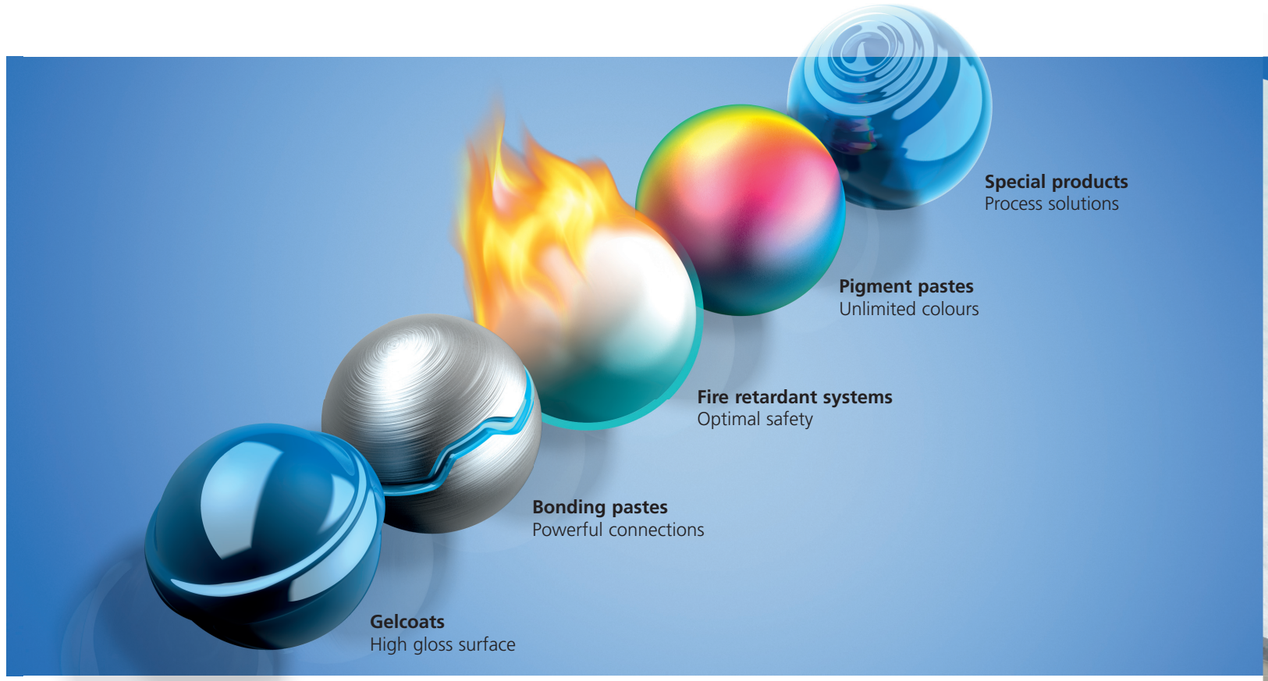
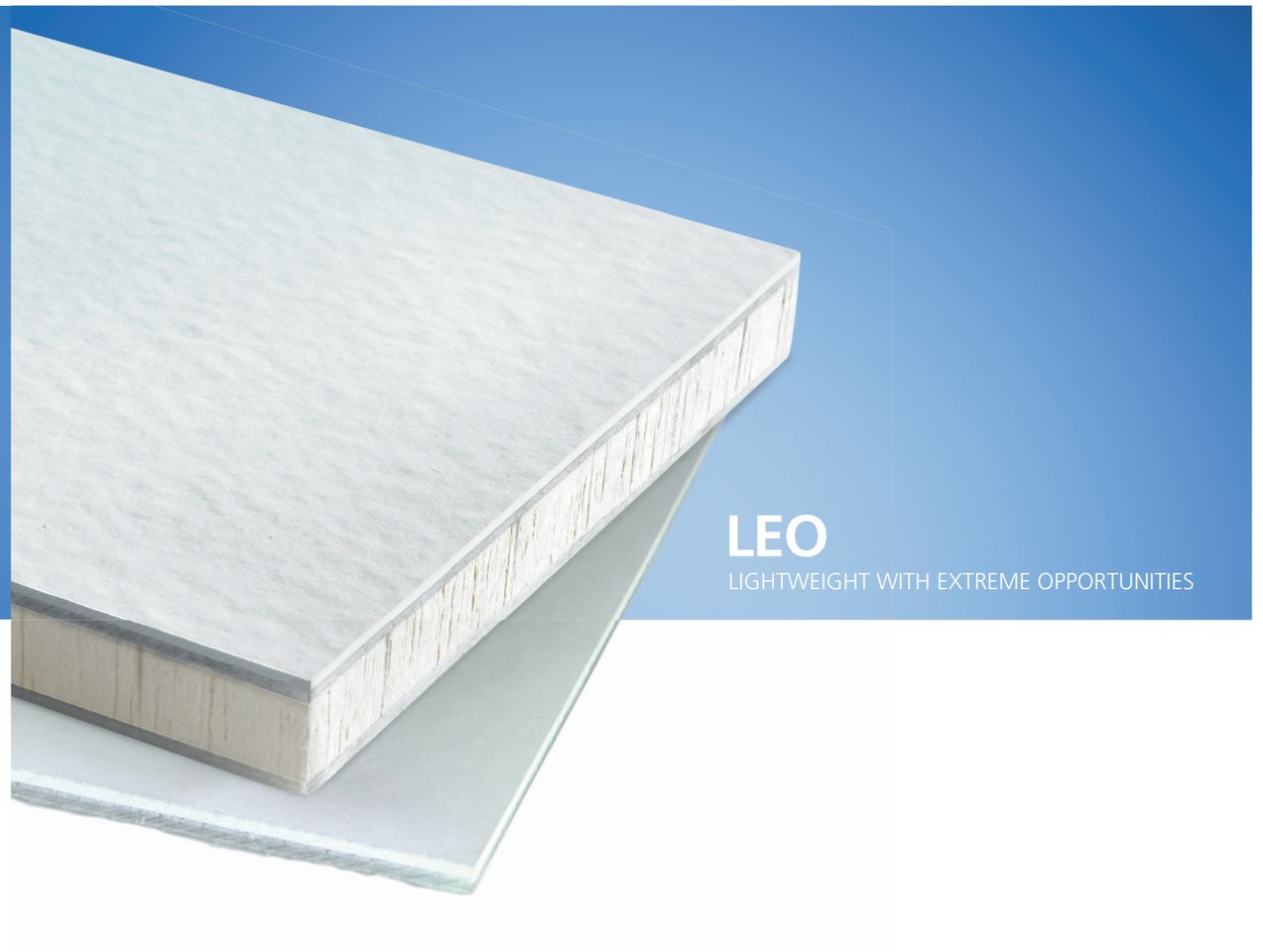
Innovative specialities for the composite industry

Gelcoat Plus





BÜFA®-Fire-Retardant-Systems

Optimal safety

Fire retardant systems

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A company of BÜFA and DSM Composite Resins

You'll find technical data sheets and further information at www.buefagelcoatplus.com.

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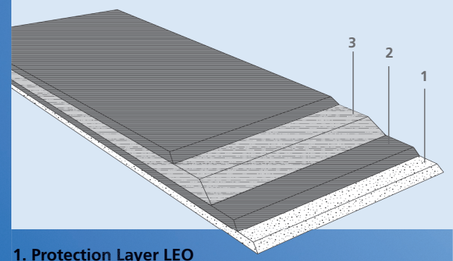
LEO – LIGHTWEIGHT WITH EXTREME OPPORTUNITIES

Fire retardant systems

DESCRIPTION

A new generation of composite material is born: **LEO** – **L**ightweight with **E**xtreme **O**pportunities.
LEO fulfils strict fire requirements applicable to marine, railway and building applications.

Possible Construction of the LEO System
(with core material)



1. Protection Layer LEO
2. Structual Layer: LEO Reinforcement (glass/carbon) and LEO Injection Resin
3. Core Material: Balsa or PVC 80

At same time it is providing structural efficiency, i.e. limiting the negative influence on mechanical properties (state of the art for fire resistant composites). This is done by combining treatment of fabrics, modification of structural resin and finally the application of a protection layer with aesthetic, weathering and fire resistant properties.

Furthermore the system components contains no toxic elements like halogens or antimony. All used raw materials show no special Health and Safety issues and are fully REACH conform.

To create LEO as a ready to use system with approved properties SAERTEX®, producer of reinforcements, and BÜFA Gelcoat Plus, producer of specialities, joined forces. We combined our knowledge to give the best solution and support to you, as customer in the composite industry. Due to the combined competence in development of customised solutions LEO shows outstanding properties in terms of fire resistance.

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OPPORTUNITIES

State of the art known processes to produce high quality composites parts, like infusion / injection processes, can be used to produce LEO structural layers. Due to the use of room temperature curing VE based resin systems, there is no need to produce the parts at higher temperature, or with autoclaves. The infusion resin shows excellent compatibility with the used glass or carbon reinforcement and allows long open times to produce thick laminates. Finished composite parts show high performance at low specific weight.
LEO allows production of high end composite parts under controlled conditions. Additionally it is possible to control mechanical properties and calculate the finished composite part.

ADVANTAGES

Example of mechanical properties of LEO composite part

DIN EN ISO 527-4	DIN EN ISO 14125	DIN EN ISO 14130
E [GPa] 27,6	E [GPa] 30,4	–
RM[MPa] 495,2	RM [MPa] 802,1	RM [MPa] 43,3

Due to the use of special glass or carbon NCF, composite parts built by LEO show high mechanical properties and high structural efficiency.

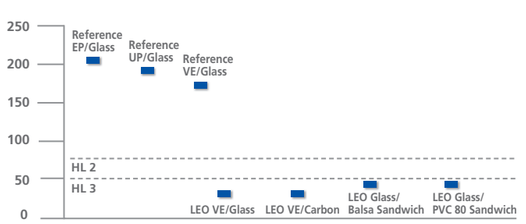
Structual Layer: 4 layers of glass Biax 1200 gsm glass content app. 51 Vol%.

EXTREME

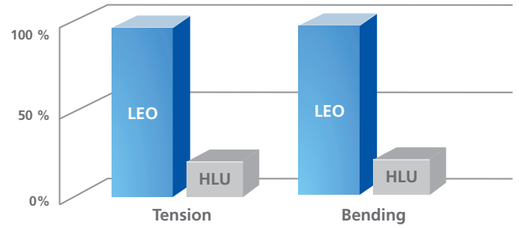
Possibility to build monolitic and sandwich constructions with high fire retardant properties

COMPARISON

Maximum Average Heat Release Rate acc. ISO 5660-2



Mechanical Properties



	IMO			EU			GER	FR	UK				US				EU	ES
	HSC 200	IMO RES. A 653 (16) FTP	IMO RES. A 653 (16) FTP	CEN /TS 45545-2:2009					BS 6853				NFPA 13:2007					
		Code MSC 61 (67)	Code MSC 61 (67)															
	ISO 9705	Annex 1 Part 2	Annex 1 Part 5	ISO 5658-2 2006	EN ISO 5659-2 2007	ISO 5660-1 2002	DIN 5510	NFF 16-101	BS 476-6	BS 476-7	BS 6853, Annex B	BS 6853, Annex d	ASTM E 662	ASTM E 162	ASTM E 1354	BSS 7239	EN ISO 13501	UNE 23721: 1990
LEO Marine	*	fulfills	fulfills															
LEO Rail				HL 3	HL 3	HL 3	S4/SR2/ST2+Tox., nach 5659	M 1/F 1	*		*	*	*	*	*	*	*	M 1/F 1
LEO Building								M 1/F 1	*	class 1	*	*	*	*	*	*	b/s2/d0	M 1/F 1

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