

EL768. Foam Fire Extinguishing Agent

[EL768-2012/1/2012-36]



1. Scope

This criteria applies to foam fire extinguishing agent, a type of fire extinguishing agent specified in the “Installation, Maintenance, and Safety Control of Fire-Fighting Systems Act.”

2. Definitions

2.1

“Fire Extinguishing Agent” refers to a substance in three phases or forms (solid, liquid, or gas) that is used in firefighting equipment or facilities with the capability of fire extinguishing.

2.2

“Foam Fire Extinguishing Agent” refers to a liquid phase fire extinguishing agent with foam stabilizing agent or other additives, which is to be mixed with water (including sea water) in a certain ratio and mixed with air or inert gas mechanically to generate foam for fire extinguishing.

Note) The types of foam fire extinguishing agents are classified into protein foam, synthetic foam, aqueous film foam and alcohol resistant foam in the type approval and verification technology criteria for foam fire extinguishing agents.

2.3

“EC₅₀: Median Effective Concentration” refers to the concentration of a sample that immobilizes approximately 50% of the test organisms in a given population for the given test period.

2.4

“LC₅₀: Median Lethal Concentration” refers to the concentration of a sample that kills approximately 50% of the test organisms in a given population for the given test period.

3. Certification Criteria

3.1 Environmental Criteria

3.1.1

With respect to the use of chemical substances in the manufacturing process, the product shall meet the following requirements.

3.1.1.1

APEOs (alkylphenol ethoxylates), APDs (alkylphenol derivates) or ethylene glycol shall not be used.

3.1.1.2

PFOS (perfluorooctanesulfonate), PFHxS (perfluorohexanesulfonate) or 8:2 FTOH (8:2 Fluorotelomer alcohol) shall not be used, and the total sum of these components shall not exceed 100 mg/kg.

3.1.2

With respect to the emission of harmful substances while the product is used, the following requirements shall be satisfied.

3.1.2.1 The harmful substance content of the product shall meet the following requirements.

Item	Lead (Pb)	Arsenic (As)	Cadmium (Cd)	Mercury (Hg)	Chromium (Cr)	Copper (Cu)	Nickel (Ni)	Zinc (Zn)
Criteria [mg/Kg]	≤ 5	≤ 2.5	≤ 0.05	≤ 0.05	≤ 15	≤ 20	≤ 2.5	≤ 50

3.1.2.2

Chemical substances that are labeled and classified into one of the following H code categories that indicate the harmfulness to aquatic organisms in accordance with the UN GHS (Globally Harmonized System of Classification and Labelling of Chemicals) shall not be used.

Note) Classification of substances shall be tentatively based on Part 3 of the EU Regulation (EC) No. 1272/2008 Appendix VI (Harmonized Classification and Labeling Tables).

H400: very toxic to aquatic life

H410: very toxic to aquatic life, with long-lasting effects

H411: toxic to aquatic life, with long-lasting effects

H412: harmful to aquatic life, with long-lasting effects

H413: may cause long-lasting harmful effects to aquatic life

3.1.3

With respect to the emission of substances that may pollute the water system and soil when product is disposed, the product shall meet the following requirements.

3.1.3.1

Surfactants (including mixing agent) and other raw substances with contents over 5 weight% used in the fire extinguishing agent shall be readily biodegradable.

Note) Product is tentatively considered to be readily biodegradable if the biodegradability meets the following criteria for each biodegradability test method applied in this criteria.

Test Method	Culturing Days	Biodegradability	Test Method	Culturing Days	Biodegradability
OECD 301 A	28 days	≥ 70%	KS I ISO 7827	28 days	≥ 70%
OECD 301 B	28 days	≥ 60%	KS I ISO 9439	28 days	≥ 60%
OECD 301 C	28 days	≥ 60%	-	-	-
OECD 301 D	28 days	≥ 60%	KS I ISO 10707	28 days	≥ 60%
OECD 301 F	28 days	≥ 60%	KS I ISO 9408	28 days	≥ 60%

3.1.3.2

Level of toxicity expressed as EC₅₀ from 48 hours of acute toxicity testing using a water flea or the level of toxicity expressed as LC₅₀ from 96 hours of acute toxicity testing using a freshwater fish shall be 100 mg/L or higher.

3.1.3.3

Applicant shall have established and executed/operated a system to collect and treat the waste products properly.

3.2 Quality Criteria

Quality of the product shall satisfy the certification criteria specified in the “Type Approval and Verification Technology Criteria of Fire Extinguishing Agent” in accordance with the “Installation, Maintenance, and Safety Control of Fire-Fighting Systems Act”. However, the products used in the fire-fighting facilities shall meet the requirements specified in the “Type Approval and Verification Technology Criteria of Foam Fire Extinguishing Agent”.

3.3 Consumer Information

3.3.1

Indication on the items of the product that contribute to the reasons for certification (reduction of harmful substances, reduction of toxicity of eco-system, superior biodegradability) while the product is used.

3.3.2

Information about the method used to collect waste products (telephone number of collecting company, and etc.)

3.3.3

In the event that perfluorinated compound is not used as surfactant of the fire extinguishing agent, the corresponding information shall be indicated.

4. Test Methods

Certification Criteria		Test and Verification Methods	
Environmental Criteria	3.1.1	3.1.1.1	Verification of submitted documents
		3.1.1.2	Test report issued by an accredited testing laboratory in accordance with the following test methods <ul style="list-style-type: none"> • PFOS, PFOA Test report issued by an accredited testing laboratory in accordance with “Annex Table 2. EM201 Method to measure the contents of PFOS and PFOA.” <ul style="list-style-type: none"> • PFH_xS • 8:2 FTOH
	3.1.2	3.1.2.1	Test report issued by an accredited testing laboratory in accordance with the test methods specified in KS M 0010 (Test Methods for Water Content of Chemical Products), KS M 0016 (General Rules for Atomic Absorption Spectrochemical Analysis), KS M 0032 (General Rules for ICP Emission Spectrochemical Analysis) and ICP-MS (Inductively Coupled Plasma Mass Spectroscopy).
		3.1.2.2	Verification of submitted documents
	3.1.3	3.1.3.1	Verification of submitted documents or test report issued by an accredited testing laboratory in accordance with OECD 301 A, OECD 301 B, OECD 301 C, OECD 301 D, OECD 301 F, KS I ISO 7827, KS I ISO 9439, KS I ISO 10707 and KS I ISO 9408 ^{Note 1) Note 2)} .
		3.1.3.2	Verification of submitted documents or test report issued by an accredited testing laboratory in accordance with the following test methods ^{Note2)} . <ul style="list-style-type: none"> • OECD 202 (Daphnia sp. Acute immobilization test) • Water pollution process test standard (ES 04751.1 Acute Toxicity Test Method using a Water Flea) • OECD 203 (Fish, acute toxicity test)
		3.1.3.3	Verification of submitted documents

Quality Criteria	<ul style="list-style-type: none"> • Products other than those for fire-fighting facility Type Approval and Type Approval Document According to Verification Technology Criteria of Fire Extinguishing Agent • Products for fire-fighting facility Type Approval and Type Approval Document According to Verification Technology Criteria of Foam Fire Extinguishing Agent
Consumer Information	Verification of submitted documents

Note 1) List of related standards

- OECD 301 A : Ready Biodegradability – DOC Die-Away
- OECD 301 B : Ready Biodegradability – CO2 Evolution (Modified Sturm Test)
- OECD 301 C : Ready Biodegradability – MITI (I) (Ministry of International Trade and Industry, Japan)
- OECD 301 D : Ready Biodegradability – Closed Bottle
- KS I ISO 7827 : Water quality — Evaluation in an aqueous medium of the "ultimate" aerobic biodegradability of organic compounds — Method by analysis of dissolved organic carbon (DOC)
- KS I ISO 9439 : Water quality — Evaluation of ultimate aerobic biodegradability of organic compounds in aqueous medium — Carbon dioxide evolution test
- KS I ISO 10707 : Water quality - Evaluation in an aqueous medium of the "ultimate" aerobic biodegradability of organic compounds - Method by analysis of biochemical oxygen demand(closed bottle test)
- KS I ISO 9408 : Water quality - Evaluation of ultimate aerobic biodegradability of organic compounds in aqueous medium by determination of oxygen demand in a closed respirometer

Note 2) If applicant intends to prove the compliance by using a test report issued by a certified domestic/international testing laboratory in accordance with the specified test methods or the methods that are considered to be equivalent (limited to the methods that are issued within 3 years priority to the date of application of E-Mark certification) or a document that is deemed to be reliable and with a known source, the E-Mark Certification Deliberation Committee may judge the compliance. Applicant shall submit a test report in accordance with the specified method if it is deemed to be inappropriate.

4.1 General Matters

4.1.1

One test sample shall be prepared for each applicable product as a general rule. If more than one test sample is required, however, the required number of samples shall be provided.

4.1.2

Test samples shall be collected at random by a certification institute from the products available in the market or stored in the manufacturing facility.

4.1.3

The result of the test shall be numerically set according to KS Q 5002 (Statistical interpretation of data - Part1: Statistical presentation of data)

5. Reasons for Certification

“Reduction of harmful substance, reduction of toxicity of eco-system, superior biodegradability”

[Common Criteria]

1. An applicant who applies for E-Mark certification shall meet one of the following requirements in relation to the compliance with environmental regulation standards.
 - A. The applicant shall not have any record of violating environmental regulation standards in the corresponding business premises within one year prior to the date of application.
 - B. If the applicant has a record of violating environmental regulation standards in the corresponding business premises within a year prior to the date of application, the applicant shall present the evidence that the violating issue has been corrected and a proper measure (including a plan; hereinafter, plan is assumed to be included in the term “measure”) to prevent the recurrence of the same issue is established. In this case, the measure to prevent the recurrence shall include the following.
 - i. List of environmental regulation standards in the applicable region.
 - ii. Execution system for environmental regulation standard (such as an organization chart with roles marked on it).
 - iii. Policy of storing written documents related to the execution of environment regulation standards.
2. An applicant who has received the E-Mark certification shall comply with the environmental regulation standards during the certification period. If any violation of the environmental regulation standards is found during the certification period, the contents of the violation, measures to resolve the issue in violation and measures to prevent the recurrence of the issue shall be reported to the President of the Korean Environmental Industry & Technology Institute (hereinafter referred to as the President of KEITI) within one month from the date of the corresponding violation, or the certification may be canceled.
3. An applicant who has received the E-Mark certification must satisfy the following requirements in relation to the indication of ‘consumer information’ specified in the certification standards for each target product, or the certification may be cancelled.
 - A. ‘Consumer information’ related to the product shall be marked on the surface of the product. If the President of KEITI acknowledges that it

is impossible or undesirable to mark it on the surface of a product, however, the information may be marked on another appropriate part of the product that is visible to consumers, such as product packaging, guidebook or user's manual. The date of manufacture shall also be indicated (in cases in which it can be identified by a serial number or other means, it shall be considered as indicated). The date of purchase can be used to determine whether the product is certified and whether the certification criteria is observed if the date of manufacture is not indicated.

- B. In addition, the 'consumer information' related to services shall be marked on the internal and external areas of a building where the service is provided. If the President of KEITI acknowledges that it is impossible or undesirable to mark it on the internal or external areas of a building, however, it shall be marked in an appropriate location where it is visible to consumers, such as on the contract, statement of delivery, warranty document or brochure.
4. An applicant who applies for the E-Mark certification or who has obtained the E-Mark certification shall comply with the "Fair Labeling and Advertising Act" in order to establish fair trade order and protect consumers, or the application for the certification may be rejected or their certification may be cancelled.
 5. Unless otherwise specified, the various specifications cited in this certification criteria for each target product shall be the ones that are current at the time of the application of the certification.
 6. If the application of the standards in relation to quality in accordance with the certification criteria for each target product is deemed inappropriate, the President of KEITI may establish and operate the quality criteria for the product.

[Verification Method in accordance with Certification Criteria]

1. Test report in accordance with the specified test method refers to a test report issued by a testing laboratory designated by the President of KEITI from among the following organizations. However, if the applicant applying for the E-Mark certification wishes to be verified on the basis of a test report issued by a test/inspection organization that is not included on the following list or a test report issued by the testing laboratory of the applicant's lab, it shall be verified and inspected in the presence of a specialist designated by the President of KEITI.
 - A. KEITI, in accordance with Item No 12, Item 4, Paragraph 3, Article 5 of the relevant law.
 - B. Test/inspection institute recognized by the Test/Inspection Institute Recognition System in accordance with the Article 23 of the "Framework Act on National Standards" (Example: Test/Inspection institutes recognized by KOLAS)
 - C. Test/inspection institutes recognized/designated by the president of central administrative organization in accordance with the applicable laws.
 - D. Foreign test/inspection institute that conforms to the international standard ISO/IEC 17025.
2. When a test/inspection institute described in the above Clause 1 receives a request from the President of KEITI about data related to the test, the corresponding institute shall comply with the request unless there is an exceptional situation that justifies non-compliance. Penalties such as restriction on test commissioning may be applied if the request of the President of KEITI is refused without a valid reason.
3. Compliance with the certification criteria shall be verified by what is submitted by the applicant applying for E-Mark certification for the purpose of proving the compliance with the corresponding criteria such as test report, raw material supply/production data, certificates related to the product and user's manual or guidebook, or product. Performance data, evidentiary documents or site photos may be included in case of service. However, if verification is difficult to be made with the submitted documents alone, tests described in Clause 1 can be added.