



## TECHNICAL STANDARD INSTRUCTION FOR MEASUREMENT OF PERCENTAGE FERRITE AND PEARLITE IN A NORMALIZED LOW CARBON STEEL BY MICROSCOPIC METHOD

### A Proficiency Testing Program

- A.1 Program Name: Proficiency Testing for determination of volume fraction of ferrite and pearlite measurement
- A.2 Program code No Met.2
- A.3 Material Normalized low carbon steel
- A.4 Test Method ASTM E562, E112 or ISO 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

### 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 two phase structure consisting of ferrite(bright) and pearlite(dark) phase . At least twenty fields must be considered for determination of percentage of ferrite and pearlite preferably at 100magnification.

### 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** Grid selection 25 or lesser point grid
- C.4** Image analysis technique
- C.5** All measurement must be performed 100magnification or higher magnification.

### D Test method, Volume fraction of ferrite or pearlite phase

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

Where  $P_{p/f}$  = total count in either ferrite or pearlite phase and  $P_T$  total number of point in the test grid either in ferrite or pearlite

**E Test procedure** Three methods may be used for determine of percentage of ferrite and pearlite. These methods are

- E.1** Point count method; the total number of points in a test line that fall within the ferrite and pearlite phase. In case of boundary of ferrite and pearlite, each test point of boundary is one half points.
- E.2** Point fraction mode: total number of count in ferrite and pearlite phase to the number grid point (number of reticule)
- E.3** Image analysis technique



# DEEP METALLURGICAL SERVICES

Approved Proficiency Testing Provider (Chemical & Mechanical) by NABL



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ISO 17043 - 10, PC - 1045

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### F Expected range

| PT program | Test method   | Expected % Pearlite | Expected % ferrite | Method  |
|------------|---|---------------------|--------------------|---|
| Met/2      | ASTM E562, E112,<br>ASM 9, ISO or any<br>validated method | 25 % to 45%         | 55% to 75%         | Point count, point<br>fraction or image<br>analyzer technique |

### G Competency

- G.1 Competent person should carry out the test and evaluate the result as routine test.
- G.2 The participant is required to submit the report for each sample as per result reporting Format with accuracy as mentioned
- G.3 All results will be analyzed based on Robust Algorithm A and Z score according to ISO13528-15.
- G.4 Final report includes all clauses of 4.8.2 of ISO17043-2010
- G.5 In case of loss or deterioration of PTP Specimen, please feel free to contact PT provider for replacement.
- G.6 In case of exclusion of a PT schemes by the participant side, the participant must inform PT provider and sample must be sent back.
- G.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 Co-coordinator,

Mr. K.K. Karmakar  
Deep Metallurgical Services  
Mobile; 9892216539, Email: deep.ptp2018@gmail.com



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## TECHNICAL STANDARD INSTRUCTION FOR MEASUREMENT OF PERCENTAGE OF FERRITE AND PEARLITE IN A NORMALIZED LOW CARBON STEEL BY MICROSCOPIC METHOD

### TEST RESULT REPORTING FORMAT

#### A Proficiency Testing Program

- A.1 Program Name: Proficiency Testing Scheme for ferrite and pearlite measurement
- A.2 Program code No Met.2
- A.3 Material Normalized low carbon steel
- A.4 Test Method ASTM E562, E112 ASM 9, ISO 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

**Last date of Result Submission:**

**Date of Result submission:**

| Sr. No | Parameter  | Result<br>(Up to 1 decimal) | Unit       | Results |
|--------|------------|-----------------------------|------------|---------|
| 1      | % Pearlite | Average                     | Percentage |         |
| 2      | % Ferrite  | Average                     | Percentage |         |

**Method & Magnification: Equipment used**

**NAB L/ISO Certificate No.**

**Tested by organization**

**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-ntp.in, deep.ptp2018@gmail.com