INTERNATIONAL MARITIME ORGANIZATION

E

SUB-COMMITTEE ON CARRIAGE OF CARGOES AND CONTAINERS
5th session
Agenda item 5

CCC 5/5/8
2 July 2018
Original: ENGLISH

AMENDMENTS TO THE IMSBC CODE AND SUPPLEMENTS

Electrical equipment requirements for ammonium nitrate and related fertilizers

Submitted by IACS

SUMMARY	
Executive summary:	This document seeks clarification on the electrical equipment requirements for ammonium nitrate and related fertilizers
Strategic direction, if applicable:	Other work
Output:	OW 9
Action to be taken:	Paragraph 8
Related documents:	None

Introduction

1 The International Maritime Solid Bulk Cargoes (IMSBC) Code includes the following provisions relating to the carriage of AMMONIUM NITRATE UN 1942, AMMONIUM NITRATE BASED FERTILIZER UN 2067 and AMMONIUM NITRATE BASED FERTILIZER UN 2071:

> "***Prior to loading, the following provisions shall be complied with:***
>
> All electrical equipment, other than that of approved intrinsically safe type, in the cargo spaces to be used for this cargo shall be electrically disconnected from the power source, by appropriate means other than fuse, at a point external to the space. This situation shall be maintained while the cargo is on board."[1]

2 SOLAS regulation II-2/19.3.2 requires electrical equipment fitted in enclosed cargo spaces to be of a certified type and a footnote to this regulation makes reference to IEC 60092, titled "Electrical installations in ships". The unified interpretations related to this regulation in

[1] Note: This provision is also contained in the individual schedule for AMMONIUM NITRATE BASED FERTILIZER (non-hazardous).

the *Unified interpretation to SOLAS chapter II-2, the FS Code, the FTP Code and related fire test procedures* (MSC/Circ.1120) and the *Unified interpretations of SOLAS chapter II-2* (MSC.1/Circ.1555) refer to IEC 60092 – Part 506: Special feature – Ships carrying specific dangerous goods and materials hazardous only in bulk. Note 8 to table 19.2 of SOLAS chapter II-2 further states that for ammonium nitrate and ammonium nitrate fertilizers, compliance with IEC 60079, "Electrical apparatus for explosive gas atmospheres" is all that is required.

3 IACS is aware that there is a lack of clarity as to the intent of note 8 to table 19.2 of SOLAS chapter II-2 and a lack of consistency between said note and the IMSBC Code requirement for "intrinsically safe type" equipment.

Discussion

4 The above-mentioned note appears to indicate that a lesser electrical safety requirement applied when considering the carriage of ammonium nitrate and ammonium nitrate fertilizers is acceptable, since "a degree of protection" is provided in accordance with IEC 60079. However, IEC 60079 is a series of explosive atmosphere standards which addresses general equipment requirements, gas detectors, intrinsically safe equipment, a variety of different methods of equipment protection, classification of areas, material characteristics and some industry specific standards.

5 Specifying "intrinsically safe type" equipment in relation to the carriage of a cargo is, in some ways, meaningless without also specifying an "apparatus group" and a "temperature class" for the equipment. This is because "intrinsic safety" is only a method of protection and not a level of protection. In IEC 60092 – Part 506, dry cargo holds are considered as zone 1 hazardous areas and there are several different types of protection methods for explosive atmosphere equipment that are suitable for use in zone 1 such as categories Ex-d, Ex-e, Ex-p, Ex-q and Ex-m, as well as intrinsically safe categories Ex-ia and Ex-ib.

6 When molten, ammonium nitrate and related fertilizers decompose and evolve ammonia, which suggests that a group rating equivalent to class IIA or better is appropriate. A review of the available material safety data sheets for these cargoes indicates that they will start to decompose at temperatures above 170°C. The IMSBC Code entries require these cargoes not to be stowed immediately adjacent to any tank, double bottom or pipe containing heated fuel oil unless there are means to monitor and control the temperature so that it does not exceed 50°C. IACS is unaware as to whether this requirement originated to protect the cargo from heating by the tank/double bottom/pipe, thus causing the cargo to decompose; or to protect the cargo from leakages of hot fuel oil. In light of these uncertainties, IACS is not in a position to recommend a temperature class.

7 Recognizing that alternative standards to IEC 60092 are available and are acceptable to some Administrations, IACS suggests that, in the relevant individual schedules of the IMSBC Code, the wording could be amended to read as follows (additions/~~deletions~~):

> "All electrical equipment, other than that ~~of approved intrinsically safe type~~ certified safe-type suitable for [hazardous areas (comparable with zone 1)][zone 1] with an apparatus group rating equivalent to IIA or better [as defined by IEC 60079] and a surface temperature equivalent to temperature class [*class to be determined*] or better [as defined by IEC 60079], in the cargo spaces to be used for this cargo shall be electrically disconnected from the power source, by appropriate means other than fuse, at a point external to the space. This situation shall be maintained while the cargo is on board."

Action requested of the Sub-Committee

8 The Sub-Committee is invited to consider the discussion provided in paragraphs 6 and 7 above and decide what equipment is considered to constitute "intrinsically safe type". Having received this clarification, and if necessary, the Sub-Committee is invited to note that IACS would be willing to work with a Member State to develop a proposal for appropriate amendments to the IMSBC Code for submission to a future session of the Sub-Committee.