

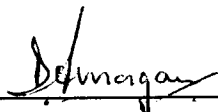
CERTIFICATE OF ANALYSIS**Reference Material Type** MILD STEEL (WROUGHT)**Catalogue Section:** 12 X **Sample No:** 354 **Batch No:** A**Certified Values**

ELEMENT	C	Si	Mn	S	P	Al
%	0.27	0.19	0.86	0.015	0.066	0.01
	B	Co	Sb	V	Nb	Zr
%	(0.0002)	0.03	0.05	0.02	0.07(5)	0.03

Form and Size: Disc 40mm diameter x 15mm thickness**Supplied by:** MBH Analytical Limited**Produced by:** Willan Metals Limited**Date of Certification:** 21 June 1993 (Replaces Single Page Certificate dated 16.3.1989)**Intended Use:** With Optical Emission and X-Ray Fluorescence Spectrometers.

Recommended Method of Use: Steels are generally prepared by finishing (avoiding contamination with abrasives), milling or turning on a lathe (avoiding the use of lubricants) or lapping (using a suitable polishing media). However, users are recommended to follow the calibration and sample preparation procedures specified by the relevant instrument manufacturer. Preparation should be the same for reference materials and the samples for test. When using O.E. a minimum of three consistent replicate analyses is recommended to optimise precision and accuracy. Users are advised to check against possible bias between reference materials and production samples due to difference in metallurgical history and be aware of possible inter-element effect.

MBH ANALYTICAL LIMITED

CERT. No.
0524

V.A.T. REGISTERED No. GB 421 3295 82

Registered in England. Registered No. 1875653

Directors: D. Moore D.J. Willis

Registered Office: Regency House, 33 Wood Street, Barnet, Herts. EN5 4BE



Chemical Analysis Data:

Sample:	C %	Si %	S %	P %	Mn %	Co %
1	0.26	0.19	0.015	0.063	0.86	0.032
2	0.27	0.19	0.015	0.068	0.854	0.026
3	0.28	-	0.015	-	-	-
4	-	-	-	0.066	-	-
Mean:	0.27	0.19	0.015	0.066	0.857	0.029
Stan. Deviation:	0.01	-	-	0.002	0.003	0.003

Sample:	Al %	Nb %	V %	B %	Sb %	Zr %
1	0.010	0.08	0.02	-	0.053	0.035
2	0.016	0.07	0.02	(0.0002)	0.055	0.024
3	-	-	-	-	-	-
4	0.011	-	-	-	-	-
Mean:	0.012	0.075	0.02	(0.0002)	0.054	0.03
Stan. Deviation:	0.003	0.005	-	-	-	0.005

Participating Laboratories:

Willan Metals Limited	Rotherham, England	NAMAS Approval 0014
Metals Tech (Testing) Ltd	Sheffield, England	NAMAS Approval 0963
Ross & Catherall Limited	Killamarsh, England	NAMAS Approval 0178

Analytical Methods Used:

Carbon	(a)	Combustion	IRD	BS6200
Silicon	(a) (b)	Gravimetric		Atomic Absorption
Sulphur	(a)	Combustion	IRD	BS6200
Phosphorus	(a)	Colorimetric	BS6200	
Manganese	(a) (b)	Colorimetric	BS6200	Atomic Absorption
Cobalt	(a) (b)	Atomic Absorption		BS6200
Aluminium	(a)	Atomic Absorption		BS6200
Niobium	(a) (b)	Gravimetric		
Vanadium	(a) (b)	Atomic Absorption		BS6200
Boron		Colorimetric		
Antimony		Atomic Absorption		
Zirconium		XRF Solution		Atomic Absorption

NOTE

- Overchecked by OES
 - Overchecked by XRF
- Data in brackets is not certified and is for guidance only.

The material to which the Certificate of Analysis refers is supplied subject to our general Conditions of Sale.