Designation: E 708 – 79 (Reapproved 1999)

Standard Specification for Waste Glass as a Raw Material for the Manufacture of Glass Containers[1]

This standard is issued under the fixed designation E 708; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers particulate glass (cullet material, recovered from waste destined for disposal, smaller than 6 mm intended for reuse as a raw material in the manufacture of glass containers.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

2. Referenced Documents

2.1 *ASTM Standards:*

C 162 Terminology of Glass and Glass Products[2]

C 169 Test Methods for Chemical Analysis of Soda-Lime and Borosilicate Glass[2]

C 429 Test Method for Sieve Analysis of Raw Materials for Glass Manufacture[2]

E 688 Test Methods for Waste Glass as a Raw Material for Glass Manufacturing[3]

3. Terminology

3.1 *Definitions:*

3.1.1 *flint glass cullet*—a particulate glass material that contains no more than 0.1 weight % Fe_2O_3, or 0.0015 weight % Cr_2O_3, as determined by chemical analysis.

3.1.2 For definitions of other terms used in this specification, refer to Terminology C 162.

4. Representative Sample

4.1 The following requirements qualify the glass lot to be used for direct use in soda-lime glass container manufacturing. Sample should be prepared and examined in accordance with Test Methods E 688.

NOTE 1—A preponderant proportion of glass cullet will be soda-lime bottle glass, the glass cullet having a composition as follows, as determined by Test Methods C 169.

Oxide	Composition, Weight %
SiO_2	66 to 75
Al_2O_3	1 to 7
CaO + MgO	9 to 13
Na_2O	12 to 16

NOTE 2—All percents referred to in this specification are weight percents.

5. General Requirements

5.1 The sample shall show no drainage of liquid and be noncaking and free flowing. A moisture content of less than 0.5 weight % is required to meet the free-flowing characteristics of a cullet that is predominantly of smaller particle size, 1.18-mm (No 16) sieve or smaller.

5.2 *Screen Size*—No material shall be retained on a 6-mm (¼-in.) screen. Material not exceeding 15 weight % shall pass through a 106-µm (No. 140) screen.

5.3 *Organic Materials*—The total content of organic materials, as measured in accordance with Section 6 shall not exceed 0.2 weight % of dry sample, except for color-mixed glass where the content of organic material may exceed 0.2 weight %. However, a content of organic material greater than 0.2 weight % must be held within a tolerance of ±0.05 weight %, with a maximum organic limit of 0.4 weight %.

5.4 *Magnetic Materials*—The total magnetic materials shall not exceed 0.05 weight % of dry sample weight for flint glass and 0.14 weight % for colored glass of dry sample weight in accordance with Section 6.

5.5 *Permissible Color Mix for Color Sorted Glass Cullet by Weight*:

5.5.1 *Amber Glass Cullet*:

90 to 100 % amber
0 to 10 % flint
0 to 10 % green
0 to 5 % other colors

5.5.2 *Green Glass Cullet*:

50 to 100 % green
0 to 35 % amber
0 to 15 % flint
0 to 4 % other colors

5.5.3 *Flint Glass Cullet*:

95 to 100 % flint
0 to 5 % amber
0 to 1 % green
0 to 0.5 % other colors

[1] This specification is under the jurisdiction of ASTM Committee D-34 on Waste Management and is the direct responsibility of Subcommittee D34.06 on Recovery and Reuse.

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[2] *Annual Book of ASTM Standards*, Vol 15.02.

[3] *Annual Book of ASTM Standards*, Vol 11.04.

5.5.3.1 Percents above 0.1 weight % of Fe_2O_3 or 0.0015 weight % of Cr_2O_3, or both, as determined by chemical analysis shall be considered mixed color glass. These limits are consistent with industry experience on raw material.

5.5.3.2 Flint glass cullet may contain up to 1 weight % emerald green or 10 weight % Georgia green, or a combination within the limits: 1 % Georgia green = 0.1 % emerald green.

5.6 *Other Inorganic Material* (such as nonmagnetic metals or refractories)—As measured, material larger than 850-µm (No. 20) screen size shall not exceed 0.1 % of the dry sample weight. Material smaller than 850-µm screen size shall not exceed 0.5 % of the dry sample weight.

5.6.1 *Refractories*—Based upon U.S. series screen size and sample weight, the following refractory particle limits shall apply for each screen fraction as stated below.

+20 mesh	1 particle per 18-kg (40-lb) sample
−20, +40 mesh	2 particles per 450-g (1-lb) sample
−40, +60 mesh	20 refractory particles per 450-g (1-lb) sample

5.6.2 *Nonmagnetic Metals:*—

+20 mesh	1 particle per 18-kg (40-lb) sample

Upon failure to meet the previously stated specification limits, retesting is permissible.

6. Sampling and Testing

6.1 Sampling and testing shall be in accordance with Test Methods E 688.