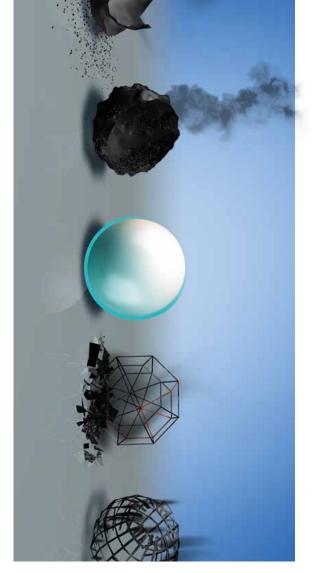


Fire Retardant Systems



## Fire Retardant Systems

## BÜFA®-Firestop – Fire protection with a system

In all systems in which glass fibre reinforced plastics are used, BÜFA®-Firestop makes GRP composites a flame retarding material and the GRP cladding turns into a fire protection wall.

Bottom line: BÜFA®-Firestop protects itself. This extraordinary effect is achieved by:

### 1. Carbonization

which in turn acts as a protective layer. verts to phosphoric acid. This causes the surface to carbonize When exposed to heat, the integrated flame retardant con-

### 2. Elimination of water

of fire and thins the resulting fumes. Aluminium oxide forms a ceramic protective layer. into aluminium oxide and water. The water cools the source At temperatures above 200 °C, aluminium hydroxide is split

### 3. Intumescence

Higher temperatures cause the surface of the component to swell. During the swelling process, the surface sets a carbon based protective foam free.

## 4. Effect in the gas phase

Through efficient suppression of the source of fire, starting in the gas phase, further spread of the fire is prevented.

The products in the BÜFA®-Firestop line can make optimum use of their qualities, either individually or combined with each other, in all imaginable applications.

sary protection against fire and therefore give you optimum safety. Innovative solutions for all applications! BÜFA Fire Retardant systems give GRP components the necesding to German as well as international standards. They can be applied quickly without any problems and no special requi-All of the BÜFA®-Firestop products are strictly tested accorrements are placed on the production process.

## Why BÜFA Fire Retardant Systems?

In-house research and development

In-house production

following test methods are used In-house test centre where the

- ISO 5660 (Cone Calorimeter)
- DIN 5510-2
- LOI (Limited Oxygen Index) ISO 4589-2
- UIC 564-2

maximum efficiency at minimum cost. Maximum safety and The result:



## Halogenfree resins

Comments	HDT [°C] calculated	Tensile strength [MPa]	Elongation at break [%]	Viscosity [mPa.s]	Non-volatile matter [%]	Resin base	Art. No.	Resin name
Slightly filled, halogen-free, pre-ac- celerated, for structural components in vacuum injection processes	110	not tested	not tested	230 (20s/1)	56	DCPD	716-0425	BÜFA®-Firestop S 425
Halogen-free, filled system, HLU, ideal for spray up application, preaccelerated	110	not tested	not tested	720 (20s/1)	78	DCPD	716-0430	BÜFA®-Firestop S 430
ATH filled injection resin for structural components, preaccelerated	100	82	2.8	800	74	DCPD	716-0520	BÜFA®-Firestop S 520
ATH filled injection res- in, preaccelerated	100	not tested	not tested	750	69	DCPD	716-0555	BÜFA®-Firestop S 555
ATH-filled, thixotropic resin for structural components, preaccelerated	88	82	2	900	84	OP	716-0570	BÜFA®-Firestop S 570
Filled foamning resin with good fire retardant properties	78	58	1.8	1250	70	OP	716-0900	BÜFA®-Firestop S 900 Foaming Resin

Comments	HDT [°C]	sile strength [MPa]	ation at break [%]	Viscosity [mPa.s]	-volatile matter [%]	Resin base	Art. No.	Resin name	
Highly ATH-filled resin for higher standards, preaccelerated	90	87	2.2	1100 (20s/1)	80	DCPD	716-5002	BÜFA®-Firestop 5001-W-2	
Prepaired to be highly filled, little smoke development (+ 300 parts of ATH), not preaccelerated	not tested	51 (filled)	0.45 (filled)	100	not tested	DCPD	716-5003	BÜFA®-Firestop 5001-T-1	
ATH-filled, thixotropic resin for structural components, preaccelerated	> 100	80	ω	750 (20s/1)	76	DCPD	716-8175	BÜFA®-Firestop 8175-W-1	
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## Halogenated resins

Comments	HDT [°C]	Tensile strength [MPa]	Elongation at break [%]	Viscosity [mPa.s]	Non-volatile matter [%]	Resin base	Art. No.	Resin name
ATH-filled and halogenated white resin for the highest fire protection requirements, not preaccelerated, also available as a nature version (716-0811)	not tested	not tested	not tested	500 (250s/1)	82	DCPD	716-0810	BÜFA®-Firestop S 810
Halogenated unfilled resin for HLU- and RTM applications, preaccelerated, also available as a filled version (716-2755)	65	49	1.8	230 (20s/1)	65	OP	716-2754	BÜFA®-Firestop 2754-P-2
Halogenated unfilled resin for HLU applications, preaccelerated, for IMO 1006 life boats	50	25	1.2	420 (20s/1)	68	DCPD	716-2777	BÜFA®-Firestop 2777-P-1
Halogenated resin for transluscent applications, not pre-accelerated	63	96	0.6	200	60	OP	788-0806	BÜFA®-Firestop 6806-N-5
Halogenated resin for transluscent applications, designed for higher standards, not pre-accelerated	54	75	1.9	210	65	DCPD	788-0816	BÜFA®-Firestop 6815-N-4
Halogenated highly flexible resin (e.g. for roofing applications), not preaccelerated, also available a syrene free version (788-0842)	35	5	>100	not tested	60	ISO	788-0840	BÜFA®-Firestop S 840

## Fire Retardant Systems



## Fire Retardant Systems

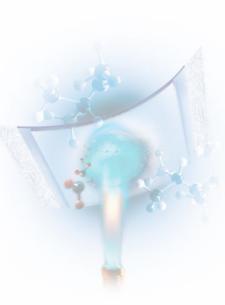


### Gelcoats

Comments	HDT [°C]	Tensile strength [MPa]	Elongation at break [%]	Viscosity [mPa.s]	Non-volatile matter [%]	Resin base	Art. No	Gelcoat name
Gelcoat in a spraying quality with increased fire protection properties	59	50	.σ	30,000	82	ΙP	714-2300	BÜFA®-Firestop GC S 230
Gelcoat in a spraying quality with good fire protection properties	41	52	8.2	Colour 708 = 7,500 Colour 728 = 30,000	Colour 708 = 77 Colour 728 = 84	₽	708-colour (spraying quality) / 728-colour (brushing quality)	BÜFA®-Firestop GC S 250
Gelcoat in a spraying quality with increased fire protection properties	39	56	3.4	11,500	76	OP / NPG	714-2600	BÜFA®-Firestop GC S 260
Gelcoat in a hand and spraying quality with highest fire protection properties	60	45	ω	28,000	84	VE / DCPD	714-2702	BÜFA®-Firestop GC S 270
Gelcoat in a hand and spraying quality with highest fire protection properties	36	48	4.5	14,000	80	₽	714-2852	BÜFA®-Firestop GC S 285
Gelcoat in a spraying quality with highest fire protection properties	85	45	2.5	25,000	85	VE / DCPD	714-3000	BÜFA®-Firestop GC S 300

Chemical properties
DCPD: dicyclopentadiene
OP: orthophthalic acid
IP: isophthalic acid
VE: vinylester
NPG: neopentyl glycol





### FR-Additives

Chemical composition	Art. No.	Product name
Accelerator complex for curing of highly filled fire retardant systems	715-9003	BÜFA®-Accelerator Complex 9003
Accelerator complex for curing of highly filled fire retardant systems based on polymeric cobalt	715-9004	BÜFA®-Accelerator Complex 9004
Accelerator complex for Viscosity reducer for filed curing of highly filled fire HLU- and infusion systems retardant systems based on polymeric cobalt	742-0018	BÜFA®-Additive Viscoreducer
Repair solution for the repair of gelcoat surfaces in spray up technics	742-0030	BÜFA®-Repair Additive
Foaming agent for BÜFA®-Foaming resins	020-0880	BÜFA®-Accelerator Foaming Agent



## Bonding Pastes and further additives

Comments	HDT [°C]	Tensile strength [MPa]	Elongation at break [%]	Viscosity [mPa.s]	Non-voaltie matter [%]	Resin base	Art. No.	Product name
Liquid fire protection mat: Levels sharp edges and corners, fire protection adhesive	70	6.5	2.5	300,000	87	OP	715-0245	BÜFA®-Firestop Liquid mat
Adhesive for structural applications with increased fire protection properties	85	12.5	4.5	400,000	85	VE	715-0255	BÜFA®-Firestop Adhesive 0255
Fire protection barriercoat to achieve optimum surface quality	not tested	not tested	œ	29,000	83	ΙP	715-0709	BÜFA®-Firestop Barriercoat 9002
Spray spatula with fire retardant properties S	not tested	not tested	6	10,000	72	₽	715-0250	BÜFA®-Firestop Surfacer

# BÜFA Fire Retardant Systems Save Lives – Innovative Solutions for all Applications!

BÜFA Fire retardant systems give GRP components the necessary fire protection.

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BÜFA®-Firestop TC S 260 RÜFA®-Firestop Surfacer	A®-Firestop TC S 260		BÜFA®-Firestop TC S 250	BÜFA®-Firestop S 245 (bonding paste / liquid mat)	BÜFA®-Firestop S 520	BÜFA®-Firestop 8175-W-1	BÜFA®-Firestop 5001-W-2	BÜFA®-Firestop 5001-T-1 (300 phr ATH)	BÜFA®-Firestop GC S 300 + BÜFA®-Firestop S 570	BÜFA®-Firestop GC S 300 + BÜFA®-Firestop S 520	BÜFA®-Firestop GC S 285 + BÜFA®-Firestop S 900 Foaming Resin	BÜFA®-Firestop GC S 285 + BÜFA®-Firestop S 425	BÜFA@-Firestop GC S 285 + BÜFA@-Firestop 8175-W-1	BÜFA@-Firestop GC S 270 + BÜFA@-Firestop S 570	BÜFA@-Firestop GC S 270 + BÜFA@-Firestop S 555	BÜFA®-Firestop GC S 270 + BÜFA®-Firestop S 520	BÜFA@-Firestop GC S 270 + BÜFA@-Firestop S 425	BÜFA®-Firestop GC S 270 + BÜFA®-Firestop 8175-W-1	BÜFA®-Firestop GC S 260 + BÜFA®-Firestop S 440	BÜFA@-Firestop GC S 260 + BÜFA@-Firestop 8175-W-1	BÜFA®-Firestop GC S 250 + BÜFA®-Firestop S 900 Foaming Resin	BÜFA®-Firestop GC S 250 + BÜFA®-Firestop S 520	BÜFA®-Firestop GC S 250 + BÜFA®-Firestop S 430	BÜFA®-Firestop GC S 250 + BÜFA®-Firestop S 425	BÜFA®-Firestop GC S 250 + BÜFA®-Firestop S 420	BÜFA@-Firestop GC S 250 + BÜFA@-Firestop 8175-W-1	BÜFA®-Firestop GC S 250 + BÜFA®-Firestop 5001-W-2	BÜFA®-Fireston GC S 230 + BÜFA®-Fireston S 455	BUFA@-Firestop GC \$ 250 + BUFA@-Firestop \$ 820	BÜFA@-Firestop GC S 250 + BÜFA@-Firestop S 810	BÜFA®-Firestop S 820	BÜFA@-Firestop S 810	BÜFA®-Firestop 2777-P-1	BÜFA®-Firestop 2754-P-2	BÜFA®-Firestop 6819-A-3	BÜFA®-Firestop 6815-N-4	BÜFA®-Firestop 6814-N-5	BÜFA®-Firestop 6806-N-5	
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