

IMO guidelines & regulations status



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SP – a wide technical range

SP Calibration and Verification

SP Certification

SP Electronics

SP Chemistry, Materials and Surfaces

SP Energy and Bioeconomy

SP Fire Research

SP Food and Bioscience

SP Measurement Technology

SP Structural and Solid Mechanics

SP Process Development

SP Sustainable Built Environment



Processum

ASTAZERO, Active Safety Test Area

CBI, Swedish Cement and Concrete Research Institute

Glafo, Swedish Glass Research Institute

JTI, Swedish Institute of Agricultural and Environmental Engineering

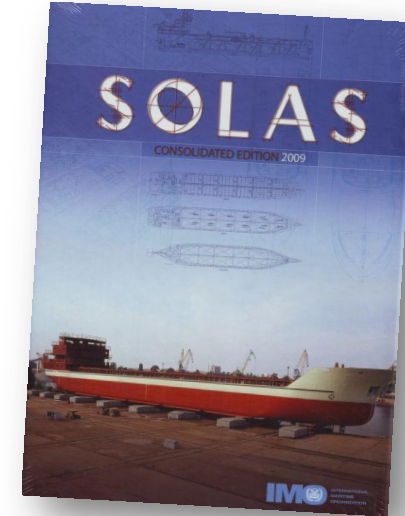
SMP, Swedish Machine Testing



Alternative design and arrangements for fire safety

SOLAS (Safety Of Life At Sea) chapter II-2

- Regulation 4 Probability of ignition
- Regulation 5 Fire growth potential
- Regulation 6 Smoke generation potential and toxicity
- Regulation 9 Containment of fire
- Regulation 10 Fire fighting
- Regulation 11 Structural integrity
- Regulation 13 Means of escape
- ...
- Regulation 17 Alternative design and arrangements



Reg. 9 prescribes main vertical and horizontal zones of A-class divisions
= steel or other equivalent material
= a non-combustible material which, by itself or down to insulation
provided, has structural integrity throughout the end of the standard

Reg. 11 prescribes the hull, superstructures, structural bulkheads, decks and deckhouses to be constructed of steel or other equivalent material.

Options for alternative design

SOLAS chapter II-2, Reg. 17 Alternative design and arrangements

Alternative solutions for fire safety are allowed if they can be shown to be at least as safe as a prescriptive design

Is shown through an analysis
based on **MSC/Circ.1002**

SOLAS chapter I, Reg. 5 Equivalents

MSC.1/Circ.1455

Guidelines for the approval of
alternatives and equivalents in
various IMO instruments



LASS

SAFEDOR



LASS-C

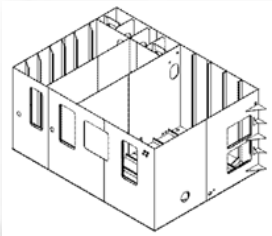
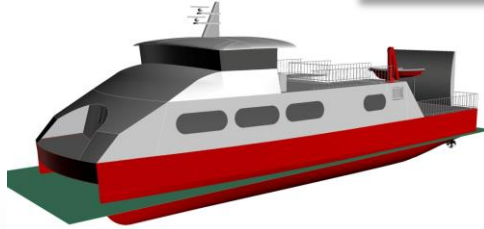
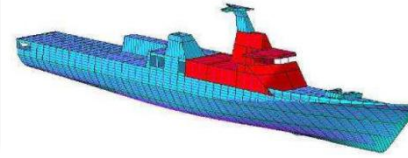


CONVINCE

TankLightModule



KOMPAS



Commercial projects



“Development of guidelines for use of Fibre Reinforced Plastic (FRP) within ship structures”

-Activity within the IMO

MSC 87 *UK* proposed the item and required guidance when FRP replaces steel.

FP 55 *UK* suggested **(1)** to develop guidelines for evaluation of FRP by SOLAS II-2/17 OR **(2)** to incorporate FRP in the regulatory framework.
SWE suggested to develop guidelines for evaluation and testing in a CG.

FP 56 *SWE* suggested to establish a CG and gave input to guidelines.
USA opposed a use of combustible structures.
China favoured guidelines for applying SOLAS II-2/17.

SDC1 CG presented results and draft guidelines.
Not possible to conclude on ToR1, applicability of SOLAS II-2/17.
CG was reinstated and guidelines developed (assuming it applies).

SDC2 CG presented results and draft guidelines.
Decided to accept guidelines and submit to MSC.

MSC95 Guidelines rejected and sent back to SDC3.



Current draft interim guidelines for use of FRP structures

Included

1. General
2. Assessing fire safety of FRP composite structures
3. Important factors to consider with regards to chapter II-2 regulations

Appendices

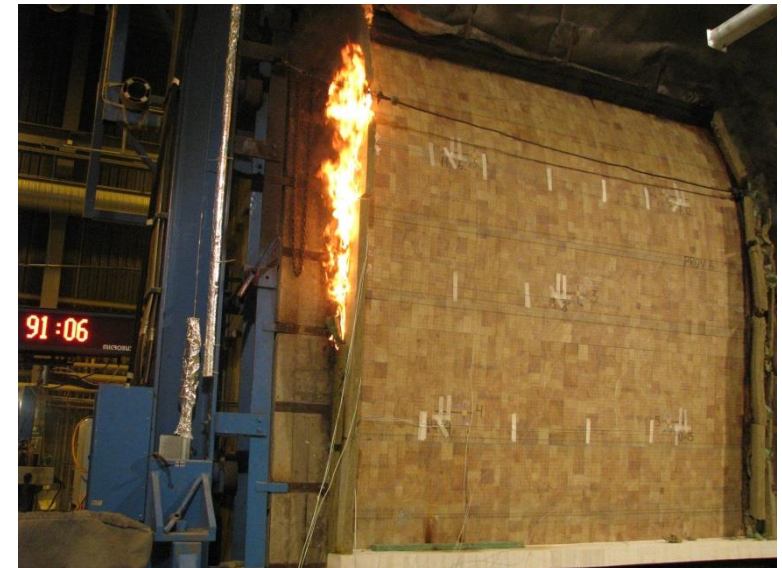


Not included

1. Solutions
2. Limitations
3. New test procedures or criteria under which FRP composite structures should be approved

Wanted

1. development of fire test and quality system procedures to evaluate and ensure structural and fire integrity properties (US)
2. more solutions, limitations and acceptance criteria (No)



Way forward, proposed by Sweden

Approval of FRP composite structures is up to each Administration and guidelines specifically addressing FRP composite structures should be continued to be developed.

The guidelines for FRP composite structures should be more focused at specifying a procedure for how to evaluate and ensure structural and fire integrity properties

The guidelines should furthermore recommend acceptance criteria and exemplify suitable solutions and limitations.

To manage this, a division is proposed on different types of use of FRP composite structures, such as:

- A. minor components (hatch cover, single decks or bulkheads, bow visor, etc.);
- B. major parts (e.g. deck house or superstructure module);
- C. replacement of interior steel structures (e.g. FRP composite with insulation);
- D. entire vessels (small ship).



Thank you for your attention!

Questions?



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