DEPARTMENT OF TRANSPORTATION
HAZARDOUS MATERIALS REGULATIONS BOARD
WASHINGTON, D.C. 20590

[Docket No. HM-119; Notice No. 74-10]

POLYETHYLENE DRUM PACKAGING

Proposed Specification 35

The Hazardous Materials Regulations Board is considering an amendment of Parts 173 and 178 of the Department's hazardous materials regulations to provide a specification for non-reusable, molded, open-head polyethylene drums, to authorize use of this packaging with certain dry and paste materials, and to provide for the use of a larger capacity plastic drum in § 173.245b.

This proposal contains a specification for non-reusable, molded, open-head polyethylene drums which is based on the satisfactory shipping experience reported to the Board under special permits. Some of these special permits have been in effect for over five years.

The proposal also reflects the authorization for use of the drum for the dry and paste materials that were permitted under the provisions of the special permits.

The present packagings authorized for corrosive solids not specifically provided for in § 173.245b include the use of a plastic drum of not over six gallons capacity. The Board has proposed to amend plastic drum packaging in § 173.245b by increasing the volumetric capacity to seven gallons in order to permit use of the specification drum covered by this proposal.

In consideration of the foregoing, it is proposed to amend 49 CFR Parts 173 and 178 as follows:

PART 173—SHIPPERS

1. In § 173.154, paragraph (a)(16) would be added to read as follows:

§ 173.154 Flammable solids and oxidizing materials not specifically provided for.

(a) * * *

(16) Specification 35 (§ 178.16 of this subchapter) non-reusable, removable head polyethylene drum for use without overpack and not over seven gallons capacity. Authorized only for dry or paste material that will maintain its form to a minimum temperature of 130° F.

* * * * *

2. In § 173.217, paragraph (a)(7) would be added to read as follows:

§ 173.217 Calcium hypochlorite mixtures, dry, lithium hypochlorite compounds, dry, mono-(trichloro) tetra-(monopotassium dichloro)-penta-s-triazinetrione, dry, potassium dichloro-s-triazinetrione, dry, sodium dichloro-s-triazinetrione, dry, trichloro-s-triazinetrione, dry.

* * *

Specification 35 (§ 178.16 of this subchapter) non-reusable, removable head polyethylene drum for use without overpack and not over seven gallons capacity.

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3. In § 173.245b, paragraph (a)(6) would be amended to read as follows:

§ 173.245b Corrosive solids not specifically provided for.

(a) * * *

(6) Plastic drum or pail not exceeding 80 pounds net weight and not over seven gallons capacity.

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PART 178—SHIPPING CONTAINER SPECIFICATIONS

4. In Part 178 Table of Contents, add the following entries:

Sec.

178.16	Specification 35; non-reusable molded polyethylene drum for use without overpack; removable head required.
178.16-1	Compliance.
178.16-4	Material.
178.16-7	Construction and capacity.
178.16-10	Closure.
178.16-13	Design qualification tests.
178.16-16	Periodic testing.
178.16-19	Markings.

5. Part 178 would be amended by adding the following:

§ 178.16 Specification 35; non-reusable molded polyethylene drum for use without overpack; removable head required.

§ 178.16-1 Compliance.

(a) Required in all details.

(b) Each drum must comply with the requirements of § 173.24 of this subchapter.

§ 178.16-4 Material.

(a) Drums must be made of polyethylene having the following properties, as determined by the American Society for Testing Materials (ASTM) methods designated. Tests must be performed on resin with additives included:

Property	Specification	ASTM Method
Melt index	6.0 maximum	D1238-65T.
Density range	0.950 to 0.965	D1505-68.
Tensile strength	3,000 p.s.i. Min.	D638-68.
Percent elongation	50% minimum	D638-68.

(b) Ultraviolet light protection must be provided by impregnation of polyethylene with carbon black or other equally efficient pigments or inhibitors. These additives must be compatible with lading and must retain their effectiveness for at least two years.

(c) Other materials may be added provided they do not adversely affect the physical properties specified in paragraph (a) of this section or the performance specified in § 178.16-13.

(d) Steel used in top head of drum must be low carbon made by the open-hearth or electric steel process, of standard commercial quality.

§ 178.16-7 Construction and capacity.

(a) Rated capacity: not to exceed 7 gallons.

(b) Minimum thickness of drum measured at any point may not be less than 0.065-inch. If top head is constructed of steel, a minimum of 26-gauge steel must be used.

(c) The gross weight of each drum, when filled, may not exceed the maximum allowable gross weight indicated by the marking on the drum (see § 178.16-19).

§ 178.16-10 Closure.

(a) Top head must be of the full removable type, and must be made of steel, polyethylene, or combination thereof. Gaskets are required.

(b) Openings in body of drum are not authorized.

§ 178.16-13 Design qualification tests.

(a) The following tests must be performed at the start of production on each drum size and design. If any change is made to drum design, size, material used, or process, tests in this section must be repeated. Product leakage in any of the required tests will constitute a failure. No single drum will be expected to withstand more than one of the following tests:

(1) *Drop test.* Sample drums, selected at random and of each size and design must be filled to marked gross weight at normal outage with dry powdered material and topped with a minimum of one inch of sodium bicarbonate, and closed for use. Each test drum and its contents must be conditioned for at least four hours at 0° F, then immediately dropped from a height of four feet onto solid concrete as follows:

(i) Three drums must be dropped flat on bottom.

(ii) Three drums must be dropped diagonally on top chime or edge.

(iii) Three drums must be dropped flat on side.

Each drum must be oriented to impact on bail ear. Immediately following each drop, the drum must be rolled three revolutions on its side and observed for any evidence of leakage during the first five minute interval following each drop. If failure occurs, the individual drop orientation test must be repeated on six additional drums without any leakage of contents. Failure of any one of the six drums disqualifies that design from this specification until design qualification tests have been repeated successfully.

(2) *Vibration test.* Sample drums selected at random and of each size and design, must be filled to marked gross weight at normal outage with dry powdered material and topped with a minimum of one inch of sodium bicarbonate, and closed for use. Each test drum and its contents must be vibrated in such a manner that horizontal motion will be restricted and only vertical motion per-

mitted. The test must be performed for one hour using an amplitude of one inch at a frequency that causes the drum to be raised from the vibrating platform so that a piece of 20 gauge material (0.0359) may be passed between the drum and platform.

(3) *Static compression test.* Two drums stacked two high, filled as required in § 178.16–13(a)(1) of this section and conditioned for at least four hours at 130° F immediately preceding the test, must withstand a static compression test of 600 pounds on the top drum without buckling of the side walls or failure of any cover to cause leakage. In no case must the top to bottom deflection of one or both drums be more than one inch in 48 hours. Compression must be applied evenly to top rim of top drum.

(4) *Reports and records.* The manufacturer shall prepare a report on the tests prescribed in paragraphs (a)(1), (a)(2), and (a)(3) of this section and shall retain the report on the results of these tests for at least two years from date of tests. A copy of these reports must be retained by the manufacturer at each producing plant.

§ 178.16–16 Periodic testing.

(a) At least one sample of each size and design of drum must be tested at each production plant from every 1,000 drums produced by each molding machine. No single drum will be expected to withstand more than one drop. Product leakage from drum in any of the following tests will constitute a failure. Tests must be as follows:

(1) One drum filled to marked gross weight as provided in § 178.16–13(a) must be drop tested from a height of four feet diagonally on its top edge.

(2) One drum filled to marked gross weight as provided in § 178.16–13(a) must be drop tested from a height of four feet flat on its side. Each drum must be oriented to impact on bail ear.

(b) Failure of drum when tested as described above disqualifies that design from this specification until design qualifications tests (§ 178.16–13) have been repeated successfully.

§ 178.16–19 Markings.

(a) The markings required by this subsection must be legible, and in characters at least ½-inch in height, and embossed in the bottom of each drum. The marking requirements of § 173.24 of this subchapter with the exception of paragraph (c)(1)(ii), are applicable.

(b) The markings must be as follows:

(1) DOT–35* star to be replaced by maximum allowable gross weight in pounds (for example, DOT–35–50). These marks must be understood to certify that the drum complies with all specification requirements.

(2) "NRC" located near the DOT mark to indicate "non-reusable container."

(3) Month and year of manufacture, for example, DOT–35–20–2/74, to indicate the drum specification, maximum allowable gross weight, and that the drum was manufactured in February 1974.

(4) Registration number (M * * of the manufacturer.

(c) No person may mark any drum with the specification identification "DOT–35" unless (1) it was manufactured in compliance with the requirements of this section and (2) its manufacturer has a registration number (M****) from the Office of Hazardous Materials, Department of Transportation, Washington, D.C. 20590.

Interested persons are invited to give their views on these proposals. Communications should identify the docket number and be submitted in duplicate to the Secretary, Hazardous Materials Regulations Board, Department of Transportation, Washington, D.C. 20590. Communications received on or before November 5, 1974 will be considered before final action is taken on these proposals. All comments received will be available for examination by interested persons at the Office of the Secretary, Hazardous Materials Regulations Board, room 6215 Trans Point Building, Second and V Streets, SW., Washington, D.C., both before and after the closing date for comments.

(Transportation of Explosives Act (18 U.S.C. 831–835), sec. 6, Department of Transportation Act (49 U.S.C. 1655); Title VI and sec. 902(h), Federal Aviation Act of 1958 (49 U.S.C. 1421–1430, 1472(h), and 1655(c)))

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W. J. BURNS,
Director, Office of Hazardous Materials.

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