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Standard Specification for Source-Separated Steel Cans[1]

This standard is issued under the fixed designation E 1134; 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 the chemical and physical requirements of source-separated steel cans that are intended for use by such industries as follows:

1.1.1 Copper industry (precipitation process),

1.1.2 Iron and steel foundry industry,

1.1.3 Iron and steel production industry,

1.1.4 Detinning industry, and

1.1.5 Ferroalloy industry.

1.2 Questions concerning material rejection, downgrading, and retesting based on failure to meet the requirements of this specification shall be dealt with through contractural arrangements between purchaser and supplier.

1.3 Source-separated steel cans in this specification covers two types of steel cans:

1.3.1 Bi-metal food and beverage cans, and

1.3.2 All other steel cans.

2. Referenced Documents

2.1 *ASTM Standards:*

E 701 Test Methods of Testing Municipal Ferrous Scrap[2]

E 702 Specification for Municipal Ferrous Scrap[2]

3. Descriptions of Terms Specific to This Standard

3.1 *source-separated steel cans*—post-consumer products that are generated as separated can fractions by commercial or household sources.

3.2 *bi-metal beverage cans*—steel cans with nonferrous metal convenience ends (normally made of aluminum), originally containing beer or carbonated beverages, but not including other contaminants.

3.3 *bi-metal food cans*—steel cans with nonferrous metal (usually aluminum) convenience ends, originally containing snack foods, but not including other contaminants.

3.4 *all other steel cans*—include containers for food products or liquids with a maximum capacity of 5 gal.

3.5 *total combustibles*—materials that include paints, lacquers, coatings, plastics, etc. associated with the original container (ferrous product), as well as combustible materials (paper, plastic, textiles, etc.) which become associated with the container (ferrous product).

3.6 *metallic yield*—the weight percent of the source-separated steel cans that is generally recovered as metal or alloy.

4. Chemical Composition

4.1 Source-separated steel cans shall conform to the requirements as to chemical composition for the respective end uses prescribed in Table 1.

4.2 The chemical requirements listed in Table 1 are based on melt analysis except where noted.

5. Physical Requirements

5.1 Source-separated steel cans shall conform to the physical properties for the respective end uses prescribed in Table 2.

6. Test Methods

6.1 Determine the physical and chemical requirements of source-separated steel cans in accordance with Test Methods E 701.

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[1] This specification is under the jurisdiction of ASTM Committee D-34 on Waste Management and is the direct responsibility of Subcommittee D34.14 on Materials Recovery.

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

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TABLE 1 Chemical Requirements

Element	Composition, Weight %					
	Cans, Manufactured[A]	Copper as Industry (Precipitation Process)	Iron and Steel Foundry Industry	Iron and Steel Production Industry	Detinning Industry	Ferroalloy Industry
Bi-metal Cans:						
Aluminum, max	11.0	...	0.50	11.0	[D]	0.15
Tin	0.17–0.20	...	0.3 max [B]	0.3 max	...	0.3 max
Iron (metallic), min	87.0	96.0	...	...	...	...
Total combustibles, max	1.75	0.2	1.75	...	...	0.5
Metallic yield, min	...	...	90.0	90.0	...	90.0
Further processing required to meet industry requirements	...	yes	yes	no	yes	yes
All Other Steel Cans:[C]						
Aluminum, max	0.0	...	0.50	11.0	[D]	0.15
Tin	0.23–0.27	...	0.3 max [B]	0.3 max	[E]	0.3 max
Iron (metallic), min	98.7	96.0	...	...	...	...
Total combustibles, max	1.0	0.2	1.75	...	...	0.5
Metallic yield, min	...	...	90.0	90.0	...	90.0
Further processing required to meet industry requirements	...	yes	no	no	no	yes

[A] Values in this first column are typical values shown for reference.
[B] For steel foundries, the requirement for tin content is 0.10 %, maximum.
[C] Washed, free of visible foodstuffs and paper labels.
[D] The presence of aluminum is not acceptable to the detinning industry.
[E] Tin content of the container, as manufactured, is acceptable to the detinning industry.

TABLE 2 Physical Requirements

End-use	Property	
	Bulk Density, kg/m³ (lb/ft³)	Form[F]
Copper industry (precipitation process)	480 (30) max	loose, shredded; shall not be nuggetized or baled [A]
Iron and steel foundry industry	800 (50) min	loose, nuggetized, or baled [B]
Iron and steel production industry	1200 (75) min [C]	loose [D] or baled [B]
Detinning industry	480 (30) max	loose, flattened, shredded, or baled [E]; 95% by weight shall be in size range from −152 to +12.5 mm (−6 to +½ in.); shall not be nuggetized, burned, incinerated, or pyrolyzed
Ferroalloy industry	800 (50) min	loose and free flowing.

[A] Various purchasers may establish gage limitations on the material they purchase.
[B] Industry practice is to specify a maximum bale size that may vary among purchasers.
[C] Some purchasers prefer that bale density be as high as 1600 (100).
[D] Experience has shown that if the size range is 95 % by weight, from −50 to +6.3 mm (−2 to +¼ in.) the bulk density requirement can be met and the material will be loose and free flowing.
[E] Bales must conform to bulk density requirements and fall apart when dropped.
[F] As agreed between purchaser and supplier.

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