

Analysis	V	Fe	C	Mn	P	S	Si	Cu	Ni	Cr
1	45.19	33.49	0.236	4.07	0.101	0.303	4.74	0.386	4.182	5.71
2	45.22	33.54	0.236	4.07	0.113	0.305	4.82	0.398	4.23	5.76
3	45.25	33.62	0.237	4.09	0.119	0.332	4.83	0.402	4.29	5.78
4	45.33	33.67	0.238	4.09	0.119	0.333	4.83	0.405	4.30	5.80
5	45.36	33.98	0.24	4.11	0.12	0.34	4.88	0.42	4.30	5.81
6		34.01	0.243	4.18	0.12	0.34	4.90	0.427	4.33	5.85
7		34.06	0.246	4.19		0.341	4.93	0.45	4.36	5.878
8			0.253	4.239			4.94			5.93
9				4.24						
Average	45.270	33.767	0.241	4.142	0.115	0.328	4.859	0.413	4.285	5.815
Std Dev	0.072	0.241	0.006	0.070	0.008	0.017	0.067	0.021	0.060	0.070
Certified	45.27	33.8	0.24	4.14	0.12	0.33	4.86	0.41	4.28	5.82

Analysis	Al	Ca	Mg	Mo	N	Ti
1	0.010	0.008	0.009	0.006	0.2585	0.020
2	0.0128	0.008	0.014	0.0078	0.2596	0.020
3	0.017	0.010	0.014	0.008	0.265	0.021
4			0.018	0.008	0.27	0.022
5				0.0141		0.023
6				0.016		0.023
Average	0.0133	0.0087	0.0138	0.0100	0.263	0.0215
Std Dev	0.0035	0.0012	0.0037	0.0040	0.005	0.0014
Certified	(0.013)	(0.009)	(0.014)	0.01	0.26	0.022

Data in parentheses are not certified and are provided for information only.

Analysis: Chemical analyses were made on samples taken from the bulk material. The laboratories participating in the testing normally followed the requirements of ISO Guide 25. The individual values listed above are the average of each analyst's results. Methods of analysis used were a combination of ASTM Standard Methods E 31 and E 365 plus additional ICP and AA spectrometric methods. The following Certified Reference Materials were used to validate the analytical data listed above: ECRM 577-1; IRSID 511-1; JK FeV-2.

Co-operating Laboratories: Some of the co-operating laboratories were:

Anarem, Praha, Czech Republic
 Brammer Standard Co., Inc., Houston, Texas
 Coleman Testing Laboratories, Riverside, New Jersey
 J. Dirats and Co., Inc., Westfield, Massachusetts
 Elkem Development Center, Sewickley, Pennsylvania
 Ledoux & Company, Teaneck, New Jersey
 Andrew S. McCreath & Son, Inc., Harrisburg, Pennsylvania
 VHG Laboratories, Inc., Manchester, New Hampshire

Homogeneity: This Reference Material was tested for homogeneity using ASTM Standard Practice E 826 and found acceptable.

Traceability: This Reference Material was also examined by ICP emission spectrometry and found to be compatible with the following Certified Reference Materials: ECRM 577-1; IRSID 511-1; JK FeV-2.

Source: This material was produced by the Shieldalloy Metallurgical Corporation, Newfield, New Jersey. The material was made in an electric furnace, cast and crushed to minus 8 mesh.

Available Form: This Reference Material is available only in the form of minus 100 mesh powder in 100 gram containers.

Use: This Reference Material is intended for use in x-ray spectrometric and solution methods of analysis.

Sample Preparation: For best analytical results, use the same method for preparing all reference materials as you use for production specimens.

Safety Notice: A Material Safety Data Sheet (MSDS) is not required for this material. This material will not release or otherwise result in exposure to a hazardous chemical, under normal conditions of use in the unit size available for purchase. Inquiries concerning this Reference Material should be directed to:

Brammer Standard Co., Inc. Phone: (281) 440-9396
14603 Benfer Road
Houston, Texas 77069-2895 USA Fax: (281) 440-4432

Certified by: _____ on May 23, 1994.
G. R. Brammer

References:

ASTM documents available from ASTM, 1916 Race Street, Philadelphia, PA, 19103.

E 31-85 (Reapproved 1989) Standard Methods for Chemical Analysis of Ferroalloys

E 365-90 Standard Test Methods for Chemical Analysis of Ferrovandium and Vanadium Alloying Additives

E 826 - 85 (Reapproved 1990) Standard Practice for Testing Homogeneity of Materials for the Development of Reference Materials

ISO Guides available from American National Standards Institute, 11 West 42nd St., 13th Floor, New York, NY 10036.

ISO Guide 25 (Third edition, 1990), General requirements for the competence of calibration and testing laboratories.

ISO Guide 30 (Second edition, 1992), Terms and definitions used in connection with reference materials.

ISO Guide 31 (First edition, 1981), Contents of certificates of reference materials.

ISO Guide 33 (First edition, 1989), Uses of certified reference materials.

ISO Guide 35 (Second edition, 1989), Certification of reference materials - General and statistical principles.

Other useful documents available at no cost from NIST, U.S. Department of Commerce, Gaithersburg, MD 20899.

NBS Special Publication 260-100, Handbook for SRM Users

NIST Special Publication 829, Use of NIST Standard Reference Materials for Decisions on Performance of Analytical Chemical Methods and Laboratories

Certificate Number FeV45-052394