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

GB/T 13813-2023

Replacing GB/T 13813-2008

**Testing method and judging rule of safety to friction spark of
metallic material for coal mine**

煤矿用金属材料摩擦火花安全性试验方法和判定规则

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Foreword

This document is in accordance with the provisions of GB/T 1:1-2020 "Guidelines for Standardization Work Part 1: Structure and Drafting Rules for Standardization Documents" drafting: This document replaces GB/T 13813-2008 "Metal Material Friction Spark Safety Test Methods and Judgment Rules for Coal Mine", and is in line with Compared with GB/T 13813-2008, except for structural adjustment and editorial changes, the main technical changes are as follows:

- Deleted the definition, formula, test piece pattern, etc: related to the impact flange (see 3:2, 3:4, A:1:3:1,:2008 edition Figure A:7);
- Increased the test equipment, inspection requirements and test piece pattern for the analysis of the chemical element composition of metal materials (see Table 2, 11:5, A:1:6, Table A:1);
- Added the test equipment, test methods, judgment rules, metal material friction spark safety test, substitution and test of brake friction Parts drawings (see Table 2, 7:5, 8:5, 9:6, 10:1, A:1:5, Table A:1);
- Changed the scope of application of the friction spark safety test of the rotor (impeller) and casing (protection ring) paired metal materials (see 9:1:1, 8:1:1 of the:2008 edition);
- Deleted the "High-speed impact test conditions for light alloy lifting container materials" for the test equipment and scope requirements for projectile quality (see Table 2, Table 3, Table 2, Table 3 of the:2008 edition);
- Changed the principle of substitution of friction spark safety test results for equipment,

instruments, meters, tools and utensils using light alloy shells (see 10:1, 10:5:4 of the:2008 edition);

--- Changed the inspection requirements of the inspection unit, deleted the modification, replacement, revocation of the certificate, etc: (see 11:1~11:5,:2008 edition 10:1, 10:2, 10:4, 10:6, 10:7);

--- Changed the outer edge dimensions of the drop weight test piece (see Figure A:3, Figure A:3 of the:2008 edition): Please note that some contents of this document may refer to patents: The issuing agency of this document assumes no responsibility for identifying patents: This document is proposed and managed by China Coal Industry Association: This document was drafted by: China Coal Science and Industry Group Chongqing Research Institute Co., Ltd., Chongqing Anbiao Testing Research Institute Co., Ltd., Anbiao National Mine Product Safety Mark Center Co., Ltd., Shanxi Anrui Fan Electric Co., Ltd., Wolong Electric Nanyang Explosion-proof Group Co., Ltd: Division, Shan'an Yun Fan Co., Ltd., Howden Hua Engineering Co., Ltd., Ping An Electric Co., Ltd: The main drafters of this document: Yang Liang, Ju Guanggang, Deng Peng, Kong Lingang, Shi Zhiyuan, Liu Yongliang, Zhou Zhipeng, Duanmu Fengqing, Wu Xuandong, Li Jingzhe, Li Dajiang, Chen Zhongzhong, Yang Sen, Yan Wenxue, Qin Yubing, Peng Minghui, Cheng Bo, Wang Liangjiang, Yang Huayun, Li Shaohui, Wang Fanshu, Wang Wei, Lian Bo, Li Pan: This document was first released in:1992, revised for the first time in:2001, revised for the second time in:2008, and this is the third revision: Safety of Friction Sparks of Metal Materials Used in Coal Mine Test Method and Judgment Rules

1 Scope

GB/T 13813-2023 is the Chinese national standard on testing method and judging rule of safety to friction spark of metallic material for coal mine, in the field of environment and health protection, safety. 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 23 May 2023 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 December 2023. Classification: ICS 13.220.40, CCS D15. 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 document specifies the test flammable gas, test equipment, and test environment conditions for the friction spark safety test of metal materials used in coal mines: Parts, test methods, judgment rules, metal material friction spark safety test, test result expression, inspection requirements: This document is applicable to the friction spark safety test of metal materials used in coal mines, and the friction spark test of other metal materials in

similar explosive hazardous environments: The rubbed spark safety test can be carried out with reference to this document:

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text: Among them, dated references For documents, only the version corresponding to the date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to this document:

GB/T 700 carbon structural steel

GB/T 1591 Low-alloy high-strength structural steel

3 Terms and Definitions

The following terms and definitions apply to this document: 3:1 light alloy lightaloy The general term for alloys based on light metals such as aluminum, magnesium, and titanium with a density less than $4.5 \times 10^3 \text{ kg/m}^3$: 3:

2 In unit time, the outer edge of the rotating test piece slides over the arc length of the fixed test piece: Calculate according to formula (1): $v = \pi \cdot D \cdot n$ (1) In the formula: v

--- rotational friction velocity, the unit is meter per second (m/s); D

--- the diameter of the outer edge of the rotating test piece, in meters (m); n

--- rotating speed of the test piece, the unit is revolution per minute (r/min): 3:

3 The number of collisions between the rotating specimen and the fixed specimen: The rotating test piece and the fixed test piece are rubbed against each other continuously, and each time the arc length of 0.5m is slid is one impact, calculated according to formula (2): $N = 2\pi \cdot D \cdot n \cdot t$ (2) In the formula: