System FLAMMOTECT-A

Ablative coating system for protecting cable installations from fire and other external factors



Field of Application

- prevents flame spread up to 120 min. in acc with. IEC 60332-3-22
- maintains the functional integrity of cables in the event of a fire
- protects cables from external factors
- designed for indoor and outdoor use
- suitable for many different environments, e.g. (nuclear) power plants, electrical substations, production and industrial facilities, infrastructure objects or public buildings.

Products



FLAMMOTECT-A
Coating

5 kg pail – Art. no. 01155132
12.5 kg pail – Art. no. 01155131



FLAMMOTECT-A
Solid emulsion

5 kg pail – Art. no. 01155121
12.5 kg pail – Art. no. 01155136

Benefits

- product available in various viscosities
- high film thicknesses can be applied in one go
- highly suitable for airless spray guns
- no electrical derating necessary
- various certificates for use in nuclear facilities
- does not have an effect on other building materials such as polyethylene (PE) und polyvinyl chloride (PVC)
- resistant to moisture, freeze-thaw cycling, UV radiation as well as various oils and chemicals.
- salt water tested
- no spalling of material because of mechanical stress, high coating flexibility
- solvent and halogen free
- free of asbestos, lead, mercury, hexavalent chromium and polybrominated biphenyl ethers
- does not emit toxic gases

Services

	Cables	✓
	Cable bundles	✓
	Cable trays	✓

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System FLAMMOTECT-A

Basic physical and chemical properties

State of aggregation	liquid or paste-like
Colour	white
Odour	Almost odourless
pH value	7.0–7.8
pH solution	10 % in water
Density (at +20 °C)	1.34–1.48 g/cm³
Viscosity	Viscosity can be adjusted by adding water.
Non-volatile compounds	66–86 % in acc. with EN ISO 3251
Loss of mass on heating	38–48 % in acc. with EN ISO 3451-1 / EOTA TR024 at 400 °C over a period of 30 min.
LOI (Limited Oxygen Index)	52–58 % in acc. with ISO 4589; sample thickness 1.5 mm
Coating flexibility	≥ 5 mm in acc. with EN ISO 1519; sample thickness 1.5 mm

Fire protection and reaction to fire

Reaction to fire	class E	in acc. with EN 13501-1
Prevention of flame spread	Cat. A: 2018 for 60 min. dry film thickness ≥ 0.5 mm	in acc.with IEC 60332-3-22 (DNV GL Certificate No. TAE00003BN)
	Cat. A: 2018 for 120 min. dry film thickness ≥ 1.6 mm	in acc. with IEC 60332-3-22 (Test report no. P000561617/02)
	Cat. A for 60 min. dry film thickness ≥ 1.0 (PE); 1.4 mm (PVC)	GOST IEC 60332-3-22
	Class Rating: A (0-25 flame spread, 0-450 smoke developed) Flame spread index: 15 Smoke developed index: 60	ASTM E84
Maintenance of functional integrity	Tests up to 180 min. for various cable types and voltage ranges.	in acc. with IEC 60331-21
FM Approval Class 3971	FM Approvals – Certificate of Compliance Approval Identification: 3037058 certified dry film thickness of 1.6 mm	
Glow wire test	GWEPT 650 °C and GWEPT 850 °C	in acc. with IEC 60695-2-11 (test report no. X10T0001
Smoke density	DS (4) = 81, VOF4 = 154 min., DS (max) = 85 DS Average = 174.36	in acc. with DIN EN ISO 5659-2 in acc. with ASTM E 662
Smoke toxicity	CITG = 0.20 (Conventional Index of Toxicity) No HCl, HF, HBr or HCN emission	EN 45545-2 Annex C and ISO 5659-2

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Electrical specifications

Heating of cables	No derating necessary	in acc. with FM Approval Class 3971
	Temperature comparison of coated and uncoated cables. Difference in temperature: ≤ 2 %	GOST IEC 60332-3-22
	No difference in temperature for coated and uncoated cables with a current load for over 8 hours	Test report No. 00541 Elektrisches Prüfamt München
Dielectric strength	leakage current ≤ 5.0 mA between conductor and outer jacket during high potential test	in acc. with FM Approval Class 3971
Surface resistance	≥ 1000 MΩ	in acc. with DIN VDE 0427/05.85, Sektion 503-4.2

Resistances

Ageing resistance	Aging does not have an effect to the general properties of FLAMMOTECT-A.	
	Artificial ageing without impairment **Indoor / outdoor areas:** Extreme temperature changing from +71 °C to -40 °C, UV radiation and humidity	in acc. with FM 3971 in acc. with EOTA TR024
	Long-term ageing without impairment **Outdoor areas:** Material was exposed for five years to outdoor weathering without any changes in its reaction to fire (MPA Nordrhein-Westfalen (notified body 0432), report no. 230006109-1) **Indoor areas:** Material was stored for 10 years in an indoor area without any changes in its reaction to fire (MPA Braunschweig (notified body 0761), report no. 3224/821/11)	
Weather resistance	Use category X (product suitable for use in areas exposed to weathering)	in acc. with EOTA TR024
Salt water resistance	Long-term exposure to salt water	in acc. with FM 3971 in acc. with EOTA TR024 in acc. with EN ISO 2812-1
Radiation resistance	Certified as radiation resistant at a radiation dosage of 1.0×10^6 Gy (108 rad)	
Resistance against aggressive deactivation media	Approved to withstand various types of deactivation media, e.g. nitric acid, sodium hydroxide, boric acid	

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Chemical resistance in accordance with EN ISO 2812-1

The chemical resistance of FLAMMOTECT-A was assessed in accordance with DIN EN ISO 2812-1 (Paints and varnishes - Determination of resistance to liquids – Part 1: Immersion in liquids other than water).

The series of tests comprises the most common chemicals which may occur in sensitive or dangerous areas. Tests range from minor exposure caused by accidental contact (generally not longer than 30 minutes) to lasting exposure (measured on the basis of a residence time of 28 days).

The coated cable samples were exposed the the respective chemicals at 80 % of their length. After exposure the samples were cleaned with distilled water, dried for 24 hours und assessed according to the intactness of the coating.

Assessment criteria

Complete resistance; no changes occurred.	+++
Resistance is intact; slight changes are noticeable.	++
Resistance is still intact, there are visual and slight mechanical changes.	+
Resistance is no longer intact; mechanical changes have a limiting effect on the function.	–
Resistance is no longer intact; the chemicals destroy parts of the coating.	– –

Chemical	Concentration	Short term exposure	Long term exposure
Boric acid	5 %	+ + +	+ + +
Acetic acid	undiluted	- -	- -
	10 %	+ + +	-
Nitric acid	undiluted	+ + +	- -
	10 %	+ + +	- -
	1 %	+ + +	+ + +
Hydrochloric acid	undiluted	+ + +	- -
	10 %	+ + +	+ +
	1 %	+ + +	+ + +
Sulfuric acid	undiluted	+ + +	- -
	10 %	+ + +	+ + +
	1 %	+ + +	+ + +
Phosphoric acid	undiluted	+	- -
	10 %	+ +	- -
	1 %	+ + +	- -
Potassium chloride	10 %	+ + +	+ + +
Caustic potash	50 %	+ +	- -
	10 %	+ + +	- -
	1 %	+ + +	+ + +
Caustic soda	50 %	+ + +	-
	10 %	+ + +	-
	1 %	+ + +	+
Sodium chloride	10 %	+ + +	+ + +

Chemical	Concentration	Short term exposure	Long term exposure
Ammonia	undiluted	+ + +	- -
	3.5 %	+ + +	- -
Hydrogen peroxide	undiluted	- -	- -
	3 %	+ + +	- -
Seawater	3 %	+ + +	+ + +
Natron	10 %	+ + +	+ + +
Tap water	undiluted	+ + +	+ + +
Urea	undiluted	+ + +	+ + +
Formaldehyde	30 %	+ + +	+ + +
	3 %	+ + +	+ + +
Hydrogen fluoride	undiluted	- -	- -
Butyl acetate (ester)	undiluted	+ +	- -
Acetone	undiluted	+ + +	+
Isoproyl alcohol	undiluted	+	- -
Methanol	undiluted	+ +	- -
Ethanol	undiluted	+ +	+
	20 %	+ + +	+
Butanol	undiluted	+ +	- -
White spirit (odourless)	undiluted	+ + +	+ +
White spirit	undiluted	+ + +	+ +
Glycerol	undiluted	+ + +	+ +
Heating oil / diesel	undiluted	+ + +	+ +

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Application and workability properties

Field of application	**Coating**	thin layer application quantities
	Solid emulsion	thick layer application quantities

Type of application		• brush or roller application,
		• airless spray gun
		• recommended application:
		  • coating: recommended nozzle orifice > 0.019" = 0.48 mm
		  • solid emulsion: recommended nozzle orifice > 0.021“ = 0.53 mm
		  • pressure: 150-180 bar

Example consumption	solid body (weight)	application quantity [g/m²]	film thickness [mm]	
			wet	dry
	66–86%	1000	approx. 0.9	approx. 0.5
		2000	approx. 1.8	approx. 1.0
		3200	approx. 2.9	approx. 1.6
		4000	approx. 3.6	approx. 2.0

Drying times at +23 °C and 65 % relative humidity		dust-dry	can be coated over with itself	dried through
	Coating	min. 4 hours	min. 8 hours	min. 4 days
	Solid emulsion	min. 4 hours	min. 8 hours	min. 4 days

Emission tests

Label	Test objective/standard	Certificate / test report number	Summary/evaluation
	EPD	NEPD-11061-9977	EPD available
	AgBB scheme	58112-A001-AgBB-L II	passed
	French-VOC	392-2021-00490501_E_EN	A+
	ecobau	202409.13697	eco 1
	Italian CAM	392-2021-00235001_A_EN	passed
	Byggvarubedömningen (onstruction product assessment Sweden)	392-2021-00490501_C_EN	passed
	LEED	58112-B001-CS-L II, 58112-B001-L	meets the requirements for low-emitting paints and coatings in credit EQc2 of the LEEDv4 and LEEDv4.1 rating systems

Emission measurements and evaluations

- contains no substances of very high concern (SVHC according to REACH (1907/2006/EG)) SVHC > 0.1 %
- contains no chlorinated paraffins of any chain length
- contains no halogenated blowing agents
- contains no heavy metals
- contains no polybrominated diphenyl ethers (PBDE), polybrominated biphenyls (PBB)

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Delivery and packaging

- Storage at room temperature (+5 °C to +30 °C).
- Protect from frost.
- Can be stored for at least 18 months in the original sealed container.
- No hazardous material according to German Hazardous Substances Act (GefStoffV) and no hazardous material according to the German Act on the Transport of Dangerous Goods (GGVS/ADR).

Product	Art. no.	Packaging	Pail/pallet	Net weight / pallet
FLAMMOTECT-A Coating	01155132	5 kg pail	60 pcs.	300 kg
	01155131	12.5 kg pail	40 pcs.	500 kg
FLAMMOTECT-A Solid emulsion	01155121	5 kg pail	60 pcs.	300 kg
	01155136	12.5 kg pail	40 pcs.	500 kg