

# Certificate of Analysis

## STANDARD REFERENCE MATERIALS

### 644, 645, 646

### Spectroscopic Titanium-Base Standards

NBS <sup>1</sup> Designation	644 2Cr-2Fe-2Mo (A)	645 2Cr-2Fe-2Mo (B)	646 2Cr-2Fe-2Mo (C)
Cr	1.03	1.96	3.43
Fe	1.36	2.07	2.14
Mo	3.61	2.38	1.11 <sup>2</sup>

<sup>1</sup>Size: Disks 1 1/4 in in diameter and 3/4 in thick.

<sup>2</sup>The molybdenum content in No. 646 at the periphery and extending radially inward 1/4 in was found to vary significantly from the remaining center section and the outer area is not certified for this element.

The material for each standard was prepared at Armour Research Foundation under contract with the Air Force, Wright Air Development Center. Ingots were made by triple-arc melting under vacuum at Armour, followed by processing to rods for standard samples by Allegheny-Ludlum Steel Corporation.

Preliminary studies of homogeneity were made by Armour Research Foundation, Watertown Arsenal, and Spectrochemical Laboratories Inc.; this was followed by an extensive examination of homogeneity at the National Bureau of Standards. Material was accepted for use as standard samples when the variation in composition of the cross section and along the length did not exceed plus or minus one percent of the amount present by the specific testing employed. However, for molybdenum as indicated in Note 2 above the certified area is limited to the center section of the disk 3/4 in in diameter.

Samples for chemical analysis were prepared by milling the full cross section of the accepted rod material except for the determination of molybdenum in No. 646 where only the center cross section 3/4 in diameter was used. Chemical analyses were made by the National Bureau of Standards, Washington, D. C.; Allegheny-Ludlum Steel Corporation, Brackenridge, Pennsylvania; and Ordnance Corps, Watertown Arsenal, Watertown, Massachusetts.

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