

Guideline No.F-05 (201510)



**F-05**

# **FOAM EXTINGUISHING AGENT**

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## **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](mailto:mp@ccs.org.cn).

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## Contents

1 Application.....	4
2 Basis for approval and inspection .....	4
3 Terms and definitions.....	4
4 Plans and documents.....	4
5 Technical requirement.....	5
6 Selection of fire extinguishing agent for type test.....	5
7 Type test items.....	5
8 Unit/batch inspection .....	9
9 Miscellaneous.....	9

## **FOAM EXTINGUISHING AGENT**

### **1 Application**

1.1 The Guideline applies to foam extinguishing agent that is used on ships and offshore installations.

1.2 The Guideline does not apply to the foam extinguishing agent used for chemical-reaction-type extinguisher.

### **2 Basis for approval and inspection**

- (1) MSC.98 (73) *International Code for Fire Safety Systems (FSS CODE)*
- (2) MSC217 (82) *Adoption of Amendments to the International Code for Fire Safety Systems*
- (3) GB15308-2006 *Foam Extinguishing Agent*
- (4) MSC/Circ.670 *Guidelines for the Performance and Testing Criteria and Surveys of High-Expansion Foam Concentrates for Fixed Fire-Extinguishing Systems*
- (5) MSC/Circ.798 *Guidelines for Performance and Testing Criteria and Surveys of Medium-Expansion Foam Concentrates for Fire-Extinguishing Systems*
- (6) MSC.1/Circ.1312 *Revised Guidelines for the Performance and Testing Criteria, and Surveys of Foam Concentrates for Fixed Fire-Extinguishing Systems*

### **3 Terms and definitions**

3.1 The terms and definitions involved in the Guideline are in line with those in GB15308 and MSC.1/Circ.1312.

### **4 Plans and documents**

4.1 The applicant should submit the following documents to CCS for information when applying for CCS works approval.

- (1) Particulars of the manufacturer: Manufacturer history and present status, relevant product manufacturing history and operation status, name, usage, specification and capacity of main production and inspection equipment, technical and inspection personnel, and product brand;
- (2) Detailed of products applied for approval: including the product name, model and usage;
- (3) Product instructions: Including the product specifications, and technical discretions on protect selection, usage and maintenance;

- (4) Main raw material description: Including the name, model/specification, acceptance method and source;
- (5) Main production process: The production process flow chart indicating the inspection/test control point;
- (6) Quality management document.

4.2 The type test program, technical conditions for inspection and delivery and / or enterprise standards should be submitted to CCS for approval.

## 5 Technical requirement

5.1 The design and acceptance inspection of the product should comply with GB15308-2006 or the FSS CODE.

5.2 The fire extinguishing agent complying with GB15308-2006 should be of non-temperature sensitivity, apply to seawater, and not be affected by freezing or melting.

## 6 Selection of fire extinguishing agent for type test

6.1 The type test should be carried out on each type of fire extinguishing agent applied by the applicant for approval.

## 7 Type test items

7.1 The high/medium/low expansion and alcohol-resistance foam extinguishing agent with GB15308 as the production and inspection standard should be subject to relevant type test as per the requirements of Tables 7.1~7.4, and the qualification determination should also be based on such standard.

**List of type test items on low expansion foam concentrates Table 7.1**

No.	Test items	Technical requirement	Test method
1.	Freezing point test	GB15308 4.2.1.1	GB15308 5.2.3
2.	Freezing and thawing test	GB15308 4.2.1.1	GB15308 5.2
3.	Sedimentation test (for protein foam type)	GB15308 4.2.1.1	GB15308 5.3
4.	Fluidity test	GB15308 4.2.1.1	GB15308 5.4
5.	pH value test	GB15308 4.2.1.1	GB15308 5.5
6.	Surface tension test ( for film-forming foam type)	GB15308 4.2.1.1	GB15308 5.6

F-05(201510) FOAM EXTINGUISHING AGENT

7.	Interfacial tension test (for film-forming foam type)	GB15308 4.2.1.1	GB15308 5.6
8.	Spreading coefficient test (for film-forming foam type)	GB15308 4.2.1.1	GB15308 5.6
9.	Corrosiveness test	GB15308 4.2.1.1	GB15308 5.7
10.	Expansion ratio test	GB15308 4.2.1.1	GB15308 5.8
11.	25% drainage time test	GB15308 4.2.1.1	GB15308 5.8

No.	Test items	Technical requirement	Test method
12.	Fire tests	GB15308 4.2.1.2	GB15308 5.10
13.	Temperature sensibility test	GB15308 4.2.1.3	--

**List of type test items on medium expansion foam concentrates Table 7.2**

No.	Test items	Technical requirement	Test method
1.	Freezing point test	GB15308 4.2.2.1	GB15308 5.2.3
2.	Freezing and thawing test	GB15308 4.2.2.1	GB15308 5.2
3.	Sedimentation test	GB15308 4.2.2.1	GB15308 5.3
4.	Fluidity test	GB15308 4.2.2.1	GB15308 5.4
5.	pH value test	GB15308 4.2.2.1	GB15308 5.5
6.	Surface tension test ( for film-forming foam type)	GB15308 4.2.2.1	GB15308 5.6
7.	Interfacial tension test (for film-forming foam type)	GB15308 4.2.2.1	GB15308 5.6
8.	Spreading coefficient test (for film-forming foam type)	GB15308 4.2.2.1	GB15308 5.6
9.	Corrosiveness test	GB15308 4.2.2.1	GB15308 5.7
10.	Expansion ratio test	GB15308 4.2.2.1	GB15308 5.8
11.	25% drainage time test	GB15308 4.2.2.1	GB15308 5.9.1
12.	50% drainage time test	GB15308 4.2.2.1	GB15308 5.9.1
13.	Fire tests	GB15308 4.2.2.1	GB15308 5.10

14.	1% burnback time	GB15308 4.2.2.1	GB15308 5.10
15.	Temperature sensibility test	GB15308 4.2.2.3	--

**List of type test items on high expansion foam concentrates Table 7.3**

No.	Test items	Technical requirement	Test method
1.	Freezing point test	GB15308 4.2.2.2	GB15308 5.2.3
2.	Freezing and thawing test	GB15308 4.2.2.2	GB15308 5.2
3.	Sedimentation test	GB15308 4.2.2.2	GB15308 5.3
4.	Fluidity test	GB15308 4.2.2.2	GB15308 5.4
5.	pH value test	GB15308 4.2.2.2	GB15308 5.5
6.	Surface tension test ( for film-forming foam type)	GB15308 4.2.2.2	GB15308 5.6
7.	Interfacial tension test (for film-forming foam type)	GB15308 4.2.2.2	GB15308 5.6
8.	Spreading coefficient test (for film-forming foam type)	GB15308 4.2.2.2	GB15308 5.6
9.	Corrosiveness test	GB15308 4.2.2.2	GB15308 5.7
10.	Expansion ratio test	GB15308 4.2.2.2	GB15308 5.9.2
11.	50% drainage time test	GB15308 4.2.2.2	GB15308 5.9.2
12.	Fire tests	GB15308 4.2.2.2	GB15308 5.10
13.	Temperature sensibility test	GB15308 4.2.2.3	--

**List of type test items on alcohol-resistance foam concentrates Table 7.4**

No.	Test items	Technical requirement	Test method
1.	Freezing point test	GB15308 4.2.1.1	GB15308 5.2.3
2.	Freezing and thawing test	GB15308 4.2.1.1	GB15308 5.2
3.	Sedimentation test (for protein foam type)	GB15308 4.2.1.1	GB15308 5.3
4.	Fluidity test	GB15308 4.2.1.1	GB15308 5.4
5.	pH value test	GB15308 4.2.1.1	GB15308 5.5

F-05(201510) FOAM EXTINGUISHING AGENT

6.	Surface tension test ( for film-forming foam type)	GB15308 4.2.1.1	GB15308 5.6
7.	Interfacial tension test (for film-forming foam type)	GB15308 4.2.1.1	GB15308 5.6
8.	Spreading coefficient test (for film-forming foam type)	GB15308 4.2.1.1	GB15308 5.6
9.	Corrosiveness test	GB15308 4.2.1.1	GB15308 5.7
10.	Expansion ratio test	GB15308 4.2.1.1	GB15308 5.8
11.	25% drainage time test	GB15308 4.2.1.1	GB15308 5.8
12.	Fire tests	GB15308 4.2.3.2; 4.2.3.4	GB15308 5.10
13.	Temperature sensibility test	GB15308 4.2.1.3	--

7.2 The low/medium/high expansion foam extinguishing agent with the FSS CODE as the production and inspection standard should be subject to relevant type test as per the requirements of Table 7.5.

**List of type test items on foam concentrates**

**Table 7.5**

No.	Test items	Technical requirement/test method		
		Low expansion foam concentrates	Medium expansion foam concentrates	High expansion foam concentrates
		MSC.1/Circ.1312	MSC/Circ.798	MSC/Circ.670
1.	Freezing and melting test	3.1	3.1	3.1
2.	Heat stability test	3.2	3.2	3.2
3.	Sedimentation test	3.3	3.3	3.3
4.	Kinematic viscosity test	3.4	3.4	3.4
5.	pH value test	3.5	3.5	3.5
6.	Spreading coefficient test	3.6	--	--
7.	Expansion ratio test	3.7	3.6	3.6
8.	Drainage time test	3.8	3.7	3.7
9.	Fire tests	3.9	3.8	3.8

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10.	Corrosiveness test	3.10	3.9	3.9
11.	Density test	3.11	3.10	3.10

**8 Unit/batch inspection**

8.1 After approval, the product unit/batch inspection will be carried out as per the product inspection plan authorized during the approval.

8.2 After the unit/batch inspection, CCS product certificate or equivalent document can be issued for the qualified product.

**9 Miscellaneous**

The Surveyor should verify the inspection basis in the certificate according to fire extinguishing agent application conditions on the ship before it is placed on the ship.