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Determination of percentage of resolvable pearlite in high carbon steel wire rod

Détermination du pourcentage de perlite résoluble dans les fils machine en acier à haut carbone

Reference number
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Contents

Page

Foreword

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The committee responsible for this document is ISO/TC 17, *Steel*, Subcommittee SC 7, *Methods of testing (other than mechanical tests and chemical analysis)*.

Introduction

This test method produces an estimate of the percentage of pearlite resolvable at 500x magnification in wire rod as a function of the cooling method after hot rolling to rod. The drawability of high-carbon pearlitic rod is influenced by the amount of resolvable pearlite present. As the percentage of resolvable pearlite increases, drawability decreases. The methods are used to check if the content of resolvable pearlite can fulfil the requirement of the wire rod with improved characteristics intended for drawing.

Determination of percentage of resolvable pearlite in high carbon steel wire rod

1 Scope

This International Standard defines resolvable pearlite and specifies two methods of determining the percentage of resolvable pearlite.

The methods are applicable for wire rod made from control cooling steel with carbon content greater than 0,65 % C.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 9042, *Steels — Manual point counting method for statistically estimating the volume fraction of a constituent with a point grid*

ISO 16120-1, *Non-alloy steel wire rod for conversion to wire — Part 1: General requirements*

3 Terms and definitions

For the purpose of this document, the terms and definitions given in ISO 9042 and ISO 16120-1 apply.

4 Symbols and abbreviated terms

The symbols and corresponding designations are given in Table 1.

Table 1 — Symbols and designations

Symbol	Designation
$O1$	the 1st measuring location
$O2$	the 2nd measuring location
$O3$	the 3rd measuring location
$O4$	the 4th measuring location
Oi	the i^{th} measuring location, i = 1,2,3 and 4
$Si1$	percentage of resolvable pearlite in the first field of view of the Oi measuring location
$Si2$	percentage of resolvable pearlite in the second field of view of the Oi measuring location
$Si3$	percentage of resolvable pearlite in the third field of view of the Oi measuring location
$\bar{S}$	average percentage of resolvable pearlite in the cross-section of wire rod