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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 26032-2010

Evaporated nickel material

镍蒸发料

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Standardization Administration of the PRC

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Foreword

GB/T 26032-2010 was issued on 10 January 2011 by the General Administration of Quality Supervision, Inspection and Quarantine and the Standardization Administration of the People's Republic of China, and has been in force since 1 October 2011.

The document is a recommended national standard: the /T in the designation marks it as recommended rather than compulsory.

1 Scope

China's national standard for evaporated nickel material - the high-purity nickel charge that is vaporised in a vacuum chamber to lay down a thin nickel film on a semiconductor wafer. Everything about this product is governed by one fact: whatever is in the charge ends up in the film. A thin film is a few hundred atoms thick, so an impurity present at a few parts per million in the source becomes a significant fraction of what is deposited, and the alkali metals in particular - sodium, potassium, lithium - are mobile in silicon dioxide and will drift under bias into the gate of a transistor and shift its threshold voltage over the life of the device. That is why this standard's purity requirements are stated in parts per million and go down to hundredths of a part per million for the alkalis, and why the non-metallic elements are controlled separately: carbon, hydrogen, nitrogen, oxygen and sulfur dissolved in the metal cause spitting and pinholes as the charge is evaporated. The standard specifies the requirements, test methods, inspection rules, marking, packaging, transport, storage, quality certificate and contents of the order or contract for evaporated nickel material, classifying it into two purity grades and two shapes, sheet and rod. It applies to the various kinds of evaporated nickel material used in the semiconductor industry, and material for

other uses may also refer to it.

This standard specifies the requirements, test methods, inspection rules, marking, packaging, transport, storage, quality certificate and the contents of the order form or contract for evaporated nickel material.

This standard applies to the various kinds of evaporated nickel material used in the semiconductor industry. Evaporated nickel material for other uses may also be dealt with by reference to this standard.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document, including all amendments, applies.

GB/T 2828.1 Sampling procedures for inspection by attributes - Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection.

GB/T 8647.8 and GB/T 8647.9 Methods for chemical analysis of nickel - Determination of sulfur content and of carbon content by high frequency induction furnace combustion infrared absorption.

GB/T 15077 Test methods for geometrical dimensions of precious metals and their alloys.

GB/T 26016-2010 High purity nickel.

3.1 Product classification

The types of evaporated nickel material are divided by the purity of the nickel into two grades, IC-Ni99.99 and IC-Ni99.995.

The shapes of evaporated nickel material are mainly of two kinds, sheet and rod, as shown in Figure 1. The sheet is drawn with its length, width, thickness and corner radius; the rod with its length and diameter.

3.2 Chemical composition requirements

3.2.1 The chemical composition requirements are given in Table 1, which for each of the two grades fixes a minimum nickel content and a maximum content for each of twenty-two impurity elements - the alkali and alkaline earth metals, the common transition metals, the low-melting metals and the metalloids - together with a maximum total impurity content. The notes provide that the nickel content is 100 per cent less the sum of the impurity elements actually found, and that where a customer has a requirement for the content of a particular impurity it is settled by agreement between supplier and purchaser.

3.2.2 The requirements for the non-metallic elements are given in Table 2, which fixes for

each grade a maximum content of carbon, hydrogen, nitrogen, oxygen and sulfur.