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Label Review Manual

Chapter 9: Physical or Chemical Hazards

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I. Introduction

This chapter covers the Physical or Chemical Hazards statements that are required for certain pesticide products set out in the regulations, *40 CFR 156.78*. Such hazard statements address flammability, explosive potential and precautions. In addition, special hazard statements are required for certain fumigants. The reviewer should refer to the regulations and look through the guidance set out in the following sections to evaluate labels.

II. Placement of the physical or chemical hazards statement

Placement of the Physical or Chemical Hazards section should be immediately below the Hazards to Humans & Domestic Animals and Environmental Hazards statements in the Precautionary Statements section of the label. The physical or chemical hazards section must bear the subheading "Physical or Chemical Hazards".

III. Labeling for flammable products

Precautionary statements relating to product flammability are required if the product meets the criteria set out in the regulations and described below. Review Table 1 to determine the appropriate flammability statements.

A. Data Requirements for Flash Point/Flame Extension

Data requirements for flammability are covered in the regulations set out in *40 CFR 158.310* and *40 CFR 161.190*. OPPTS Harmonized Test Guidelines Series 830, Product Properties (830-6315), covers the **flash point** and **flame extension** of a product. The flash point is the lowest temperature at which a liquid product containing a combustible ingredient that gives off a flammable vapor will ignite. The flame extension test is required for aerosol products. The flame extension test is conducted by holding the aerosol can 6 inches from a flame and discharging the product across the flame. The extension of any flame from the flame source (typically a candle) in inches is noted and recorded. Any flame extension more than 18 inches or any flashback of flame to the valve at any degree of valve opening would then dictate the proper labeling of the product as either being flammable or extremely flammable. Flashback occurs when the flame is drawn back toward the aerosol can by the stream of propellant. This would indicate an extremely flammable product.

The product's flash point is shown on the Confidential Statement of Formula (CSF) and should be expressed in degrees Fahrenheit (°F) and the equivalent in degrees Celsius (°C). For aerosol products, the registrant is required to report the results of the flame extension

test and any positive flashbacks. This requirement does not apply to liquid products that are typically incombustible, as well as solid products not containing combustible ingredients such as most dust or granular formulations, pellets/tablets (baits), impregnated materials, etc. If the CSF indicates "not applicable" or "N/A for flammability", you may skip this section.

Table 1. Typical Statements for Flammable Products

Criteria	Required Text
(A) Pressurized Products	
Flash point at or below 20°F (-7°C) or if there is a flashback at any valve opening	**Extremely flammable.** Contents under pressure. Keep away from fire, sparks, and heated surfaces. Do not puncture or incinerate container. Exposure to temperatures above 130°F may cause bursting.
Flash point above 20°F (-7°C)to 80°F (27°C) or if the flame extension is greater than 18 inches long at a distance of 6 inches from the flame	**Flammable.** Contents under pressure. Keep away from heat, sparks, and open flame. Do not puncture or incinerate container. Exposure to temperatures above 130°F may cause bursting.
All other pressurized products	**Contents under pressure.** Do not use or store near heat or open flame. Do not puncture or incinerate container. Exposure to temperatures above 130°F may cause bursting
(B) Nonpressurized Products	
Flash point at or below 20°F (-7°C)	**Extremely flammable.** Keep away from fire, sparks, and heated surfaces.
Flash point greater than 20°F (-7°C) to 80°F (27°C)	**Flammable.** Keep away from heat and open flame.
Flash point greater than 80°F to 150°F (66°C)	**Combustible.** Do not use or store near heat or open flame.

[40 CFR 156.78]

B. Terms to Avoid

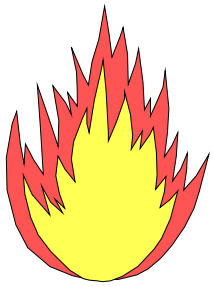
In order to avoid confusion with the product's overall signal word, the terms, CAUTION, WARNING, and DANGER (human hazard signal words based on toxicity data) are **NOT** to be used with the flammability statements. These words are only to be used as the human hazard signal word on the product. (*40 CFR 156.64(b)(3)*).

C. Total Release Fogger Products

If the product is a total release fogger containing a propellant with a flash point at or below 20°F, the following label statement must be included in the Physical or Chemical Hazards section:

"This product contains a highly flammable ingredient. It may cause a fire or explosion if not used properly. Follow the Directions for Use on this label very carefully".

In addition to this required language, a graphic symbol such as that illustrated below or an equivalent symbol must be displayed adjoining the Physical or Chemical Hazards statement. The graphic symbol must be no smaller than twice the size of the first character of the human hazard signal word. Also, the two phrases shown below must be presented near the graphic symbol. (*PR Notice 98-6* and *40 CFR 156.78(d)(3)*).



Highly Flammable Ingredient
Ingrediente Altamente Inflamable

IV. Declaration of non-flammability

Certain products may bear a claim of non-flammability, with terms like: *"non-flammable"* or *"non-flammable (gas, liquid, etc.)"*. If the draft label has no claim of non-flammability, skip this section. However, if the proposed draft label has such a claim, the reviewer must check to see that the terms *"Extremely Flammable"* or *"Flammable"* do not appear in the Physical or Chemical Hazards section of the proposed label. Obviously, if either of these terms appears in the Physical or Chemical Hazards section, the claim of non-flammability CAN NOT be used.

A. Criteria for Declaring Non-Flammability

If the proposed label bears a claim of non-flammability, it should meet the following criteria:

1. **Gases/Mixtures of Gases.** If a gas or mixture of gases (under pressure), the product must not ignite when a lighted match is placed against the open cylinder valve.

2. **Liquids.** If a liquid, the product must have a flash point greater than 350°F (177°C). Refer to the CSF for the flash point.

3. **Pressurized Products.** Pressurized products (aerosols) may be classed as non-flammable if they meet the following criteria:

a. The flame extension is zero inches, using the method designated in the Guidelines.

b. There is no flashback.

c. The flash point of the non-volatile liquid component is greater than 350°F (177°C).

If you are unsure of whether the product meets the criteria for declaring non-flammability, submit the label package for product chemistry review to determine the validity of the non-flammability claim.

B. Non-Flammability Labeling Statement and Placement

The phrases *"non-flammable"*, *"non-flammable gas"* or *"non-flammable liquid"*, may appear as a sub-statement to the ingredients statement, or on a back or side panel. The phrase should not be highlighted or emphasized (such as through use of inordinately large type size, or sharply contrasting color, etc.) so as to constitute a misleading safety claim.

V. Labeling for liquid products used near electrical equipment (*Dielectric Breakdown Voltage*)

If the proposed draft label is **not** for a liquid, skip this section. Some liquid products may pose a shock hazard when used near electrical equipment or outlets. The dielectric breakdown voltage is a measure of a liquid's capacity to conduct electricity and is required if the end use product is a liquid and is to be used near electrical equipment. (*40 CFR 158.310(d)*). (OPPTS Test Guidelines Series 830, Product Properties, #830-6321)

If the proposed label **is** for a liquid product, review the criteria below:

A. Criteria for Determining the Requirement of the Shock Hazard Statement

1. The use directions permit use of the product near electrical equipment or electrical outlets (transformers, cable TV pedestals, conduits, etc.); and

2. the data matrix does not provide a dielectric breakdown voltage; or

3. the dielectric breakdown voltage is less than 5,000 volts.

B. Shock Hazard Labeling Statement and Placement

The Agency has historically taken the position that if the product meets the criteria above; the following statement must be shown under the heading Physical or Chemical Hazards.

"Do not apply this product around electrical equipment due to the possibility of shock hazard".

VI. Labeling for explosive potential

A. When Required

When data submitted in accordance with *40 CFR Part 158* demonstrates hazards of a physical or chemical nature other than flammability (such as explosive potential), appropriate statements of hazard must be included on the label. Such statements must address the potential explosion hazard.

B. Chemicals with Potential Explosion Hazard

Chemicals that the Agency recommends have specific statements for potential explosion hazard include, but are not limited to:

- sulfur dust
- carbon dust
- potassium nitrate
- sodium nitrate
- potassium chlorate

If the CSF indicates that the product might require labeling for potential explosion hazard, submit the label package for product chemistry review for a determination.

VII. Additional label statements for certain fumigants

For some fumigant chemicals, statements of flammability or other physical or chemical hazards may be required. Several fumigants are highly flammable in the liquid or vapor form. The statements of flammability listed below for the following chemicals should be located on the side panel under the heading "Physical or Chemical Hazards". (*PR Notices 84-5* and *85-6*)

A. Sodium and Calcium Cyanides

"In the presence of moisture, highly poisonous gas (hydrogen cyanide) is formed".

VIII. Warning statements about mixing certain products

Some products react with certain surfaces such as galvanized steel to form highly combustible gases. Therefore, under the Directions for Use section, some product labels prohibit mixing, storing, or applying the product in galvanized steel or unlined steel containers. This is acceptable. However, no human hazard signal word (Caution, Warning, or Danger) may be used with this information. (*40 CFR 156.64(b)(3)*). The registrant may use "Attention", "Notice" or a similar word or phrase to alert the user. (Refer to chapter 11, Directions for Use "Compatibility with Other Products", for more information on this issue.)

IX. Requirements for use of fire retardant

Because of its combustion capability, the Agency has historically required all formulations of **sodium chlorate** to include an appropriate fire retardant chemical. Refer to *Chapter 5, Ingredients Statement, (IX)(I) Sodium Chlorate Products*, for placement instructions for the required statement.

X. Other physical/chemical hazard statements

When data submitted in accordance with the requirements set forth in *40 CFR 158.310* and *40 CFR 161.190* demonstrate hazards of a physical or chemical nature other than flammability or explosive potential, appropriate statements of hazard must be included on the label. Such statements may address hazards of oxidizing or reducing capability, reactivity, or corrosivity. For example, EPA has historically required a warning statement for oxidizing agents such as "Do not use with or store near any oxidizing or reducing agents." These decisions are made on a case-by-case basis. Check with other documents, such as REDs and registration review documents, to see if other wording is required.