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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 14999.6-2010

**Test methods for characterizing duplex grain sizes and primary
carbides distribution of superalloy forgings**

锻制高温合金双重晶粒组织和一次碳化物分布测定方法

(English Translation)

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Foreword

Appendix A and Appendix B of this standard are normative appendices.

This standard is proposed by China Iron and Steel Industry Association.

This standard by the National Steel Standardization Technical Committee.

The main drafting unit of this standard. Iron and Steel Research Institute, Metallurgical Industry Information Standards Institute.

Introduction

This standard provides a method for the determination of double grain microstructures and primary carbides distribution of forged superalloys. As a result of the original photo the geometry of the slice is based and therefore has nothing to do with the alloy itself. If the double grain structure in the alloy and the standard provided by this type of mold Corresponding to the picture, according to the type of determination; if the alloy in the primary carbide distribution and the standard provided by the standard rating picture , Can be assessed using the comparative method, can also be measured by quantitative indicators.

The measurement method of this standard is only applicable to the determination of two-dimensional plane (cross-section) double grain structure and primary carbide distribution, Determination of Microstructure and Primary Carbide Distribution of Gravitational Double Grain.

Forged high temperature alloys Double grain structure and primary carbide distribution test methods

1 Scope

1.1

This standard describes the type and characteristics of double grain organization and specifies the corresponding measurement method and result identification.

1.2

This standard specifies the determination method and result identification of the primary carbides distribution.

1.3

This standard is applicable to the determination of double grain microstructures and primary carbides in forged superalloys.

1.4

This standard only as a recommended method of determination, not forged high-temperature alloy product acceptance test qualified level of the provisions of the provisions.

2 Normative reference documents

The terms of the following documents are hereby incorporated by reference into this standard. Whichever is the date of the reference file, which is followed by all (Excluding corrigenda) or revisions do not apply to this standard, however, encourage the parties to reach an agreement under this standard Whether you can use the latest version of these files. For undated references, the latest edition applies to this standard.

GB/T 6394 Determination of average grain size of metals GB/T 24177 Double grain size characterization and determination method ASTM E930-99 (2007) Determination of maximum grain size level (ALA grain size) on metallographic detection surface Characteristics and Classification of Double Grain Microstructures 3.1 Double grain organization There are at least two distinct sizes, different distribution of grain, where the fine grain and coarse grain grain size difference is not less than three.

3.1.1

Individual coarse grains ALA (as large as) condition the individual coarse grains are randomly distributed in the longitudinal section of the sample, and the grain size difference of the average grain size is not less than 3.

And the percentage of the total area occupied by these isolated coarse grains is not more than 5%. Such as the percentage of its area is greater than 5%, according to two levels Grain corresponding to the provisions of the implementation.

3.1.2

Mixed-grain wide-range condition the vertical grain and the smallest grain have a grain size of not less than 5 in the field of view.

Poor granularity.

3.1.3

Necklace grain necklacecondition in the observation section, two different sizes of grain are distributed in the field of view. The small grains are surrounded by large grains and the two grain sizes Level difference of not less than 3. When the small grains are still surrounded by large grains, but the percentage of the total area of the observed range is greater than 50% the two-stage grain is specified for execution.

3.1.4

Two - stage grain bimodalcondition There are two distinctly different grain sizes in the field of view, and the two grain sizes are more than three, and the two