# TGL-42-08

# Fire Extinguishers

## 1. Rationale

Portable fire extinguishers that are produced and sold in the market use various types of extinguishers. Some of the extinguishers used create environmental problems. For example, Halon has the potential to create holes in the ozone layer. Carbondioxide also has the potential to trap heat within the atmosphere, resulting in increased temperatures within the atmosphere from the Greenhouse Effect. Extiguishers made from dry chemicals, if misused, can damage tools and equipments around the area applied, cause irritation to the respiratory system, as well as reduce visibility.

Thus, fire extinguishers with Green Labels consider the environmental impacts from various extiguishers and use only extinguishers with minimal environmental and human health impacts.

## 2. Category Definitions

The term '*fire extinguisher*' here includes only portable fire extinguishers used for putting out Types A, B, and C flames only. It does not include fire extinguishers for putting out Type D flames.

## 3. Definitions

'*Type A flame*' refers to flames generated from normal fuels such as wood, paper, cloths, rubber, and plastics.

'*Type B flame*' refers to flames generated from inflamed liquids, gases, wax, and other oils.

'*Type C flame*' refers to flames generated in electric equipment or things with electric current.

'*Type D flame*' refers to flames generated from inflamed metals such as Magnesium, Sodium, Potassium, Zirconium, and Titanium.

'*Water-type portable fire extinguishers*' refers to primary fire extinguishing equipments that are easily portable, filled with water on the inside. Water is a Type A extinguisher.

'*Chemical-type portable fire extinguishers*' refers to primary fire extinguishing equipments that are easily portable, the barrel of which is made from metal or other materials.

'*Foam-type portable fire extinguishers*' refers to primary fire extinguishing equipments that are easily portable and can spray foam, which is an extinguisher of type A and B.

'*Water-solution-type portable fire extinguishers*' refers to primary fire extinguishing equipments that contain water and other chemicals that are type A, B, and C extinguishers.

## 4. General Requirements

4.1 The product must be certified to or pass the tests for the minimum desirable characteristics specified in Table 1 below:

**Table 1** Type of fire-extinguishers that must pass tests for desirable characteristics.

| Type | Thai Industrial Standard or Specified Tests |
|---|---|
| Dry chemicals | TIS 332: Dry chemical portable fire extinguishers |
| Foam | TIS 882: Portable fire extinguishers: Foam |
| Water or Water Solutions | 1) ANSI-UL-711 (Rating and Fire Testing Extinguishers) or<br>2) EN-3 (Portable fire extinguishers. Characteristics, performance requirements and test methods ) or<br>3) NFPA-10 (Standard for Portable Fire Extinguishers),18 (Standard on Wetting Agents) |

4.2 Production, transportation, and waste disposal must be in accordance with all applicable government acts and regulations.

4.3 The product must be certified to ISO 9001 or have production processes that have quality control and/or quality assurance: QC/QA.

## 5. Product Specific Requirements

5.1 Portable fire extinguishers must not use extinguishers that contain Halogens or Organic Halogenides or Carbondioxide.

5.2 Heavy metals or compounds of heavy metals such as Lead, Cadmium, Copper, Mercury, and Zinc in extinguishers must be no more than the standards specified in Table 2.

**Table 2:** Amount of Heavy Metals Permitted in Extinguishers

| Parameters | Standard (milligram per liter)[1] |
|---|---|
| Cadmium | 0.003 |
| Lead | 0.01 |
| Mercury | 0.006 |
| Copper | 2 |
| Zinc | 3 |

Note: [1] Standard for Water Quality, Metropolitan Waterworks Authority.

5.3 Packaging
- Must not use plastic polymers with Halogen content.
- Plastic packages must be recyclable.

5.4 There must be measures for taking back product waste as well as measures for waste disposal that are in accordance to academic theory, but that can be practically applied. There must also be a clear timeline beginning from the date the product is allowed to carry the Green Label.

5.5 There must be documents detailing methods of product disposal after use. These wastes are fire extinguishers that can no longer be used and the chemicals still remaining inside.

## 6. Testing Methods

6.1 The manufacturer shall submit documents permitting the product to bear the Thai Industrial Standard symbol for that product or test results for the minimum required characteristics according to Table 1.

6.2 The manufacturer shall submit documents certifying that the production process meets the ISO 9001 standard from a trusted certification body or pass quality control tests by Green Label officers.

6.3 The manufacturer shall submit certificates and lists of extinguishers according to requirement no. 5.1, signed by the company's Managing Director or other authorities within the company.

6.4 The manufacturer shall submit test results for heavy metals such as Lead, Cadmium, Copper, Mercury, and Zinc according to Atomic Absorption Spectrometry (AAS) and Inductively Coupled Plasma Spectrometry (ICP) tests.

6.5 The manufacturer shall submit to Green Label officers documents certifying that the plastic packages do not contain polymers with Halogens, and is recyclable, signed by the packge manufacturing company's Managing Director.

6.6 The manufacturer shall submit evidence or plan for recalling product waste that is practiceable within a clear time period. The evidence or plan must be certified by the company's Managing Director or authorized party within the company.

6.7 The manufacturer shall submit documents suggesting measures for dealing with product waste after use. These product wastes are fire extinguishers that can no longer be used and the remaining chemicals contained within them.

Note: All tests must be made within the following laboratories:
- Government laboratories
- Independent laboratories that have been certified to be in compliance with the general requirements for the competence of testing and calibration laboratories, TIS 17025 (ISO/IEC 17025)