



Razi Applied Science Foundation

Test Report

Inspection Certificate 3.1 (EN 10204)

Website: www.razi-foundation.com

Email: info@razi-foundation.com

No. 27, Fernan St., Shahid Ghasem Asghari Blvd., Km 21 Karadj Makhsoos Road, Tehran, Iran Tel: (+9821) 49732 , 46841121 , Fax: (+9821) 49732

Client:Arma

Address:Tehran

Sample Name:Bullet 1

Contract No.	1-34326
Date Reported	2020-02-12
Revision No.	0
Attachment	
Sample Received on	2020-01-26
Tested On	2020-01-27
Client Letter No	
Client Letter Date	

Environmental Conditions:

Temperature

Humidity:

Sampling was performed by the client

Page No 1

Of 6
Accredited by

As Na Li Ta Ca

ISO/IEC 17025
Analitica/ ILAC
No : AAC.A.00223

NACI
National Accreditation
Center of IRAN
Cert No. T/3048



Laboratory Manager:

S.Nasiri

Technical Manager:

R.Khoshmanesh



For Information Purpose Only

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Sample Name:Bullet 1

Environmental Conditions:

Temperature 22C

Humidity: %24

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Chemical Analysis by Atomic Emission Spectrometry (OES)

Standard Test Method: --

INSTRUMENT: OXFORD☒ ARL☐ HITACHI☐

Preparation Sample: Grinding☒ Remelting And grinding (ASTM E1010-16)☐ Machining☐

Material Type: Ferrous☒ Non Ferrous☐

Result of chemical analysis test:

C	Si	Mn	P	S	Cr	Mo	Ni	Cu	Nb	V	Fe
3.07	0.49	0.38	0.021	0.024	11.24	0.02	0.18	0.11	< 0.005	< 0.005	Base

As-Nal-Ti-Ga

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Sample Name:Bullet 1

Environmental Conditions: Temperature 25C Humidity: %41 Sampling was performed by the client Page No 3

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Rockwell C HARDNESS TESTING

Reference Standard: ASTM E18(2017) - BS EN ISO 6508-1(2015)

Instrument: INNOVATEST NEXUS 8000XL

Indenter ☒Diamond sphero-conical indenter ☐ball 1/16-in. (1.588-mm)

Applied Force: ☐HRA 60 Kgf (588.4 N) ☐HRB 100 Kgf (980.07 N) ☒HRC 150 Kgf (1471 N)

No.	Test location	Hardness at measured point(HRC)			Hardness (mean) HRC	Acceptance limit HRC	Uncertainty
		Point 1	Point 2	Point 3			
1	Center	60	61	61	61	---	---

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Microstructure

Ref. Standards: ASTM E3-11 Sample Preparation of Metallographic specimen

ASTM E 407-07 Microetching of Metals

ASTM E 883-11 Metallographic Photomicrography

Microstructure (after etching)

Microstructure: The inter-dendritic network of iron-chromium carbide and the dendritic pattern of martensite and precipitation of fine $Cr_{23}C_6$ carbide within martensitic matrix.

Remarks: ---

Micrographs of sample are shown in figure 1 to 2.

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Client Letter Date	

Environmental Conditions:

Temperature 25C

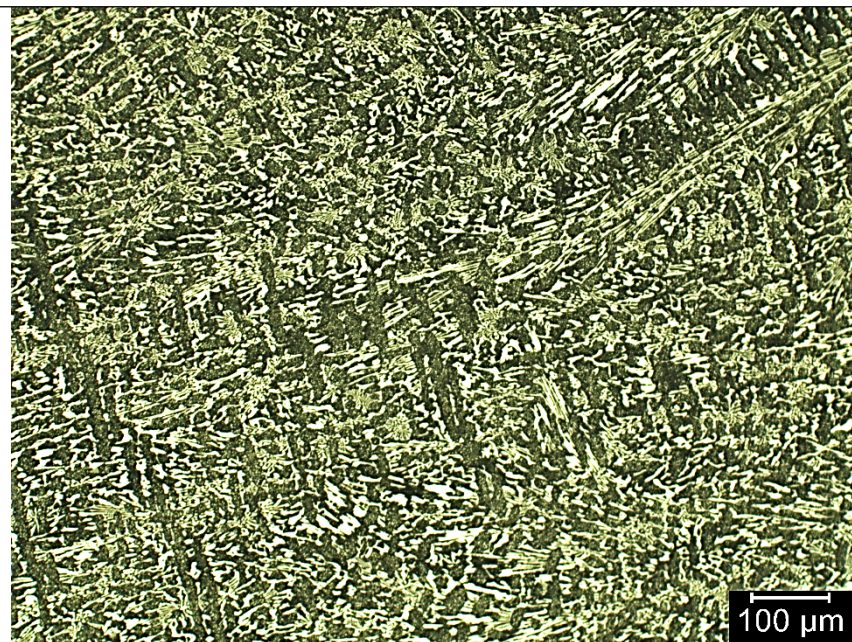
Humidity: %41

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Fig 1. The inter-dendritic network of iron-chromium carbide (white) and the dendritic pattern of martensite (gray)
Mag. 100X
Etch Solution: Nital %2



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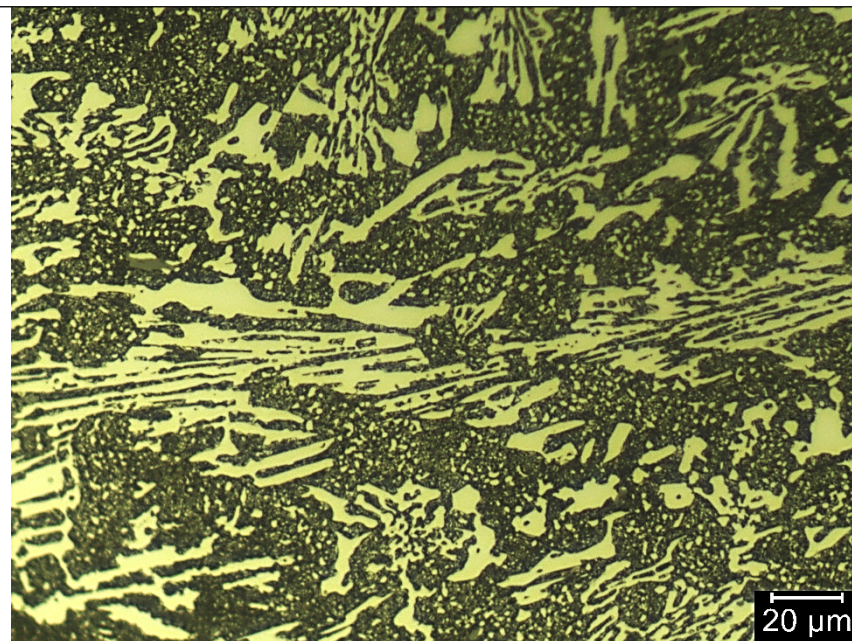
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Fig 2. Same structure at a higher magnification and precipitation of fine Cr_{23}C_6 carbide within martensitic matrix.

Mag. 500X

Etch Solution: Nital %2



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