

Translated English of Chinese Standard: GB/T12963-2014

www.ChineseStandard.net

Sales@ChineseStandard.net

GB

NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA

ICS 29.045

H 82

GB/T 12963-2014

Replacing GB/T 12963-2009

Electronic-grade Polycrystalline Silicon

电子级硅多晶

GB/T 12963-2014 How to BUY & immediately GET a full-copy of this standard?

1. www.ChineseStandard.net;
2. Search --> Add to Cart --> Checkout (3-steps);
3. No action is required - Full-copy of this standard will be automatically & immediately delivered to your EMAIL address in 0~25 minutes.
4. Support: Sales@ChineseStandard.net. Wayne, Sales manager

Issued on: December 31, 2014

Implemented on: September 1, 2015

Issued by: General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China;

Standardization Administration of the People's Republic of China.

Table of Contents

Foreword	3
1 Scope	4
2 Normative references	4
3 Terms and definitions	5
4 Requirements	5
5 Testing Method	7
6 Inspection Rules.....	8
7 Mark, Package, Transportation and Storage	9
8 Content of Order List (or Contract).....	10

Foreword

This Standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This Standard replaces GB/T 12963-2009 "Polycrystalline silicon". Compared with GB/T 12963-2009, the main changes of this Standard are as follows:

- Add the reference national standards GB/T 1551, GB/T 1557, GB/T 24574, GB/T 24581 and GB/T 24582 (see Chapter 2);
- Add polycrystalline silicon's technical parameters, including the requirements of donor impurity concentration, acceptor impurity concentration, oxygen concentration, substrate metal impurity concentration, surface metal impurity concentration (see Table 1);
- For different grade of polycrystalline silicon, the carbon concentration is revised FROM $<1.5 \times 10^{15}$ atoms / cm^3 , $<2 \times 10^{16}$ atoms/ cm^3 , $<2 \times 10^{16}$ atoms/ cm^3 TO $<4.0 \times 10^{16}$ atoms/ cm^3 , $<1.0 \times 10^{16}$ atoms/ cm^3 , $<1.5 \times 10^{16}$ atoms/ cm^3 respectively (see Table 1).

Please note that some of the content of this document may involve patents. The issuing agency of this document do not undertake the responsibility to identify these patents.

This Standard was jointly proposed by and shall be under the jurisdiction of National Standardization Technical Committee of Semiconductor Equipment and Materials (SAC/TC 203) AND National Standardization Technical Committee of Semiconductor Equipment and Materials – Material Sub-committee (SAC/TC 203/SC 2).

Drafting organizations of this Standard: Emei Semiconductor Materials Research Institute, Sichuan Xinguang Silicon Technology Co., Ltd., Youyan Semiconductor Materials Co., Ltd., Jiangsu Zhongneng Silicon Technology Development Co., Ltd., Xinte Energy Co., Ltd. AND Luoyang Sino-silicon High-tech Co., Ltd.

The drafters of this Standard: Zhan Ke, Yang, Zhong Na, Li Yawen, Liang Hong, Sun Yan, Liu Xiaoxia, Yin Bo, Gan Xinye and Yan Dazhou.

The previous editions replaced by this Standard are as follows:

- GB/T 12963-1991, GB/T 12963-1996, GB/T 12963-2009.

Specification for Polycrystalline Silicon

1 Scope

This Standard specifies polycrystalline silicon's requirements, test methods, inspection rules, mark, transportation, storage, quality certificate and order list (or contract).

This Standard is applicable to the polycrystalline silicon which is manufactured from chlorosilane and silane.

2 Normative references

The following documents contain provisions which, through reference in this text, constitute the provisions of this Standard. For dated reference, the subsequent amendments (excluding corrigendum) or revisions of these publications do not apply. For undated references, the latest edition of the normative document is applicable to this Standard.

GB/T 1550 Standard methods for measuring conductivity type of extrinsic semiconducting materials

GB/T 1551 Test method for measuring resistivity of monocrystal silicon

GB/T 1553 Test methods for minority carrier lifetime in bulk germanium and silicon by measurement of photoconductivity decay

GB/T 1557 The method of determining interstitial oxygen content in silicon by infrared absorption

GB/T 1558 Test method for substitutional atomic carbon content of silicon by infrared absorption

GB/T 4059 Polycrystalline silicon - Examination method - Zone-melting on phosphorus under controlled atmosphere

GB/T 4060 Polycrystalline silicon - Examination method - Vacuum zone-melting on boron

GB/T 4061 Polycrystalline silicon - Examination method - Assessment of sandwiches on cross-section by chemical corrosion

GB/T 13389 Practice for conversion between resistivity and dopant density for

determined by the negotiation of the supplier and purchaser.

6.5 Determination of inspection result

6.5.1 The grade of polycrystalline silicon shall be determined by donor impurity concentration, acceptor impurity concentration, carbon concentration, oxygen concentration, surface metal impurity concentration and substrate metal impurity concentration. If one item of the inspection results is unqualified, then the doubling sampling is required to be carried out for the re-inspection of the unqualified item(s). If it is still unqualified, then this batch of products are deemed as unqualified.

6.5.2 The determination of inspection result of conduction type, minority carrier lifetime, resistivity, dimension and allowable deviation, structure and appearance quality shall be determined by negotiation of the supplier and purchaser.

7 Mark, Package, Transportation and Storage

7.1 Mark

The wordings or marks such as "Handle with Care", "Keep Away From Corrosion, Keep Away from Moisture" shall be marked on the packing box, and indicate:

- a) Purchaser's name;
- b) Product name, designation;
- c) Number of packages and net weight of the product;
- d) Supplier's name.

7.2 Packaging

The polycrystalline silicon shall be packed into a clean polyethylene packaging bag after it is cleaned and dried in a certain way; then the packaging bag shall be packed into a packing box. It is required to protect the polyethylene packaging bag from breakage while packing, so as to avoid the foreign contamination to the product; the good protection shall be provided in an optimal placing way. The packing of polycrystalline silicon can also be negotiated by the supplier and purchaser.

7.3 Transport

The product shall be loaded and unloaded carefully during the transport process; do not press and shove it, and adopt the vibration-proof measures.

7.4 Storage

The product shall be stored in a clean and dry environment.

7.5 Quality certificate

Each batch of product shall be accompanied by a quality certificate, and noted with:

- a) Supplier's name;
- b) Product name and designation;
- c) Product batch number;
- d) The gross weight and net weight of product;
- e) Stamps of each-item inspection result and inspection department;
- f) Serial number of this Standard;
- g) Date of exit-factory.

8 Content of Order List (or Contract)

The following contents shall be included in the order list of specified products in this Standard:

- a) Product name and designation;
- b) Serial number of this Standard;
- c) The content negotiated by the supplier and purchaser in this Standard;
- d) Other.

_____ **END** _____

This is an excerpt of the PDF (Some pages are marked off intentionally)

Full-copy PDF can be purchased from 1 of 2 websites:

1. <https://www.ChineseStandard.us>

- SEARCH the standard ID, such as GB 4943.1-2022.
- Select your country (currency), for example: USA (USD); Germany (Euro).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Tax invoice can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with download links).

2. <https://www.ChineseStandard.net>

- SEARCH the standard ID, such as GB 4943.1-2022.
- Add to cart. Only accept USD (other currencies - <https://www.ChineseStandard.us>).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with PDFs attached, invoice and download links).

Translated by: Field Test Asia Pte. Ltd. (Incorporated & taxed in Singapore. Tax ID: 201302277C)

About Us (Goodwill, Policies, Fair Trading...): <https://www.chinesestandard.net/AboutUs.aspx>

Contact: Wayne Zheng, Sales@ChineseStandard.net

Linkin: <https://www.linkedin.com/in/waynezhengwenrui/>

----- The End -----