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ANY OTHER BUSINESS

IACS Unified Interpretation GF 21 of paragraph 11.7.1 of the Interim guidelines for the safety of ships using methyl/ethyl alcohol as fuel (MSC.1/Circ.1621)

Submitted by IACS

SUMMARY

Executive summary:	This document brings to the attention of Member States the IACS unified interpretation GF 21 of paragraph 11.7.1 of MSC.1/Circ.1621 regarding the fixed fire-extinguishing system in machinery spaces and fuel preparation spaces where methyl/ethyl alcohol-fuelled engines or fuel pumps are arranged.
Strategic direction, if applicable:	7
Output:	7.1
Action to be taken:	Paragraph 17
Related documents:	None

Background

1 The International Code of Safety for Ships using Gases or other Low-flashpoint Fuels (IGF Code) provides an international standard for ships using low-flashpoint fuel, other than ships covered by the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code).

2 At present, the IGF Code only contains detailed prescriptive requirements for natural gas (predominantly methane) as fuel. All other gases or low-flashpoint fuels must follow the "alternative design" process.

3 To support the "alternative design" process of the IGF Code and to provide an international standard for ships using methyl/ethyl alcohol as fuel, MSC 102 approved the *Interim guidelines for the safety of ships using methyl/ethyl alcohol as fuel* as set out in MSC.1/Circ.1621.

4 CCC 10 has updated the work plan for the development of the IGF Code and safety provisions on alternative fuels as set out in annex 2 of document CCC 10/16. If time permits, CCC 11 will consider the revision of the *Interim guidelines for safety of ships using methyl/ethyl alcohol as fuel*, with a view to developing mandatory instruments, and CCC 12 will further consider the revision of those Interim Guidelines, with a view to developing mandatory instruments.

5 IACS supports the work plan, as updated by CCC 10, to develop the mandatory safety standards for the use of methyl/ethyl alcohol to minimize the risk to the ship, its crew and the environment.

6 Based on the experience gained to date in the application of MSC.1/Circ.1621, IACS members, acting as recognized organizations, have identified requirements of MSC.1/Circ.1621 that need further clarification to facilitate their global and uniform implementation. This document provides IACS' interpretation of paragraph 11.7.1 of MSC.1/Circ.1621.

Introduction

7 Paragraph 11.7.1 of MSC.1/Circ.1621 states:

> "11.7.1 Machinery space and fuel preparation space where methyl/ethyl alcohol-fuelled engines or fuel pumps are arranged should be protected by an approved fixed fire-extinguishing system in accordance with SOLAS regulation II-2/10 and the FSS Code. In addition, the fire-extinguishing medium used should be suitable for the extinguishing of methyl/ethyl alcohol fires".

8 IACS members have faced challenges while applying provisions of paragraph 11.7.1 of MSC.1/Circ.1621 regarding the suitability of the medium for the extinguishing of methyl/ethyl alcohol fires, specifically when considering the use of CO_2.

Discussion

9 IACS recognizes that CO_2 may be a suitable extinguishing medium for methyl/ethyl alcohol fires and several sources give indication of the concentration to be used depending on the situation.

10 The FSS Code requires the following for machinery spaces (using fuel oil):

> "2.2.1.3 For machinery spaces the quantity of carbon dioxide carried shall be sufficient to give a minimum volume of free gas equal to the larger of the following volumes, either:
>
> .1 40% of the gross volume of the largest machinery space so protected, the volume to exclude that part of the casing above the level at which the horizontal area of the casing is 40% or less of the horizontal area of the space concerned taken midway between the tank top and the lowest part of the casing; or
>
> .2 35% of the gross volume of the largest machinery space protected, including the casing;"

11 Paragraph 11.2.2 of the IBC Code (applicable to chemical tankers) requires an amount of gas to be sufficient to provide a quantity of free gas equal to 45% of the gross volume of the cargo pump-room in all cases.

12 International standards on carbon dioxide extinguishing systems such as NFPA 12 and BS 5306-4 contain provisions to define the required quantity of CO_2 to be used, which finally results in a CO_2 quantity of 48% of the gross volume.

13 The proFLASH* report from the RISE Institute of Sweden on methanol fire detection and extinguishment states that "the design concentration of carbon dioxide gas fire-extinguishing systems should be increased from 40% to 55% to achieve the same safety margin for methanol as for traditional fuels".

Proposal

14 Based on the foregoing, IACS considers that a value of 50% is appropriate, since it is in line with the principles/orders of magnitudes given in those key references.

15 Aside from the matter of the CO_2 concentration, other aspects may have to be considered for the suitability of CO_2 fire-extinguishing system, including aspects such as time for CO_2 deployment (including the time needed for mustering and ensuring complete evacuation of the space before releasing CO_2), the inventory of methanol in the space and methanol fire duration in the space considered, which may imply that, at the time the CO_2 is deployed, the fire, even if originated from methanol, might have changed into an oil, paint or other material fire which does not require an increased concentration of CO_2 to be extinguished. This may be considered during the risk assessment process to confirm the suitability of the fire-extinguishing arrangements in machinery spaces.

16 Therefore, IACS has developed its unified interpretation, as set out in the annex of this document. This unified interpretation GF 21 will be uniformly implemented by IACS members on ships contracted for construction on or after 1 January 2026, to which the flag Administration has required the application of MSC.1/Circ.1621, unless instructed otherwise, in writing.

Action requested of the Sub-Committee

17 The Sub-Committee is invited to note the IACS UI GF 21 contained in the annex of this document.

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* https://www.diva-portal.org/smash/get/diva2:1094660/FULLTEXT02.pdf

ANNEX

IACS UNIFIED INTERPRETATION GF 21 OF PARAGRAPH 11.7.1 OF MSC.1/Circ.1621

GF 21 (OCT 2024): CO_2 FIRE-EXTINGUISHING SYSTEMS IN METHYL/ETHYL ALCOHOL FUELLED VESSELS MACHINERY SPACES

Paragraph 11.7.1 of MSC.1/Circ.1621, the *Interim guidelines for the safety of ships using methyl/ethyl alcohol as fuel* states:

> *"11.7.1 Machinery space and fuel preparation space where methyl/ethyl alcohol-fuelled engines or fuel pumps are arranged should be protected by an approved fixed fire-extinguishing system in accordance with SOLAS regulation II-2/10 and the FSS Code. In addition, the fire-extinguishing medium used should be suitable for the extinguishing of methyl/ethyl alcohol fires".*

Interpretation

1 Where the CO_2 fire-extinguishing system is used as the fixed gas fire-extinguishing system for the machinery space or fuel preparation space in methyl/ethyl alcohol-fuelled vessels, the quantity of CO_2 carried is to be sufficient to give a minimum volume of free gas equal to 50% of the gross volume of the largest space protected, including the machinery space casing.

2 As an alternative to 1, aspects, such as, but not limited to the inventory of methanol and the expected duration of a potential methanol fire in the space considered, may be considered in the risk assessment to confirm the suitability of the fire-extinguishing arrangements in machinery space, including both the fixed gas fire-extinguishing system (required by SOLAS II-2/10.5.2) and the fixed local application fire-extinguishing system (required by SOLAS II-2/10.5.6). Such alternative may be subject to approval by the Administration.

Note:

1 This unified interpretation is to be uniformly implemented by IACS Societies on ships contracted for construction on or after 1 January 2026, to which the Administration has required the application of MSC.1/Circ.1621.

2 The "contracted for construction" date means the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. For further details regarding the date of "contract for construction", refer to IACS Procedural Requirement (PR) No.29.
