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Procedure for Positive Material Identification (PMI) for Alloying Elements in Metals

TYPE OF INSTRUMENT : Portable XRF Alloy Analyzer
Model : XLt 898, Make : NITON

Method

This procedure describes the methods to carryout Positive Material Identification (PMI) for verification of Grade or Alloy type and Quantitative Analysis of Alloying Elements present in the material without destroying the material by X-Ray Fluorescence Techniques.

Surface Preparation of components

The surface of the component subjected to the test shall be free from grease, oil, paint and oxides. The surface preparation shall be performed with a portable grinding machine or any other suitable equipment and the same should represent the original surface of the component.

Calibration of the testing instrument

Calibration of the instrument has been carried out by the manufacturer at their factory using various types and grades of Standards Reference Materials (SRM's) for various types of materials. Hence no re-calibration is required to be performed.

VERIFICATION OF INSTRUMENT

Verification shall be performed at site once daily by using standard reference samples, before commencing the actual testing or as and when required during the day.

Testing of Components

On satisfactory verification of the instrument, the actual testing shall be commenced on individual components and the results shall be recorded.

Acceptance & Rejection

All results within $\pm 10\%$ of the requirements of the relevant material specification shall be considered acceptable and a considerable deviation of alloying elements / or absence of alloying elements with respect to the required material specification shall be considered non acceptable. A detailed Chemical analysis may be performed in a laboratory for the materials having very nominal deviation of Alloying Elements from the acceptable limits, as a referee method, before rejecting the material. In such cases a final decision to accept or reject is left to the client and their consultant. All rejected materials are identified and kept separately.

Documentation of Results

A detailed report shall be made in the prescribed format having all the relevant data of the material tested.

Prepared by

Reviewed by

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