

Amendments to SOLAS chapter II-2 and FSS Code on fire safety of RO-RO spaces, etc.



Relevant for ship owners, managers and Surveyors

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Introduction

Following the adoption of Resolution MSC.550 (108) & MSC.555 (108) on May 23rd, 2024, this Technical Information addresses amendments adopted by MSC at its 108th session, focusing on fire safety of ro-ro spaces, vehicle spaces and weather decks.

New Ships: These newly adopted amendments **will enter into force on January 1st 2026** and will be affecting **all new building vessels** that fall under the scope of application of the Convention and the FSS code (Ships the keels of which are laid or which are at a similar stage of construction on or after 1 January 2026) as well as passenger ships constructed before this date (this includes vessels constructed before 2012 as well).

Existing vessels that fall under the scope of these amendments should be in compliance with these regulations no later than the first survey¹ on or after 1 January 2028.



Resolution MSC.550 (108), Changes to the text of the SOLAS convention, Chapter II-2

Resolution MSC.550 (108) focuses on Chapters II-2 & V of the SOLAS convention but for the purpose of this document, we will focus on parts concerning only Chapter II-2.

First of these changes includes the addition of a new paragraph after paragraph 4.2.1.8, titled 4.2.1.9, which states the following:

“Oil fuel delivered to and used on board ships shall not jeopardize the safety of ships or adversely affect the performance of the machinery or be harmful to personnel”

The paragraph is a safety barrier; fuel must not introduce any risk of fire, machinery damage, or crew harm. Suppliers and ships now have a clear legal obligation to ensure that all oil fuel used onboard meets recognized safety and quality standards.

¹ Annual, Periodical or Renewal Survey

Secondly, changes have been implemented to specifically regulation II-2/7, section 5 (Protection of accommodation and service spaces and control stations).

Paragraph 7.5.2, which previously stated that a ship must have a fixed fire detection and alarm system that provides smoke detection throughout accommodation spaces, control stations, and service areas, including all corridors and escape routes. Detectors are not required in low-risk spaces such as bathrooms, galleys, voids, public toilets, and CO₂ rooms. Cabin detectors, when triggered, must also sound an audible alarm inside the cabin to warn occupants, has been replaced by the following:

“A fixed fire detection and fire alarm system shall be so installed and arranged as to provide smoke detection in service spaces, control stations and accommodation spaces, including corridors, stairways and escape routes within accommodation spaces. Smoke detectors need not be fitted in private bathrooms and galleys. Spaces having little or no fire risk such as voids, public toilets, carbon dioxide rooms and similar spaces need not be fitted with a fixed fire detection and fire alarm system. Detectors fitted in cabins, when activated, shall also be capable of emitting, or cause to be emitted, an audible alarm within the space where they are located.”

It is important to note that this paragraph only applies to passenger ships carrying more than 36 passengers onboard and was mostly done for the legal writing style of the paragraph.

Paragraph 7.5.5 concerning cargo ships has received a major amendment and been replaced. The revised SOLAS II-2 paragraph 7.5.5 for cargo ships, effective for vessels constructed on or after 1 January 2026, expands fire detection requirements by adding control stations and cargo control rooms to the spaces that must be protected. While the three protection methods (IC, IIC, IIIC) remain structurally unchanged, each method now requires smoke detection not only in accommodation corridors, stairways, and escape routes (as previously required), but also in these critical operational spaces. Other elements—including exemptions for low-risk spaces and sprinkler requirements under Method IIC—remain the same. Ships built before 2026 continue to follow the previous version of paragraph 5.5, meaning the update primarily enhances early fire detection and operational safety for newly built cargo ships.

For regulation II-2/9 (Containment of fire), paragraph 6.1 is deleted as a structural clean up.

Thirdly, the most extensive changes were done to Regulation 20 of this chapter, as it concerns protection of vehicles, special category and ro-ro spaces. These change aim to modernize fire safety and protection onboard vessels designed with these spaces in mind as new risks are starting to rise with the popularity of electric vehicles and the more modern ro-ro vessels being larger in size and thus having more exposed weather decks.

The first change applied to the regulation is the change of the title. The newly appointed title is “Protection of vehicle, special category, open and closed ro-ro spaces, and weather decks intended for the carriage of vehicles” and is expanded compared to the older title in order to cover open and closed ro-ro spaces and weather decks intended for carriage of vehicles.

This change has also carried out to paragraph 20.1.1 of the regulation (purpose), expanding the paragraph to also include open and closed ro-ro spaces and weather decks intended for carriage of vehicles.

For the application scope of this regulation, a new paragraph numbered 2.1.3 has been added, stating that:

“2.1.3 Passenger ships constructed before 1 January 2026, including those constructed before 1 July 2012, shall also comply with regulations 20.4.1.6, 20.4.4 and 20.6.2.3, as adopted by resolution MSC.550 (108).”

This is to clarify that all older vessels that were mandated to follow the older regulations must also comply with these newly revised guidelines as well.

Regulation 20.3.1 was also subject to change as it was replaced by a newly revised paragraph which states the following:

“In cargo ships, permanent openings in the side plating, the ends or deckhead of the space shall be so situated that a fire in the cargo space does not endanger stowage areas and embarkation stations for survival craft and accommodation spaces, service spaces and control stations in superstructures and deckhouses above the cargo spaces”

This revised guideline ensures any opening in ro-ro or vehicle spaces cannot allow fire to spread upward to essential areas such as:

- survival craft locations
- embarkation stations
- accommodation spaces
- control stations

This addresses cases where vehicle deck fires spread through ventilation or structural openings.

Regulation 20.4 concerning Detection and alarm was subjected to major changes as it now applies to Passenger ships constructed before 1 January 2026, including those constructed before 1 July 2012, shall comply with the requirements of paragraph 4.1.6 not later than the first survey on or after 1 January 2028.

Paragraph 20.4.1 titled Fixed fire detection and fire alarm systems, was completely replaced by the following:

The requirements of paragraphs 4.1.1 through 4.1.4 shall only apply to passenger ships constructed on or after 1 January 2026. Passenger ships constructed before 1 January 2026, including those constructed before 1 July 2012, shall comply with the requirements of paragraph 4.1.6 and the previously applicable requirements of paragraph 4.1. The requirements of paragraph 4.1.5 shall apply to cargo ships constructed on or after 1 January 2026. Cargo ships constructed before 1 January 2026 shall comply with the previously applicable requirements of paragraph 4.1.

These regulations state that from this point onward all passenger ships must be equipped with:

- smoke and heat detection throughout vehicle, special category and ro-ro spaces, with heat detectors provided in conjunction with smoke detectors as specified
- rapid-fire detection covering all zones
- detection tested under normal ventilation conditions.

This change has been made because it was observed that many cases of fire were spread due to ventilation masking the smoke.

For weather decks, a fixed detection system must cover open weather decks where vehicles are stored as a form of recognition of the risk of fire starting and spreading in open spaces.

A new paragraph titled 20.4.4 has been added after 20.4.3 concerning video monitoring. These newly added regulations mandate that a continuous video monitoring system is now required for vehicle, ro-ro and special category spaces and must provide full space coverage, immediate playback capability, camera zone alignment with fire-extinguishing sections and equal or more than 7 day recording retention for new building vessels (24 hours for existing vessels).

Regulation 20.5-titled Structural fire protection and arrangement of openings, has been completely replaced. This new regulation applies to passenger ships constructed on or after 1 January 2026. Older vessels are required to comply with the previous regulation.

The new regulation requirements significantly strengthen structural fire protection and the control of openings in passenger ships built on or after 1 January 2026, with a focus on preventing fire spread from ro-ro and special category spaces. Boundary bulkheads and decks around these high-risk areas must generally meet A-60 standards, with limited allowances for A-0 protection where adjacent spaces or fuel tanks reduce the risk. Internal decks within multi-level ro-ro spaces must be rated based on the capability of the fixed fire-extinguishing system, ensuring effective containment above and below each deck. Strict rules now govern the placement and construction of openings to prevent flames, smoke, or heat from reaching survival craft, embarkation stations, accommodation areas, and control stations—requiring minimum horizontal safety distances and enhanced fire-resistant closures. Weather decks used for vehicle carriage must also be arranged to keep fully developed fires from endangering critical areas, with specified distance requirements and permissible reductions only when boundaries achieve A-60 integrity or equivalent water-spray protection. Across all cases, air intakes for propulsion and emergency machinery must be positioned to avoid smoke contamination, ensuring the ship retains power and evacuation capability during a vehicle or ro-ro space fire.

For regulation 20.6 titled Fire extinction, a new explanatory paragraph has been added to 6.1 which states:

“The requirements of paragraphs 6.1.1 and 6.1.2 shall apply to ships constructed on or after 1 July 2014. Ships constructed before 1 July 2014 shall comply with the previously applicable requirements of paragraphs 6.1.1 and 6.1.2. The requirements of paragraphs 6.2.1 and 6.2.2 shall apply to ro-ro passenger ships constructed on or after 1 January 2026. Passenger ships with vehicle, special category or ro-ro spaces constructed before 1 January 2026, including those constructed before 1 July 2012, shall comply with the requirements of paragraph 6.2.3 not later than the first survey on or after 1 January 2028”

These were followed by a new paragraph added after 20.6.1, numbered 20.6.2 titled Fixed water-based fire-extinguishing system on weather decks intended for carriage of vehicles.

These newly added regulations specify that new passenger vessels:

- Must install monitor-based water systems for weather decks carrying vehicles.
- Systems must be sized to drain 125% of combined monitor & hose capacity.

- As for existing passenger vessels, they must comply with these new regulations no later than the first survey conducted after January 1st, 2028.

A new paragraph 20.6.3.2 has been added to the chapter as well, requiring portable fire-extinguishing appliances to be installed in spaces in which vehicles with fuel used for their own propulsion are stored.

A completely new section numbered 20.7 has been added after 20.6, titled Decision-making.

This regulation only applies to passenger vessels constructed on or after January 1st, 2026 and require these new building vessels to implement:

- clear, photo luminescent section numbering
- standardized signage
- visual guidance in fire-fighting zones

This enhances crew orientation and reduces response time during fire emergencies, especially in smoke-filled ro-ro spaces.

Lastly, for this resolution, Regulation 23.6 has had another segment added to it, numbered 10 and stating “fire detection and fire alarm system”.

This item is added as a new requirement for Control and monitoring of safety systems and must be available to access from the safety center of the vessel.

Although not directly related to fire safety, Resolution MSC.550 (108) also introduces amendments to SOLAS chapter V concerning the mandatory reporting of lost or drifting freight containers.

Under the revised regulations, the master of a ship is required to report the loss or observation of freight containers without delay to ships in the vicinity, the nearest coastal State, and the flag State. Furthermore, flag States are required to report such incidents to the Organization.

These amendments are operationally relevant to ro-ro and container vessels, particularly in the context of navigational safety, environmental protection and risk mitigation for other ships operating in affected sea areas.

Resolution MSC.555 (108): Changes made to the text of the FSS code

The amendments introduced by Resolution MSC.550 (108) establish new and revised functional fire safety requirements under SOLAS, particularly for ro-ro spaces, vehicle spaces and weather decks intended for the carriage of vehicles.

Resolution MSC.555 (108) provides the corresponding technical and engineering specifications within the FSS Code, defining system performance criteria, installation requirements and operational parameters necessary to achieve compliance with the amended SOLAS requirements.

Resolution MSC.555 (108), Adopted on May 23rd, 2024, focuses solely on the FSS code and concerns Chapters 7 (Fixed pressure water-spraying and water mist fire-extinguishing systems) and 9 (Fixed fire detection and fire alarm systems).

Firstly, a completely new regulation has been added to chapter 2 of the code under engineering specifications for fixed fire extinguishing systems on ro-ro passenger ships' weather decks intended for the carriage of vehicles. Bear in mind that these regulations only concern Ro-Ro passenger vessels built on or after January 1st 2026 and older vessels are to follow the regulations pre amendment.

The new section sets out to address fire-extinguishing systems on weather decks of ro-ro passenger ships built on or after 1 January 2026. It includes:

- Defined protected areas, including all vehicle lanes within partially or fully protected deck zones.
- Minimum discharge rates, such as:
 - 2.0 L/min/m² from fixed monitors
 - 5.0 L/min/m² from supplementary nozzles
- Positioning and performance standards for monitors, including:
 - Required throw length
 - Horizontal rotation coverage
- Pump performance rules, ensuring the system can be supplied independently or simultaneously with other fire systems if shared pumps are used.
- Automation and operational requirements, ensuring monitors activate reliably, with system controls located in accessible positions.

Overall, this new section substantially raises the capability of weather-deck fire-fighting arrangements to address high-intensity vehicle fires.

Secondly, major changes have been implemented to Chapter 9 of the code. These changes include tightening the scope of application of this chapter as well updating the chapter to accommodate the increasing risks associated with high intensity fires started by vehicles onboard Ro-Ro passenger vessels.

For section 2 of chapter 9 (engineering specification), paragraphs 2.3.1.3 & 2.3.1.4 have been completely replaced by the following:

The newly added paragraphs specify that heat detectors must comply with revised temperature-response criteria aligned with EN and IEC standards and linear heat detectors must now comply with EN 54-22 and are formally recognized as acceptable detection equipment.

Another major update to the code was done to paragraph 2.4 titled Installation requirements. Paragraphs 2.4.2.2, 2.4.2.2.1 & 2.4.2.2.2 were completely replaced with new regulations and the associated table was updated to accommodate the new regulations.

The mentioned paragraphs focus on the spacing, layout, and installation requirements for detectors. The previous table governing smoke, heat, and multi-sensor detector spacing has been completely replaced. The new Table 9.1 provides updated spacing criteria reflecting current-generation detector capabilities, taking into account improved sensitivity, modern ceiling heights, and ventilation patterns in shipboard spaces. Linear heat detection cables now also have defined spacing rules, clarifying how they must be arranged along overhead structures, cable trays, and other fire-risk zones. Collectively, these changes ensure that the physical arrangement of detectors aligns with contemporary ship layouts and modern fire-growth modelling.

Conclusion

The resolutions discussed in this document mostly focus on new building vessels and specially Ro-Ro passenger vessels constructed on or after January 1st 2026. Due to the age and scarcity of these types of vessels in our class and overall national fleet of vessels, most of these regulations do not affect our customers and overall fleet currently in service in our country.

Nevertheless, to ease the access to these new regulations, a table containing all the changes implemented by Resolution MSC.550 (108) is presented below:

| Area / Regulation | Previous Requirements | Revised Requirements (MSC.550(108) / MSC.555(108)) | Impact / Remarks |
|---|--|---|---|
| SOLAS II-2/4 – Probability of Ignition | No specific provision on fuel safety. | Oil fuel delivered and used onboard must not jeopardize safety, affect machinery performance, or harm personnel. | Addresses contaminated fuel risks; improves machinery and fire safety. |
| SOLAS II-2/7.5.2 – Passenger ships (>36 pax) | Smoke detection required; older wording. | Wording standardized (“so installed and arranged...”); no functional change. | Editorial consistency; no technical change. |
| SOLAS II-2/7.5.5 – Cargo ships (IC / IIC / IIIC) | Detection required mainly in accommodation corridors, stairways, escape routes. | Smoke detection extended to control stations and cargo control rooms for all protection methods; new rule applies to ships ≥ 1 Jan 2026. | Significant upgrade in detection coverage of critical operational spaces. |
| SOLAS II-2/9 – Containment of Fire | Included paragraph 6.1. | Paragraph 6.1 deleted; minor structural cleanup. | Administrative amendment. |
| SOLAS II-2/20 – Scope | Covered vehicle, special category, and ro-ro spaces; weather decks not clearly included. | Scope expanded to include open/closed ro-ro spaces and weather decks intended for vehicle carriage . | Aligns SOLAS with modern ro-ro ship architecture. |
| SOLAS II-2/20.1 – Purpose | Focused on internal ro-ro and vehicle space hazards. | Now includes specific recognition of weather deck fire hazards . | Addresses risks of outdoor vehicle fires (including EVs). |
| SOLAS II-2/20.2 – Application | Many older ships exempt. | Older passenger ships must comply with 20.4.1.6, 20.4.4, 20.6.2.3 by first survey after 1 Jan 2028. | Gradual modernization of older vessels. |
| SOLAS II-2/20.3.1 – Openings | Earlier opening rules less detailed. | Openings must be arranged to prevent fire threat to survival craft, embarkation stations, accommodation and control stations above. | Reduces vertical spread risk from ro-ro decks. |
| SOLAS II-2/20.4 – Detection | Base-level detection rules. | Enhanced performance standards; mandatory compliance for ships ≥ 2026; older passenger ships upgraded by 2028. | Robust early detection in ro-ro environments. |
| SOLAS II-2/20.4.1 – System Performance | General detection. | Individually identifiable smoke and heat detection throughout vehicle, special category and ro-ro spaces, with heat detectors provided in conjunction with smoke detectors as specified tested under high-ventilation conditions. | Improves detection integrity on ventilated decks. |
| SOLAS II-2/20.4.4 – Video Monitoring | Not required previously. | Mandatory CCTV for vehicle/ro-ro/special category spaces; 7-day recording (or 24 hours for existing ships). | Supports faster fire confirmation; enhances monitoring. |
| SOLAS II-2/20.5 – Structural Fire Protection | Previous A-class boundaries applied but fewer specifics. | Detailed A-60 / A-0 boundary requirements, opening restrictions, safety distances (3–12 m), and acceptance of A-0 boundaries with water-spray equivalence. | Major improvement in structural containment against vehicle fires. |
| SOLAS II-2/20.6 – Fire Extinguishing Systems | No fixed monitor-based systems required for weather decks. | New monitor-based water systems required on weather decks carrying vehicles; minimum 1,250 L/min monitor output; drainage to handle 125% | Significant enhancement in open-deck fire-fighting |

| Area / Regulation | Previous Requirements | Revised Requirements (MSC.550(108) / MSC.555(108)) | Impact / Remarks |
|--|--|---|---|
| | | discharge. | capability. |
| SOLAS II-2/20.7 – Zone Signage | No standardized section identification. | Photoluminescent and harmonized zone numbering aligned with fire-fighting system divisions. | Improves coordination and safety during fire response. |
| SOLAS II-2/23 – Safety Centre | Older phrasing for monitored systems. | Now explicitly includes “fire detection and fire alarm system.” | Editorial; clarity improved. |
| SOLAS V/31 – Danger Messages | No requirement regarding lost containers. | Masters now required to report loss or sighting of freight containers; State must inform IMO. | Modern response to increased incidents of container loss. |
| SOLAS V/32 – Form of Danger Messages | No standardized structure for container-loss reports. | New standardized reporting format introduced. | Improves navigational safety communication. |
| FSS Code Ch. 7 – New Section 2.5 (MSC.555(108)) | No specific requirements for weather-deck water-based systems. | New requirements for weather-deck fixed water-based extinguishing systems on ro-ro passenger ships (≥ 2026): defined protected areas, discharge rates (2 L/min/m ² monitors; 5 L/min/m ² nozzles), monitor throw, pump rules, automation. | Dramatically strengthens extinguishing performance for external vehicle deck fires. |
| FSS Code Ch. 9 – Applicability | Older standards applied; lacked alignment with modern detector types. | Revised applicability for ships ≥ 2026 ; performance aligned with EN/IEC standards; linear heat detectors added. | Modernizes detection technology requirements. |
| FSS Code Ch. 9 – Detector Performance | Previous temperature-response classes only partially aligned with standards. | Updated heat detector temperature response criteria; linear heat detectors must meet EN 54-22 . | Ensures consistent and validated performance. |
| FSS Code Ch. 9 – Detector Spacing | Earlier spacing table limited in scope. | New, fully replaced Table 9.1 ; new spacing rules for linear heat detection. | Harmonizes installation with modern ship architecture. |
| FSS Code Ch. 9 – Alarm Presentation (Ro-Ro Passenger Ships) | No standardized alarm format for ro-ro spaces. | Standardized alarm wording, colours, and display geometry on bridge; addressability and event history mandatory. | Greatly enhances clarity and reliability of alarm interpretation. |
| FSS Code Ch. 9 – Temporary Disconnection Rules | Disconnection rules vague or absent. | Smoke detection may be disabled during cargo operations; heat detection and MCPs must remain active ; system must show status and auto-restore. | Balances operational needs with continuous fire protection. |

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