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LEAD AND LEAD ALLOYS

SAMPLING AND PREPARATION OF SAMPLES FOR CHEMICAL ANALYSIS

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Aluminium Development Council

Australasian Institute of Mining and Metallurgy

Australian Lead Development Association

Australian Mineral Development Laboratories

Australian Tin Information Centre

Australian Zinc Development Association

Bureau of Steel Manufacturers of Australia

Confederation of Australian Industry

Copper Producers Association of Australia

Department of Defence

Electricity Supply Association of Australia

Metal Trades Industry Association of Australia

National Association of Testing Authorities

Railways of Australia Committee

Royal Australian Chemical Institute

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PREFACE

This standard was prepared by the Association's Committee on the Analysis of Metals as part of a program of standardizing methods for the sampling of non-ferrous metals. It is based on BS 3908, Methods for the Sampling and Analysis of Lead and Lead Alloys, Part 1—Sampling of Ingot Lead, Lead Alloy Ingots, Sheet, Pipe and Cable Sheathing Alloys.

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

for

LEAD AND LEAD ALLOYS—SAMPLING AND PREPARATION OF SAMPLES FOR CHEMICAL ANALYSIS

1 SCOPE. This standard sets out methods for the sampling of molten lead or lead alloy, lead ingots ($\leqslant$ 25 kg in mass), lead alloy ingots, lead sheet, and lead pipe and the preparation of laboratory samples for chemical analysis.

2 DEFINITIONS. For the purpose of the standard, the following definitions apply:

2.1 Primary sample—the material selected from the original consignment, from which the laboratory sample is prepared.

2.2 Laboratory sample—the material prepared from the primary sample to be submitted to the laboratory.

2.3 Test sample—a suitable part of, or all of, the laboratory sample, ideally containing the same components in the same proportions as they occur in the relatively large mass of the original consignment of material.

3 SAMPLING MOLTEN LEAD OR MOLTEN LEAD ALLOY. Laboratory samples shall be obtained from the molten lead or molten lead alloy by the following procedure:

(a) Heat the lead or lead alloy to a temperature of at least 50° C above the liquidus temperature and stir thoroughly, preferably by mechanical means.

(b) Skim the surface of the molten bath of lead or lead alloy free from oxide. Take a sample of at least 1 kg of the liquid from the bath with a clean graphite or ceramic ladle.

(c) Quickly pour the sample in a fine stream from a height of about 1 m into a 10 L container of water.

NOTE: Satisfactory sampling should result in individual granulated pellets of mass 0.5 g to 1 g.

(d) Rinse the sample in distilled water followed by ethanol, then dry quickly using a hot-air blower.

4 SAMPLING FROM SOLID MATERIAL.

4.1 Selection of the Primary Sample.

4.1.1 *From ingots ($\leqslant$ 25 kg).* The minimum number of ingots which constitute the primary sample shall be selected from the consignment in accordance with Table 1.

TABLE 1
SELECTION OF INGOTS

Number of ingots in consignment	Number of ingots to be selected (to the nearest integer)
1 — 4	All
5 — 249	4
over 250	2 percent

4.1.2 *From material other than ingots* (e.g. 1 t blocks, lead sheet, lead pipe). At least 1 kg of the material shall be taken at random.

NOTE: The manner of taking the material is a matter for agreement between the interested parties.

If the parts of the material have to be cut off, this shall be done by means of a saw, and the sawing shall be carried out so as to obtain a section through the piece.

Where pieces contain inserts, care shall be taken to ensure that there is no contamination from the different metal.

The sample pieces so obtained shall be immersed for a few moments in hydrochloric acid (50 mL/L), rinsed in distilled or deionized water, dried, and melted together, without flux, in a clean refractory crucible.

The melt shall be well stirred at a temperature of at least 50° C above the liquidus temperature of the metal and sufficient small chill cast samples poured into a cold shallow iron mould.

NOTES:

1. Where a sample has been remelted and there is any dross on the surface of the cast metal, the dross should be separated, the metal and dross weighed and both portions analysed. The weighted average is calculated from the analyses of the clean metal and dross.
2. All of the dross should be taken for analysis.