

Comparison of Retained Austenite Standards using XRD and OIM

T. R. Watkins,¹ O. B. Cavin,² E. A. Kenik,¹ J. A. Cooke,³ K. M. Everett,⁴ J. L. Leisner,⁵ Y. Picazo,⁶ A. M. Wright⁷ and J. Carpenter⁸

¹ Oak Ridge National Laboratory, Oak Ridge, TN, USA

² Center for Materials Processing, The University of Tennessee, Knoxville, TN, USA

³ Graham High School, Bluefield, VA, USA

⁴ Bath County High School, Hot Springs, VA, USA

⁵ Bald Eagle Area High School, Wingate, PA, USA

⁶ West Carter High School, Olive Hill, KY, USA

⁷ Tupelo High School, Tupelo, MS, USA

⁸ TSL/EDAX, Draper, UT, USA

In the absence of new certified standards, the withdrawn NBS standards for 2, 5, 15 and 30 v% retained austenite were re-examined using x-ray diffraction (XRD) and orientation imaging microscopy (OIM). Using ASTM method E-975 and Cu $K\alpha_1$ radiation, the amounts of retained Austenite were found to be 2.5 ± 0.8 , 4.5 ± 0.3 , 14.3 ± 0.4 and 30.5 ± 1.2 v%, respectively. These results agreed within ± 1 v% of the same taken with Cr $K\alpha_1$ radiation. Using OIM, the amounts of retained Austenite were found to be 2.2 ± 0.6 , 5.4 ± 0.3 , 13.1 ± 1.7 and 25.6 ± 7.6 , respectively. While the agreement with the XRD was within ± 1.5 v% for the 2, 5 and 15% samples, the OIM result for the 30 v% standard was significantly different from the XRD data. Further OIM work on the 30 v% standard found amounts of retained Austenite ranging from 25-34 v% indicating that the microstructure is not homogeneous at < 0.7 mm level.

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