

# THE INSTITUTE FOR CERTIFIED REFERENCE MATERIALS

## ICRM

### CERTIFICATE OF ANALYSIS

#### CERTIFIED REFERENCE MATERIAL

No. F30/3

### FERROTITANIUM

CERTIFIED VALUES AND UNCERTAINTIES (95% confidence level), %

Titanium	70.0	± 0.1	Copper	0.113	± 0.005
Silicon	0.40	± 0.01	Molybdenum	0.92	± 0.01
Manganese	0.335	± 0.005	Nickel	0.60	± 0.01
Chromium	0.58	± 0.01	Vanadium	0.56	± 0.01
Carbon	0.308	± 0.006	Zirconium	0.397	± 0.006
Sulphur	0.012	± 0.001	Tin	0.100	± 0.002
Phosphorus	0.0044	± 0.0005	Nitrogen	0.68	± 0.02
Aluminum	3.63	± 0.03			
Iron	19.74	± 0.06			

ADDITIONAL DATA: Minimum weight of sample for analysis is 0.1 g.

Analytical methods used are given in Supplement.

Valeriy Stepanovskikh  
Director, ICRM

**CERTIFIED REFERENCE MATERIAL**  
**No. F30/3**  
**FERROTITANIUM**  
(continuation)

SUPPLEMENT

**ANALYTICAL METHODS USED**

TITANIUM	Photometry, with diantipyrylmethane, or hydrogen peroxide. Titrimetry. ICP – AES.
SILICON	Photometry, as blue Si-Mo complex, reduction by ascorbic acid. Gravimetric, with sulfuric acid. ICP – AES.
MANGANESE	Photometry, oxidations by potassium periodate. AAS. ICP – AES. Titrimetry, persulphate/silver nitrate.
CHROMIUM	Photometry, with diphenilcarbazide. AAS. ICP – AES. Titrimetry, persulphate/silver nitrate, with back titration.
CARBON	Coulometry. Infra-red absorption spectrometry.
SULPHUR	Coulometry. Infra-red absorption spectrometry. Titrimetry iodometry.
PHOSPHORUS	Photometry, as blue P-Mo complex, reduction by thiocarbamide, or ascorbic acid with potassium antimonyl tartrate. ICP – AES. Extraction-photometry, as blue P-Mo complex, reduction by tin bichloride.
ALUMINUM	Complexometric titration. AAS.ICP – AES.
IRON	Photometry, with O-phenanthroline, or sulphosalicylic acid. Dichromate titrimetric method, or complexometric titration, or mercurymetric method. AAS. ICP – AES.
COPPER	Photometry, with sodium diethyldithiocarbamate. AAS. ICP – AES.
MOLYBDENUM	Photometry, as thiocyanic complex, reduction by thiocarbamide. AAS. ICP – AES.
NICKEL	Photometry, with dimethylglyoxime, oxidation by ammonium persulphate. AAS. ICP – AES.
VANADIUM	Amperometry. Titrimetry, with phenylanthranilic acid. Potentiometry. Coulometry. ICP – AES.
ZIRCONIUM	Photometry, with orange csylenole. ICP – AES.
TIN	Polarography. Photometry, with para-nitro-phenylfluorone. AAS - ETA. ICP – AES.
NITROGEN	Distillation/acidimetry. Reducing melting in an inert atmosphere. Thermo conductormetric method.