



Designation: E 2293 – 03

Standard Practice for Drying of Metal Bearing Ores, Concentrates and Related Metallurgical Materials for the Determination of Mercury¹

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1. Scope

1.1 This practice covers the sample drying step for the determination of mercury in ores, concentrates and related metallurgical materials.

1.2 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

E 135 Terminology Relating to Analytical Chemistry for Metal, Ores, and Related Materials²

E 877 Practice for Sampling and Sample Preparation of Iron Ores²

E 882 Guide for Accountability and Quality Control in the Chemical Analysis Laboratory²

2.2 Other Documents:

ISO 9599 Copper, Lead and Zinc Sulfide Concentrates—Determination of Hygroscopic Moisture in the Analysis Sample—Gravimetric Method

ISO 12743 Copper, Lead, and Zinc Sulfide Concentrates—Sampling Procedures for the Determination of Metal and Moisture Content

ISO 10251 Copper, Lead and Zinc Sulfide Concentrates—Determination of Mass Loss of Bulk Material on Drying

3. Terminology

3.1 *Definitions*—For definitions of terms used in this Practice, refer to Terminology E 135.

4. Summary of Practice

4.1 Test samples for be used for mercury determination are dried at 60°C.

¹ This practice is under the jurisdiction of ASTM Committee E01 on Analytical Chemistry for Metals, Ores and Related Materials and is the direct responsibility of Subcommittee E01.02 on Ores, Concentrates, and Related Metallurgical Materials. Current edition approved June 10, 2003. Published July 2003.

² *Annual Book of ASTM Standards*, Vol 03.05.

5. Significance and Use

5.1 This practice is primarily to be used to dry samples for the determination of mercury test portions, and it should not be used for the determination of sample moisture content. Most sample preparation methods prescribe drying the samples at 105°C, until a constant mass is obtained. The moisture content is determined as the percentage mass loss on drying. However, since mercury can volatilize from samples at the normally utilized temperature, samples that are to be used for mercury determination shall be dried at 60°C (See Practice E 877, Method ISO 9599, Method ISO 1273, and Method ISO 10251).

5.2 It is assumed that all who use this practice will be trained analysts capable of performing skillfully and safely. It is expected that work will be performed in a properly equipped laboratory under appropriate quality control practices such as those described in Guide E 882.

6. Apparatus

6.1 *Drying Oven*, ventilated with forced circulation of air, regulated at a temperature of $60 \pm 2^\circ\text{C}$.

6.2 *Top-Loading Balance*, minimum precision of 0.01 %.

6.3 *Drying Trays*, capable of holding at least a one kg sample, spread no thicker than 3 cm deep.

7. Hazards

7.1 For precautions to be observed in this practice, refer to Practice E 50.

7.2 Mercury can form vapors at low temperatures. Mercury vapors can be hazardous to your health. Perform method in ventilated areas or wear special health protection equipment.

8. Procedure

8.1 Remove a representative laboratory sample, 500 g minimum, from the gross sample.

8.2 Place the laboratory sample into a drying tray and level to approximately 3 cm.

8.3 Weigh to within 0.01 g on the top loading balance.

8.4 Place the tray and test portion into the drying oven and dry at 60°C for at least 16 h.