

ICS 77.160
CCS H16



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

GB/T 11108-2017

Replacing GB/T 11108-1989

Test method for thermal diffusivity of hardmetal

硬质合金热扩散率的测定方法

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Standardization Administration of China**

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009. This standard replaces GB/T 11108-1989 "Determination of cemented carbide thermal diffusivity." This standard compared with GB/T 11108-1989, the main changes are as follows:

- Modify Figure 1;
- Remove the 1989 format (6) and the following notes;
- Added symbols and definitions chapter;
- Revised sample preparation requirements;
- Increase the sample before the start of treatment work;
- Removed the 1989 edition of Chapter 6 calibration;
- Modify the test report content;
- Edit some of the text changes. This standard is proposed by China Nonferrous Metals Industry Association. This standard by the National Non-ferrous Metal Standardization Technical Committee (SAC/TC243) centralized. This standard is drafted by: Central South University Institute of Powder Metallurgy, Zhuzhou Cemented Carbide Group Co., Ltd., Chongyi Zhangyuan tungsten shares Co., Ltd., Shenzhen Note into Technology Co., Ltd.. The main drafters of this standard. Huang Zhifeng, Wang Shouren, Zheng Lingzhi, Li Huifang, Zhangqiu Lin, Zhang Yue. This standard replaces the standards previously issued as.
- GB/T 11108-1989. Determination of thermal diffusivity of cemented carbide

1 Scope

GB/T 11108-2017 is the Chinese national standard on test method for thermal diffusivity of hardmetal, in the field of metallurgy. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It

was issued on 14 October 2017 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 May 2018. Classification: ICS 77.160, CCS H16. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This standard specifies the method of determination of cemented carbide thermal diffusivity --- flash method. This standard applies to the determination of cemented carbide thermal diffusivity. This standard is also applicable to the thermal diffusivity of other isotropic materials Determination.

2 Method principle

2.1 When the front of the sample by a light pulse instantaneous uniform irradiation, the light absorbed by the rapid conversion of heat into heat and spread to the back from As a result, the back surface temperature T increases and reaches the maximum value T_m , as shown in FIG. 1. Figure 1 the back of the sample temperature and time

2.2 According to the theory of unstable thermal conductivity, the thermal diffusivity of the sample can be obtained according to formula (1) ~ (5). $T_1 T_2 = 1/2 \sum_{n=1}^{\infty} (-1)^{n+1} \exp(-n^2 \omega_1) / \sum_{n=1}^{\infty} (-1)^{n+1} \exp(-n^2 \omega_2)$ (1) $\omega_1 = \pi^2 \alpha_1 / L^2$ (2) $\omega_2 = \pi^2 \alpha_2 / L^2$ (3) $t_1 = 0.98 t_3$ (4) $t_2 = 1.71 t_3$ (5)

3 Symbols and definitions

The symbols and definitions involved in this standard are shown in Table 1.