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LEAD AND LEAD ALLOYS

SAMPLING AND PREPARATION OF SOLID SAMPLES FOR OPTICAL EMISSION SPECTROMETRY

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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 Development Association of Australia Ltd
Electricity Supply Association of Australia
Metal Trades Industry Association of Australia
National Association of Testing Authorities
Railways of Australia Committee
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PREFACE

This standard was prepared by a subcommittee of the Association's Committee for the Analysis of Metals under the direction of the Chemical Standards Board. The method of taking the sample and preparing it for analysis is an important preliminary to the analytical procedure.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
LEAD AND LEAD ALLOYS—SAMPLING AND PREPARATION OF SOLID SAMPLES FOR OPTICAL EMISSION SPECTROMETRY

1 SCOPE. This standard sets out methods for the sampling of lead and lead alloys and procedures for the preparation of the test samples required for the determination of composition by optical emission spectrometry. Samples may be taken from cast forms or from the molten metal.

NOTE: Extreme care must be taken to ensure that any remelting is carried out under the conditions specified in Clause 6.

2 REFERENCED DOCUMENT. The following document is referred to in this standard:

ASTM E401 Recommended Practice for Bonding Thin Spectrochemical Samples and Standards to a Greater Mass of Materials.

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

3.1 Primary sample—the selected ingots or slabs from which the sample is prepared.

3.2 Laboratory sample—the final form of the material submitted for analysis, viz a cast disc.

3.3 Test sample—a suitable part of the laboratory sample containing the same components in the same proportions as they occur in the relatively large mass of the original batch or batches of material.

4 SELECTION OF PRIMARY SAMPLE.

4.1 Selection of Primary Sample from Cast Forms. The minimum number of ingots or blocks, having the same composition, shall be selected at random from the consignment in accordance with Table 1.

TABLE 1
SELECTION OF PRIMARY SAMPLES

Number in batch	Number to be sampled
< 5	All
$\geqslant 5 \leqslant 249$	5
$\geqslant 250$	1 from each 50

4.2 Selection of Primary Sample from Molten Metal. A primary sample shall be taken from the molten metal or alloy and prepared in accordance with Clause 7.

5 PREPARATION OF LABORATORY SAMPLES.

5.1 From Slabs or Ingots. Samples shall be obtained from slabs or ingots by drilling in accordance with the following procedure:

(a) Clean the selected slabs or ingots to remove scale, dirt, grease, oxide film or other surface impurities, from their surfaces.

(b) Arrange the selected slabs or ingots flat, side by side, and upside down with reference to the position occupied in the mould, in groups of a maximum of 5 slabs or ingots as shown in Fig. 1. Ensure that the casting marks are arranged in the same way for each of the slabs or ingots.

(c) In each group, draw a diagonal across the rectangle thus formed.

(d) Mark 3 drilling points as shown in Fig. 1 on each slab or ingot.

NOTES:

1. Where the exact position of the point to be drilled coincides with a notch in the ingot, choose another point as close as possible to the required position.
2. If the sample portion consists of only 1 slab or ingot, select drilling points in a similar way along the diagonal of the single slab or ingot.

(e) Carry out the drilling with a clean, high speed steel drill of about 10 mm to 15 mm diameter and without the use of a lubricant. The speed of drilling shall be so regulated that excessive heating and consequent oxidation of the sample can be avoided. The holes shall be drilled through the total