 %	+ + +	+ + +
caustic potash	50 %	+ +	- -
caustic potash	10 %	+ + +	- -
caustic potash	1 %	+ + +	+ + +
caustic soda	50 %	+ + +	-
caustic soda	10 %	+ + +	-
caustic soda	1 %	+ + +	+
common salt	10 %	+ + +	+ + +
ammonia	undilated	+ + +	- -
ammonia	3.5 %	+ + +	- -
hydrogen peroxide	undilated	- -	- -
hydrogen peroxide	3 %	+ + +	- -
sea water	3 %	+ + +	+ + +
soda	10 %	+ + +	+ + +
tap water	undilated	+ + +	+ + +
urea	undiluted	+ + +	+ + +
formaldehyde	30 %	+ + +	+ + +
formaldehyde	3 %	+ + +	+ + +
hydrogen fluoride	undilated	- -	- -
butyl acetate (ester)	undilated	+ +	- -
acetone	undilated	+ + +	+
Isopropyl alcohol (isopropanol)	undilated	+	- -
methanol	undilated	+ +	- -
ethanol	undilated	+ +	+
ethanol	20 %	+ + +	+
butanol	undilated	+ +	- -
white spirit	undilated	+ + +	+ +
mineral spirit	undilated	+ + +	+ +
glycerol	undilated	+ + +	+ +
heating oil / diesel	undilated	+ + +	+ +

1. Preliminary notes / overview

1.1 Target group

• The installation manual is aimed exclusively at people with professional fire proofing training.

1.2 Using the manual

• Read this manual thoroughly first before beginning work. Pay particular attention to the following safety information.

• The authorisation holder assumes no liability for damages which arise through a failure to comply with this guide.

• Pictorial representations serve purely as examples. Installation results may differ visually.

1.3 Safety information

Personal protective equipment:

body protection
wear protective work clothing and non-slip shoes

Cable fire protection

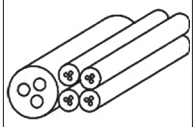
with PYRO-SAFE FLAMMOTECT-A

1.4 Area of application

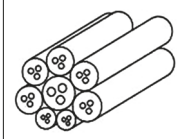
The cable coating PYRO-SAFE FLAMMOTECT-A must be used in accordance with the applicable building regulations.

PYRO-SAFE FLAMMOTECT-A is a universal protective coating for cable and cable support structures to prevent the spread of fire in the event of a short circuit or caused by external fire source.

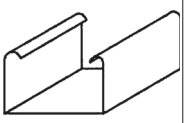
2. Permissible uses



All types of electric cables and wiring (including fibre optic cables), with the exception of "wave guide" cables
without any restriction on the size of the overall cross-section of the individual cable.
Vertically, horizontally or diagonally arranged.



cable bundles
without any restriction on the size of the overall cross-section of the individual cable.
Vertically, horizontally or diagonally arranged.



cable support structures
non-flammable cable trays or cable ladders with building material class DIN 4102-A or classes A1 and A2-s1, d0 in accordance with DIN EN 13501-1 Vertically, horizontally or diagonally arranged.

Cable fire protection

with PYRO-SAFE FLAMMOTECT-A

3. Usable products

	**PYRO-SAFE FLAMMOTECT-A coating** 12.5 kg pail - white Item No. 01155101 15.0 kg pail - white Item No. 01155105

	**PYRO-SAFE FLAMMOTECT-A solid emulsion** 12.5 kg pail - white Item No. 01155106 15.0 kg pail - white Item No. 01155107

	**Description label** Item No. 01229000

	**Recommended equipment:** • adhesive tape/masking film • airless spray gun, brush and/or roller • possibly mirror to check the coating • wet film gauge or equal • metal strip, plate or equal to measure the dry layer thickness • electronic dry film thickness gauge

4. Regulations for implementation and variations

- The surface of the cables and cable support structures to be coated must be dust-free, grease-free and dry. There must be nothing which could impair good adhesion.

- Do not use highly alkaline cleaning agents (pH > 8.5).

- There is no need for a primer coat on plastic cable sheaths. The customary existing anti-corrosion finish on metal cable structures is sufficient.

- If necessary, floors, walls and particularly any electrical components should be protected from the spray mist by covering or masking them.

- Before the coating is applied the information labels on cable routing (nodal points, redundancy and level details) must be protected. They must remain legible once the coating has been applied.

- Nominal application quantity / dry coating thickness on cables according to IEC 60 332-3-22 category A (corresponds to EN 50266-2-2 category A):

  1,000 g/m² (wet) ≙ ≥ 500 µm (dry)

- Nominal application quantity / dry film thickness on cables according to FM testing procedures:

  3,200 g/m² (wet) ≙ ≥ 1,600 µm (dry)

- Material losses must be calculated during application.

- A top coat is not required.

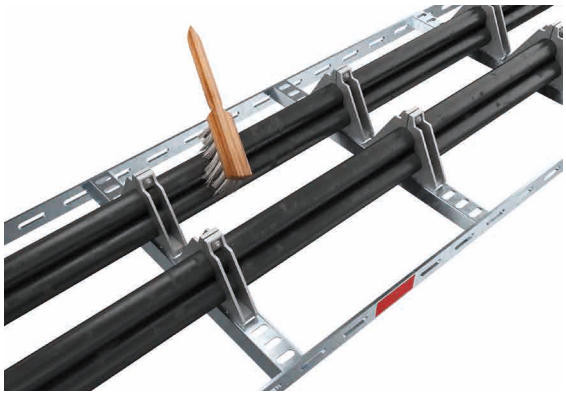
- Where a coating has been partially damaged, the damaged coating surface can be given a reapplication of PYRO-SAFE FLAMMOTECT-A.
  IMPORTANT: The dry coating thickness specified for the project must be built up again.

5. Application steps

5.1 Preparation

The specified steps should generally be carried out regardless of the subsequent treatment process.

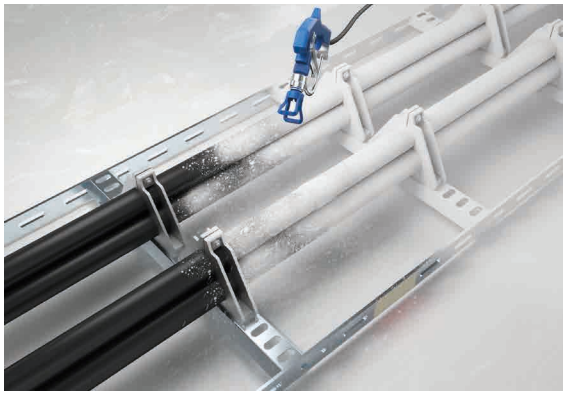
1. Make sure that the cable/cable support structures are free of any dust and dirt.



2. Thoroughly remove any grease from the cables/ cable support structures with a neutral cleanser. Do not use highly alkaline cleaning agents (pH > 8.5). Carefully remove any residual cleaner. There is no need for a primer coat on plastic cable sheaths.

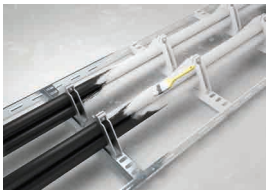
5.2 Handling

1. Coating with PYRO-SAFE FLAMMOTECT-A can be done using airless spray painting (nozzle bore > 0.019 inch = 0.48 mm).

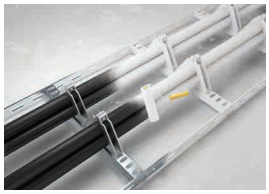


Alternatively, the cables can be coated manually using a brush and/or roller.

1.a brush

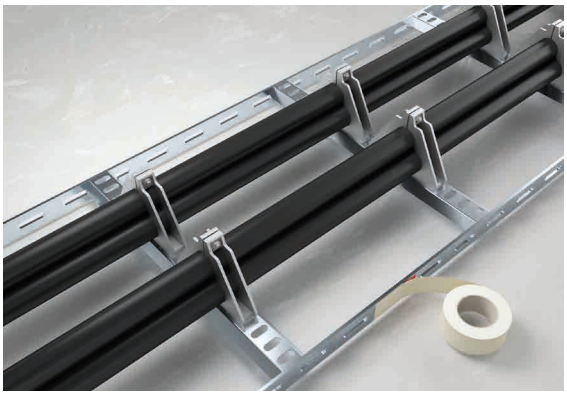


1.b roller

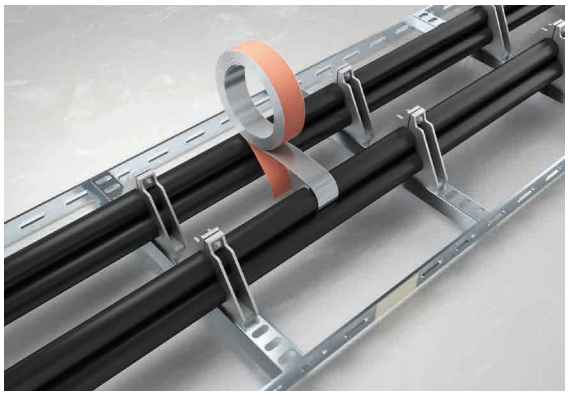


5.3 Application steps

1. Cover floors, walls and electrical components with sheeting or mask them with tape to protect them from the spray mist. Information labels on the cable routing must still be legible after coating.



2. Preparation to measure the coating thickness with a suitable method. e.g. a metal strip can be wrapped around the cable or metal plates can be placed.



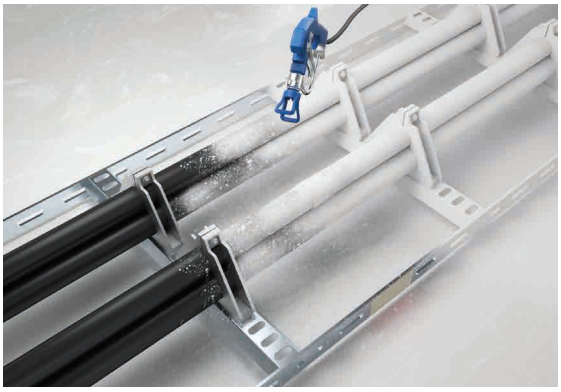
3. Using a stirrer attached to a drill machine stir the coating material thoroughly until it reaches the required handling consistency.

3.a After stirring, if the application consistency is still too thick, 3-5 % water can be added to thin it down slightly.

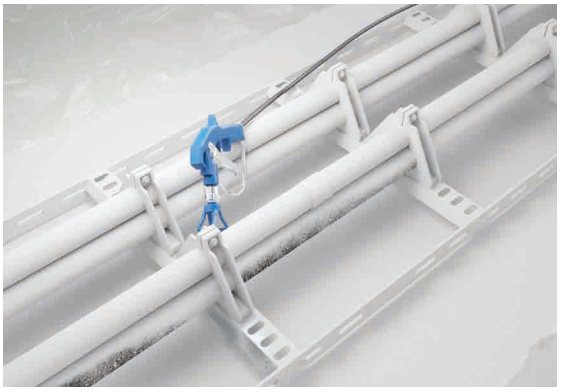
Note:
The coating material needs to be stirred up again every day.

5.3 Application steps

4. Coat all exposed surfaces evenly with PYRO-SAFE FLAMMOTECT-A; either by painting with a brush or Spraying, depending on the project specifications. Please follow the operating instructions for the airless spray gun!



5. Carefully spray cable spandrels and gaps. Hard to reach surfaces on the cables and cable trays can be coated using the airless spray gun accessories, e.g. the extension tube and the linking nozzles.

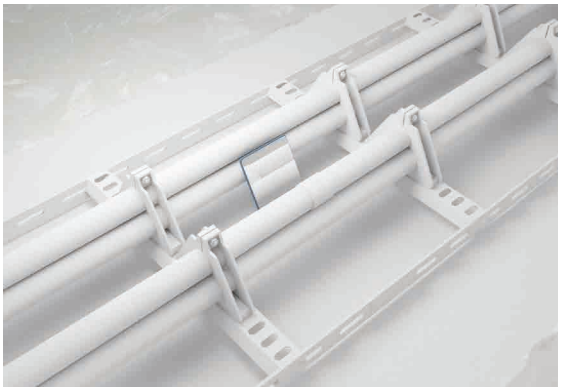


Note:
PYRO-SAFE FLAMMOTECT-A must be handled at over +5 °C and less than 85 % relative humidity.

With a wet film gauge or equal, the coating thickness in wet condition can be measured to predict the thickness of the dry coating.

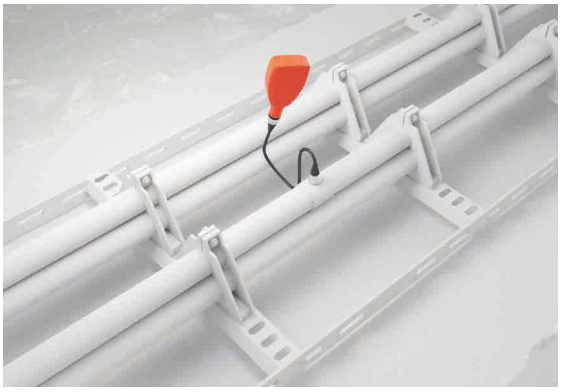
5.4 Measuring the thickness of the coating

1. Check that surfaces have been completely coated. Technical equipment can be used if necessary.



Note:
Hidden areas can be checked with a mirror.

2. Once the coating has completely dried out, use a dry film thickness measuring device to determine the thickness of the dry film e.g. on the metal strip or metal plates.
Recommended: Use an electronic measuring device.



Note:
Keep a record of the results calculated. The measurement log is a prerequisite for proper acceptance!

3. Once the coating has completely dried out and the thickness of the dry film has been established, remove any tape and/or masking.