Seaflame™ – setting new standards in fire resistant cables

As a consequence of increases in passenger numbers and cruise liner size, along with awareness of risks associated with fire at sea, SOLAS (Safety of Life at Sea Convention) took steps towards issuing stringent regulations known as 'Safe Return to Port' that must be complied with in the design and build of passenger marine vessels.

As an integral component of power geared, and power feeding systems, in order for a vessel to sail and safely return to port, cables and cable systems must always remain operational, including in the event of an onboard fire – no matter how severe the fire or surrounding conditions.

This is one of the reasons for the continuous research and development of highly specialised fire resistant cables, designed to withstand and remain operational in the event of fire, both for the shipbuilding and for the oil & gas offshore industry. A further challenge to the performance of these cables arises from the devices used to halt fires, such as sprinklers or extinguishing hoses. In both cases, water spraying or jetting can potentially cause the failure of the cables due to water or mechanical shock.

The cable industry's traditional interpretation of possible solutions to guarantee operation of cables on board a vessel in the event of fire – and to ensure shipbuilders comply with SOLAS' Safe Return to Port regulations – has led to the installation of fire resistant cables in metallic ducts to protect them from water spraying or jetting (and related mechanical shocks).

Seaflame™ is Prysmian's innovative interpretation of electrical components and cables requirements, which enables shipbuilders to comply with their regulatory demands, most importantly SOLAS' Safe Return to Port.

Combining every feature and requirement to exceed the most stringent fire resistance standards (including mechanical shock and water simulations), Seaflame™'s ultra fire resistance and ultra-high performance guarantee operation in the case of fire, helping to support shipyards in complying with SOLAS' Safe Return to Port regulations, and ensuring the highest levels of safety on all vessels.

Prysmian Group

Linking safety to the seas

Prysmian Group Viale Sarca 222, 20126 Milan, Italy
Email: infocables-it@prysmiangroup.com

www.prysmiangroup.com

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PRYSMIAN Draka

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Seaflame™

Ultra Fire Resistant Cables for Shipboard and Offshore Marine Applications

PRYSMIAN Draka

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Linking the future

As the worldwide leader in the cable industry, Prysmian Group believes in the effective, efficient and sustainable supply of energy and information as a primary driver in the development of communities.

With this in mind, we provide major global organisations in many industries with best-in-class cable solutions, based on state-of-the-art technology. Through two renowned commercial brands – Prysmian and Draka – based in almost 100 countries, we're constantly close to our customers, enabling them to further develop the world's energy and telecoms infrastructures, and achieve sustainable, profitable growth.

In our energy business, we design, produce, distribute and install cables and systems for the transmission and distribution of power at low, medium, high and extra-high voltage.

In telecoms, the Group is a leading manufacturer of all types of copper and fibre cables, systems and accessories – covering voice, video and data transmission.

Drawing on over 130 years' experience and continuously investing in R&D, we apply excellence, understanding and integrity to everything we do, meeting and exceeding the precise needs of our customers across all continents, at the same time shaping the evolution of our industry.

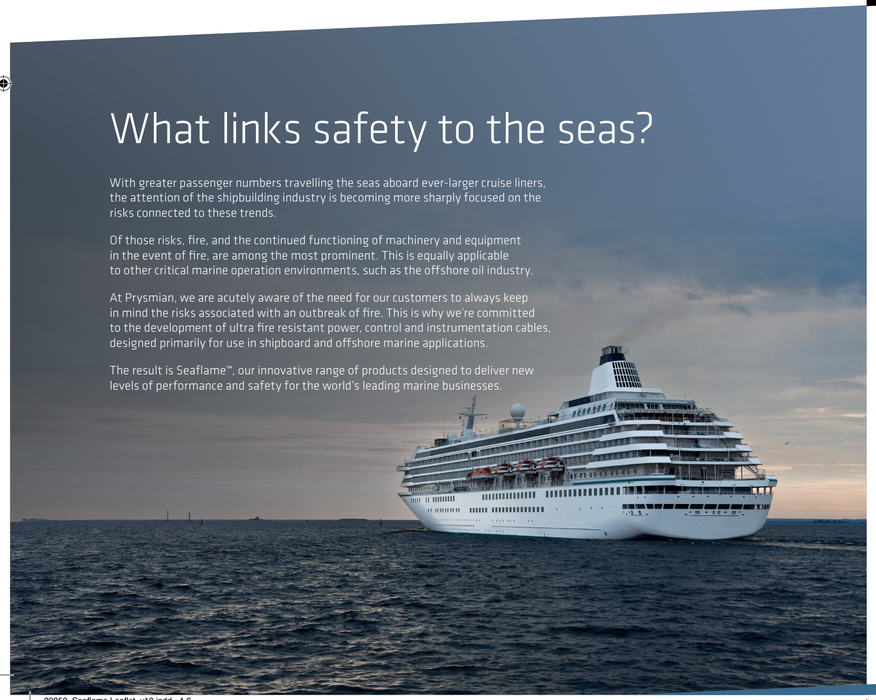
What links safety to the seas?

With greater passenger numbers travelling the seas aboard ever-larger cruise liners, the attention of the shipbuilding industry is becoming more sharply focused on the risks connected to these trends.

Of those risks, fire, and the continued functioning of machinery and equipment in the event of fire, are among the most prominent. This is equally applicable to other critical marine operation environments, such as the offshore oil industry.

At Prysmian, we are acutely aware of the need for our customers to always keep in mind the risks associated with an outbreak of fire. This is why we're committed to the development of ultra fire resistant power, control and instrumentation cables, designed primarily for use in shipboard and offshore marine applications.

The result is Seaflame™, our innovative range of products designed to deliver new levels of performance and safety for the world's leading marine businesses.



Enhanced performance for specialist situations

Our Seaflame™ Ultra Fire Resistant Cables meet – and exceed – the most rigorous international testing standards to ensure they can deliver the performance our customers rely on in challenging environments.

STANDARDS	**IEC 60331-1 EN 50362**	**IEC 60331-2 EN 50200**	**BS 8491:2008**	**PRYSMIAN SEAFLAME™**
TEMPERATURE	830 (+40/-0)°C		830 (+40/-0)°C	**1000 (+50/-0)°C[*]**
DURATION	30*, 60, 90, 120 min		30, 60, 120 min	**from 180 to 360 min**
MECHANICAL SHOCK	every 5 min		every 10 min	**every 5 min**
WATER SPRAY	no	yes, 0.8 l/min (last 15 min)	no	**yes, 0.8 l/min (last 15 min)**
WATER JET	no	no	yes, 12.5 l/min	**yes, 12.5 l/min**
				Enhanced flexibility – Seaflame™ delivers a 4 x OD bending radius.

*with water spray (Annexe E)
(*) Cu melting point = 1,083°C

Note: All tests carried on same single cable length

What does Seaflame™ mean for our customers?

- A full product range of power, control and instrumentation cables for shipboard and offshore marine applications with enhanced design characteristics (minimum bending radius 4 x OD)
- Enhanced fire resistance cables that meet and exceed all existing related standards (extended time up to 360 mins, increased temperature up to 1,050°C)
- Cables that withstand the impact of events associated with fire and fire extinguishing measures (sprinklers spraying, hoses jetting, etc.)
- No need for installation in metallic ducts or protection, leading to reduced installation materials, time and costs, reduced installation space and lower weight on board a vessel, and accordingly reduced total cost of ownership

Seaflame™ Product Range

SHIPBOARD POWER AND CONTROL CABLE

Conductors – Plain or tinned annealed copper conductors according to IEC 60228 cl.2 or cl.5(*)
Insulation – Mica glass & enhanced heat resistant compound. HF – S95 type
Fillers (if any) – Low Smoke Halogen Free in the interstitial area
Fire & water barrier (inner covering) – Consisting of inorganic tape
Braid armour – Plain or tinned copper wire braid
Outer sheath – Halogen free thermoplastic compound. SHF1 type

SHIPBOARD MARINE INSTRUMENTATION CABLE

Conductors – Plain or tinned annealed copper conductors according to IEC 60228 cl.2 or cl.5(*)
Insulation – Mica glass & enhanced heat resistant compound. HF – S95 type
Elements – Cores laid up together to form pairs/triples/quad
Laying up – Laying up pairs/triples/quad
Fire & water (inner covering/collective screen) – Consisting of inorganic tape(s) + Cu/PET (+ drain wire)
Braid armour – Plain or tinned copper wire braid
Outer sheath – Halogen free thermoplastic compound. SHF1 type

OFFSHORE POWER AND CONTROL CABLE

Conductors – Plain or tinned annealed copper conductors according to IEC 60228 cl.2 or cl.5(*)
Insulation – Mica glass & enhanced heat resistant compound. HF – S95 type
Fillers (if any) – Low Smoke Halogen Free in the interstitial area
Fire & water barrier – Consisting of inorganic tape(s) + Cu/PET tape
Bedding – LS0H thermosetting compound
Braid armour – Plain or tinned copper wire braid or galvanized steel braid
Outer sheath – Halogen free thermosetting compound. SHF2 or SHF MUD type (NEK 606)

OFFSHORE INSTRUMENTATION CABLE

Conductors – Plain or tinned annealed copper conductors according to IEC 60228 cl.2 or cl.5(*)
Insulation – Mica glass & enhanced heat resistant compound. HF – S95 type
Elements – Cores laid up together to form pairs/triples/quad
Laying up – Laying up pairs/triples/quad
Fire & water barrier (collective screen) – Consisting of inorganic tape(s) + Cu/PET tape (+ drain wire)
Bedding – LS0H thermosetting compound
Braid armour – Plain or tinned copper wire braid or galvanized steel braid
Outer sheath – Halogen free thermosetting compound. SHF2 or SHF MUD type (NEK 606)

APPLICABLE STANDARDS

IEC 60092-300 series	Design and Materials	**IEC 60754-1.../2**	Halogen free properties
IEC 60331-1 or -2	Fire resistance	**IEC 601034-1.../2**	Smoke emission properties
IEC 60332-1-2	Flame retardance	**EN 50200 Annex E**	Optional water spray test
IEC 60332-3-22	Fire retardance	**BS 8491**	Water jet device and drenching

(*) All cables available on demand with conductor cl.5 and cl.2 resistance.