

ContraFlame®

MS400 underdeck and bulkhead insulation

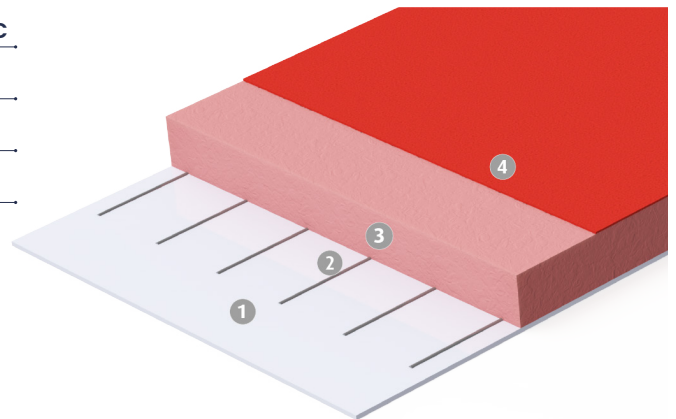
Is a lightweight multifunctional composite system, designed to protect topside facilities and platforms by providing a lightweight, integrated thermal insulation and passive fire protection (PFP). The system has been tested and certified by a third party against hydrocarbon fires achieving H60 and H120 fire rating. ContraFlame® MS400 system has been successfully tested against high heat flux (HHF) jet fire and achieved one hour rating with maximum temperature rise below 40°C. The system can resist blast loads and provides excellent acoustic absorption properties (-50dB).

ContraFlame® MS400 system has a proven track record in the Oil & Gas sector and has been used to protect areas up to 10,000m², providing a typical weight reduction up to 50% compared to traditional insulation systems.

Product construction

ContraFlame® MS400 system is based on unique syntactic phenolic foam and phenolic glass reinforced laminate. Pre-formed MS400 panels (typically 1m x 1m) have a range of thicknesses between 70mm and 110mm which are bonded to the underdeck or bulkhead, followed by the application of GRP laminate for a complete and joint-less finish.

1. Blasted steel substrate (e.g. SA 2.5) primed with approved ACC
2. Adhesive
3. MS400 core
4. D2004 GRP laminate



Product characteristics

- Designed for an operational life over 25 years
- Operational temperature range (-196°C and +150°C)
- Fire rated to HHF JF60
- DNV, Lloyds, BV and ABS approved
- Rated to 1 bar blast over pressure load
- Closed cell structure
- Robust energy absorbing structure
- Excellent water resistance and sound absorption.

Typical applications

- Offshore lightweight, thermal insulation and passive fire protection:
 - H120 Hydrocarbon protection underdeck: 107mm panel – DNV type approved
 - H60 Hydrocarbon protection bulkhead: 70mm panel – DNV type approved
 - HHF JF60 jet fire protection bulkhead: 107mm
- Underdeck acoustic insulation
- Free standing / supported wind and fire partition.

System properties

Parameter	System value	Description
Panel nominal dimensions	1000mm x 1000mm	Preformed panels
Panel nominal thickness	70-110mm	Preformed panels
Hydrocarbon fire rating	Up to H120	DNV type approval certification
HHF jet fire	Up to HHF JF60	High heat flux 356 kW/m ²
Acoustic reduction	-50dB	ISO 10140, 8mm steel plate

Performance and properties

MS400 third party certification

Location	Certification	Testing standard
Underdeck	H120 DNV type approval certificate F-20594 (MS400 thickness 107mm) H120	In accordance with IMO 2010 FTP code part 3
D2004	H60 DNV type approval certificate TAF000003R (MS400 thickness 70mm) H60	In accordance with IMO 2010 FTP code part 3

Thermal properties

MS400 can be manufactured in varying thicknesses based on the required U-Value:

Panel nominal thickness (mm)	U-Value (value W/m ² K)	MS400 weight (kg/m ²)	System weight (kg/m ²)
70	0.46	5.6	9.3
75	0.43	6.0	9.7
80	0.40	6.4	10.1
90	0.36	7.2	10.9
100	0.32	8.0	11.7
107	0.30	8.6	12.3
110	0.29	8.8	12.5

Hydrocarbon fire testing (H rating)

Duration (mins)	H60 bulkhead 73mm (avg temp rise °C)	H120 underdeck 110mm (avg temp rise °C)
15	0	1
30	1	5
60	31	36
123	-	91

HHF jet fire test performance (heat flux at 356 kW/m²) MS400 110mm

Duration (mins)	Max temp rise (°C)	Avg temp rise (°C)
15	0.9	0.4
30	1.9	1.0
45	4.8	2.1
60	39.3	4.8
65.25 (test stop)	97.8	16.2

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