DEEP METALLURGICAL SERVICES
Approved Proficiency Testing Provider (Chemical & Mechanical) by NABL
20, New Modella Indl. Estate, Padwal Nagar, Wagle Indl. Estate, Thane - 400 604. Maharashtra, India. Tel.: (022) 2583 1530, 2081 6664 2580 6688. Mob.: 9892216539 | 8928368028 | 9920044840 E-mail : deep.ptp2018@gmail.com / mech@deep-ptp.in Web : www.deepmetlab.com
ISO 17043 - 10, PC - 1045

TECHNICAL STANDARD INSTRUCTION FOR MEASUREMENT OF GRAIN SIZE AND CARBIDE VOLUME FRACTION IN AN AUSTENITIC STAINLESS STEEL BY MICROSCOPIC METHOD

A Proficiency Testing Program

A.1 Program Name: Measurement of grain size and carbide volume fraction in an austenitic stainless steel

A.2 Program Code No: Met 4

A.3 Material: Austenitic stainless steel, SA 240 Grade 304L (UNSS30403)

A.4 Test Method: ASTM E562, E112 or any validated method

A.5 Program starting date A.6 Program closing date

A.7 Last date of result submission A.8 Final result reporting date

B Sample Description

B.1 **Test Specimen**: One metallurgical polished round specimen with 1um surface finish is provided. The nominal dimension of the specimen is 35Φ mm and thickness 12 mm. It is a single phase structure of austenite with carbide along grain boundary. At least twenty fields must be considered for measurement of grain size and percentage of carbide at magnification of 100 or higher.

C Test Requirement

C.1 Test is to be performed by one operator and one microscope only

C.2 Test must be performed in sequence

C.3 Manual point grid or Image analysis technique may be used.

C.4 All measurement must be performed 100magnfication or higher magnification.

D Test method, Volume fraction of carbide

$P_V = P_{p/f} / P_T \times 100$

Where $P_{p/f}$ = total count on the carbide phase and P_T total number of point in the test grid

E Test procedure for carbide volume fraction

E.1 Point count method; the total number of points falling within the carbide is counted and averaged for a selected number of fields. It is expected to carry out 20fields

E.2 Image analysis technique or manual technique must be employed

F Test method, Austenite grain size measurement

F.1 Comparison method or image analysis technique

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G Expected range

PT program	Test method	Expected Parameters	Procedure
Met 4	ASTM E112	*Austenite grain size ASTM no 4 to 10	Comparison method or image analysis technique
	ASTM E562	Volume fraction carbide, max20%	Manual or image analysis technique

- **Outlier grain size larger than ASTM NO 3 should not be considered**

H Competency

H.1 Competent person should carry out the test and evaluate the result as routine test
H.2 The participant is required to report result with three decimals accuracy
H.3 PT results will be analyzed based on Robust Algorithm A and Z score according to ISO13528-15.
H.4 Final report includes all clauses of 4.8.2 of ISO17043-2010
H.5 In case of loss or deterioration of PTP Specimen, please feel free to contact PT provider
H.6 In case of exclusion of a PT schemes, the participant must return sample
H.7 Collusion and falsification of your PTP result are totally forbidden. In case of suspicion of collusion or falsification, the PT Provider reserves the right to exclude the participants.

PT Coordinator,

K.K. Karmakar
Deep Metallurgical Services, Email: deep.ptp2018@gmail.com

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TECHNICAL STANDARD INSTRUCTION FOR MEASUREMENT OF GRAIN SIZE AND CARBIDE VOLUME FRACTION IN AN AUSTENITIC STAINLESS STEEL BY MICROSCOPIC METHOD

TEST RESULT REPORTING FORMAT

A Proficiency Testing Program

A.1 Program Name: Measurement of grain size and carbide volume fraction of an austenitic stainless steel

A.2 Program Code No: Met 4

A.3 Material: Austenitic stainless steel, SA 240 Grade 304L (UNSS30403)

A.4 Test Method: ASTM E562, E112 or any validated method

A.5 Lab Code:

A.6 Sample Code:

A.7 Program starting date

A.8 Program closing date

A.9 Last date of result submission

A.10 Final result reporting date

Sr. No	Parameter	Unit	Result, one decimal accuracy
1	Austenite grain size *	ASTM No	
2	Carbide volume fraction	Volume fraction	

- **Outlier grain size larger than ASTM NO 3 should not be considered**

Method &Magnification: Equipment used:

NAB Certificate No.:

Tested by:

Name:

Designation

Please send the complete Test Result Form (Soft & hard copy) to PTP Coordinator, Deep Metallurgical Services, 20, New Modella Industrial Estate, Padwal Nagar, Wagle Estate, Thane, Maharashtra, India, Pin-400604, Mobile- 9892216539, Email: mech@deep-ptp.in, deep.ptp2018@gmail.com