Guideline No.: K-02(201510)

K-02

15 PPM BILGE ALARMS

Issued date: October 20,2015

Foreword:

CCS Product Inspection and Testing Guideline (hereinafter referred to as this Guideline) contains the technical requirements, inspection and testing criteria related to classification and statutory survey of marine products to be applied for CCS approval/inspection.

This Guideline frees the users to adopt other test methods and requirements which are equivalent to or are stricter than this Guideline.

This Guideline is published and updated by CCS, and is released at http://www.ccs.org.cn. Your comments or suggestions are welcomed and may be sent to our email addressed mp@ccs.org.cn.

Historical version and release date: K-02(201510) October 20, 2015

Main change: New Release

CONTENTS

15 PPM BILGE ALARMS

1 Application

1.1 This Guideline applies to the type approval and inspection of the 15 ppm bilge alarms for the oily bilge water and ballast water in oil fuel tanks.

2 Normative references

2.1 Annex I of International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto.

2.2 IMO Revised Guidelines and Specifications for Pollution Prevention Equipment for Machinery Space Bilges of Ships, adopted by the Marine Environment Protection Committee by Resolution MEPC.107(49).

2.3 Guideline 3, PART ONE of CCS Rules for Classification of Sea-going Steel Ships.

3 Definitions

3.1 15 ppm bilge alarm means the alarm arrangements specified in regulation 16(5), which is designed for detecting the oil content of the effluent from the 15 ppm bilge separator not exceeding 15 ppm.

3.2 ppm means parts of oil per million parts of water by volume.

4 Plans and documents

4.1 The following documents are to be submitted to CCS for approval:

(1) main performance specifications;

(2) general assembly plan, external scantling, panel arrangement and internal arrangement;

(3) schematic diagrams of the system, analysing unit, electrical/electronic circuits;

(4) sample feed pump plan (if required);

(5) sample conditioning unit (if required);

(6) type test program.

4.2 The following documents are to be submitted to CCS for information:

(1) product instruction manual;

(2) nameplate and manufacturer’s quality certificate (specimen).

5 Design and technical requirements

The product design and technical requirements are to comply with Annex I of MARPOL 73/78 and Parts 2, 3 and 4 of MEPC.107(49) - Revised Guidelines and Specifications for Pollution Prevention Equipment for Machinery Space Bilges of Ships.

6 Selection of typical samples

CCS Surveyor will take samples from the qualified products provided by the manufacturer, and send to a test unit after sealing.

7 Type test

7.1 The items, methods and technical index of type test are to be in compliance with Annex of MEPC.107(49), including:

(1) Part 2 - Test and performance specifications for type approval of 15 ppm bilge alarms;

(2) Part 3 - Specifications for environmental testing for type approval of pollution prevention equipment;

(3) Part 4 - Method for the determination of the oil content.

7.2 Three grades of test fluids “A”, “B” and “C” are to be used.

7.2.1 Test fluid “A” which is a marine residual fuel oil in accordance with ISO 8217, type RMG 35 (density at 15℃ not less than 980 kg/m^3).

7.2.2 Test fluid “B” which is a marine distillate fuel oil in accordance with ISO 8217, type DMA (density at 15℃ not less than 830 kg/m^3).

7.2.3 Test fluid “C” which is a mixture of an oil-in-fresh water emulsion, in the ratio whereby 1 kg of the mixture consists of:

(1) 947.8 g of fresh water;

(2) 25.0 g of test fluid “A”;

(3) 25.0 g of test fluid “B”;

(4) 0.5 g surfactant (sodium salt of dodecylbenzene sulfonic acid) in the dry form;

(5) 1.7 g “iron oxides” (the term “iron oxide” is used to describe black ferrosoferric oxide (Fe_3O_4) with a particle size distribution of which 90% is less than 10 microns, the remainder having a maximum particle size of 100 microns).

7.3 Test facility

7.3.1 Samples are to be taken, to properly represent the fluid from 15 ppm bilge separator, as shown in Figure 1.

7.3.2 A diagrammatic arrangement of a test facility for evaluating the performance of the 15 ppm bilge alarm is given in Figure 2.

7.4 Technical requirements

7.4.1 Alarm value: 15 ppm ±5 ppm;

7.4.2 Measuring range: 0~30 ppm;

7.4.3 Response time: ≤ 5s.

7.4.4 The method for determination of oil content is to comply with the International Standard ISO 9377-2:2000 - Water quality - Determination of Hydrocarbon oil Index – Part 2: Method using solvent extraction and gas chromatography.

7.5 Type test items are to include:

7.5.1 visual examination;

7.5.2 calibration test;

7.5.3 contaminant and colour test;

7.5.4 sample pressure or flow test;

7.5.5 shut-off test;

7.5.6 utilities supply variation test;

7.5.7 calibration and zero shift test;

7.5.8 response time;

7.5.9 vibration test;

7.5.10 a low temperature test at 0℃;

7.5.11 a high temperature test at 55℃;

7.5.12 humidity test;

7.5.13 inclination test.

7.6 Test unit

The test samples are to be sent to a test unit recognized by CCS for type test as specified in 7.5.

8 Unit/batch inspection

8.1 The 15 ppm bilge alarms are to be subject to unit/batch inspection only after type approved.

8.2 For manufacturers obtained CCS type approval B, the unit/batch inspection of their products is as follows.

(1) The inspection items are to be performed according to the approved product inspection

program, but to include at least visual examination, calibration test, response time determination, 15 ppm alarm test, insulation resistance measurement and voltage test.

(2) The above mentioned tests are to be accomplished independently by the manufacturer and then the complete test reports to be submitted to the Surveyor for review.

(3) At least 5% and 2 samples of each batch of the products are to be selected by the Surveyor for check of the above test items, or such tests are to be performed in the manufacturer witnessed by the Surveyor.

(4) The documents required in (2) above are also to be submitted to CCS by the manufacturer.

9 Certificate

The marine product certificate/equivalent document for 15 ppm bilge alarms is to be used together with a copy of type approval certificate in IMO format.