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Standard Specification for Crucibles, Ignition, Laboratory, Metal¹

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This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 This specification covers two types of metal ignition crucibles, nickel or platinum, complete with covers, for laboratory use.

2. Referenced Documents

2.1 *ASTM Standards*:²

[B162 Specification for Nickel Plate, Sheet, and Strip](#)

2.2 *Federal Standards*:³

[Fed. Std. No. 123 Marking for Shipment \(Civil Agencies\)](#)

2.3 *Military Standards*:³

[MIL-STD-105 Sampling Procedures and Tables for Inspection by Attributes](#)

[MIL-STD-129 Marking for Shipment and Storage](#)

[MIL-STD-1188 Commercial Packaging of Supplies and Equipment](#)

3. Classification

3.1 *Types and Capacities*—The crucibles shall be furnished in one or more of the following types or capacities as specified (see S2.1).

3.1.1 *Type I—Nickel.*

Capacity: 100 mL
250 mL

3.1.2 *Type II—Platinum.*

Capacity: 20 mL

4. Materials

4.1 *Type I*—Crucibles and covers shall be made from 99.4 % nickel, spun and hardened in conformance with Specification [B162](#).

4.2 *Type II*—Crucibles and covers shall be made from 99.9 % platinum plus iridium, with the iridium content of not more than 0.4 %.

5. Physical Requirements

5.1 *Crucibles* shall have a standard shape with a flat base to give a firm and stable resting surface. The side wall shall form a sloping and convex surface extending up to the brim. Crucibles shall be of one-piece construction.

5.2 *Covers* shall be flat, sunken in the center, and shall have an extension to serve as a handle. The sunken area in the center shall fit inside the crucible.

6. Dimensions, Mass, and Permissible Variations

6.1 *Type I* crucibles and covers shall conform to the requirements of [Table 1](#).

6.2 *Type II Crucibles and Covers*:

6.2.1 Type II crucibles shall conform to the requirements of [Table 2](#).

6.2.2 Type II covers shall conform to the requirements of [Table 3](#).

7. Workmanship

7.1 Crucibles and covers shall be free of defects (scratches, dents, discolorations) or contamination (grease, oil, foreign matter) that detract from their appearance or that impair their serviceability.

8. Keywords

8.1 crucibles; ignition; nickel; platinum

¹ This specification is under the jurisdiction of ASTM Committee E41 on Laboratory Apparatus and is the direct responsibility of Subcommittee E41.01 on Laboratory Ware and Supplies.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098, <http://www.dodssp.daps.mil>.

TABLE 1 Crucible Dimensions (Type I)

Capacity, mL	Outside Diameter, mm	Bottom OD ^A , mm	Height, mm	Wall Thickness ^B , mm	OD ^A Exclusive of Handle, mm	Length ^A incl. Handle, mm	Inside ^B Diameter of Sunken Section, mm	Wall ^A Thickness, mm
100	60	30	64	0.625	67	92	58	0.625
250	83	50	83	0.625	92	116	83	0.625

^A Tolerance ± 2 mm.

^B Tolerance ± 0.25 mm.

TABLE 2 Crucible Dimensions (Type II)

Capacity, mL	Top Inside Diameter, mm	Bottom Inside Diameter, mm	Height, mm	Thickness of Side, mm	Thickness of Bottom, mm	Weight, g
20	32.4 ± 0.8	19 ± 1.0	34.5 ± 2.0	0.22 ± 0.05	0.25 ± 0.05	16 ± 1.0

TABLE 3 Cover Requirements (Type II)

Thickness, mm	Outside Diameter Excluding Handle, mm	Length Including Handle, mm	Diameter of Sunken Section, mm	Depth of Sunken Section, mm	Weight, g
0.137 ± 0.01	36.4 ± 0.2	47 ± 0.5	31.5 ± 0.5	3.0 ± 0.3	

SUPPLEMENTARY REQUIREMENTS

The following supplementary requirements are binding when this specification is used by the Department of Defense and the Federal Government for the procurement of platinum evaporating dishes.

S1. Sampling

S1.1 Sampling for nondestructive examination shall be conducted in accordance with MIL-STD-105.

S2. Ordering Information

S2.1 *Procurement documents should specify the following:*

S2.1.1 Title, number, and date of this ASTM specification.

S2.1.2 Level of packaging and packing required,

S2.1.3 Type and capacity of crucible required, and

S2.1.4 Number of unit packages per intermediate packages required.

S2.2 *Supplier's Responsibility*—The supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may use his own or any other inspection facilities and services acceptable to the Government. Inspection records of the examination and tests shall be kept complete and available to the Government as specified in the contract or order. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to ensure that supplies and services conform to prescribed requirements.

S2.3 *Transportation Description*—Transportation description applicable to this item is:

S2.3.1 *Type I—Nickel:*

S2.3.1.1 Crucibles, not otherwise indexed by name. Car-load minimum weight 24 000 lb. Subject to Rule 34, Uniform Freight Classification³

S2.3.1.2 Crucibles, not otherwise indexed. Motor volume minimum weight 24 000 lb.

S2.3.2 *Type II—Platinum.* Not taken by freight. Ship via UPS or parcel post.

S3. Lotting and Sampling

S3.1 A lot shall consist of the crucibles and covers of the same type and capacity offered for acceptance at one time, which has been produced by one manufacturer under essentially the same manufacturing conditions.

S3.2 Sampling shall be conducted in accordance with Section S1.1

S4. Inspection

S4.1 *Special Provisions:*

S4.1.1 *Alternative Inspection (Including Testing) Procedures*—The supplier may use any alternative inspection procedures that will ensure equal or better quality by submitting a written proposal with justification and obtaining written approval from the Government prior to instituting the procedure. In case of dispute, the procedures of this specification will govern.

S4.2 *Supplemental Evidence*—The supplier shall provide evidence acceptable to the contracting officer that the requirements of 6.1 and 6.2 and S7, have been satisfied (see S2.1).

S4.3 *Examination*—Sample crucibles, covers, and Level A and commercial packaging requirements shall be examined in accordance with the classification of defects and with MIL-STD-105.

S4.3.1 Classification of defects, shall be in accordance with [Table S4.1](#) and [Table S4.2](#).

TABLE S4.1 Classification of Defects of Crucibles and Covers

Categories	Defects
Critical:	none defined.
Major:	AQL 4.0 % defective.
101	dimensions incorrect.
102	defects (scratches, dents, discoloration).
103	contamination (oil, grease, or foreign matter).
104	marking missing, illegible, or incorrect.

TABLE S4.2 Classification of Defects of Level A and Commercial Packaging

Categories	Defects
Critical:	none defined.
Major:	AQL 1.5 % defective.
101	unit, intermediate, or shipping container not as specified.
102	number of crucibles per unit or intermediate container not as specified.
103	closure of unit, intermediate, or shipping container not as specified.
104	unit, intermediate, or shipping container closure not as specified.

S5. Rejection Criteria

S5.1 The sample must pass all physical and chemical requirements when tested as specified to be accepted. Any test failure will result in the rejection of the lot.

S6. Certification

S6.1 Compliance with all stipulations of this specification regarding fill, closure, marking and other requirements not involving tests will be certified by the supplier.

S7. Marking

S7.1 *Civil Agencies*—In addition to any special marking required by the contract or order, interior packages and exterior shipping containers shall be marked in accordance with Fed. Std. No. 123.

S7.2 *Military Agencies*—In addition to any special marking required by the contract or order, interior packages and exterior shipping containers shall be marked in accordance with MIL-STD-129.

S7.3 *Commercial*— In addition to any special marking required by the contract or order, marking shall be accomplished in accordance with MIL-STD-1188.

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