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Replacing GB/T 2493-2013

Test Method for Rotating Strength of Abrasive Products

磨具回转强度试验方法

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Foreword

This Document was drafted as per the rules specified in GB/T 1.1-2020 *Directives for Standardization – Part 1: Rules for the Structure and Drafting of Standardizing Documents*.

This Document replaced GB/T 2493-2013 *Rotation Test of Grinding Wheel Strength*. Compared with GB/T 2493-2013, the major technical changes of this Document are as follows besides the structural adjustments and editorial modifications:

a) Change the Scope (see Clause 1 of this Clause; Clause 1 of 2013 Edition);

b) Add the provision that the raising speed of the rotary test machine shall be uniform (see 4.1.2 of this Edition);

c) Change the relative error range of the spindle speed of the rotary test machine (see 4.1.3 of this Edition; 3.2 of the 2013 Edition);

d) Change the requirements for the radial runout of the spindle of the rotary test machine (see 4.1.4 of this Edition; 3.3 of the 2013 Edition);

e) Add the requirements for recording or displaying the spindle speed of the rotary test machine (see 4.1.6 of this Edition);

f) Change the requirements for the tensile strength of the chuck and partition materials and the sleeve materials (see 4.2.1, 5.2 of this Edition; 4.4, 5.3 of the 2013 Edition);

g) Change the provision for the installation and clamping of the rotating test of the abrasive products (see 5.1 of this Edition; 5.2 of the 2013 Edition);

h) Add the provision for the installation and clamping of the rotating test of abrasive products with special installation methods (see 5.4 of this Edition);

i) Change the setting method of the rotating test parameters (see 6.1 of this Edition; 5.1 and 6.1 of the 2013 Edition);

j) Add the steps of idling during the rotating test (see 6.2 of this Edition);

k) Add the method for handling the breakage of the abrasive products during the rotating test (see 6.6 of this Edition);

l) Add the provision for test report (see Clause 7 of this Edition).

Please note some contents of this Document may involve patents. The issuing agency of this Document shall not assume the responsibility to identify these patents.

This Document was proposed by China Machinery Industry Federation.

Test Method for Rotating Strength of Abrasive Products

Warning: Hood is strictly prohibited to be opened during the rotating period of the rotary test machine.

1 Scope

This Document specifies the test equipment, test requirements, test methods and test reports for the inspection of the rotating strength of abrasive tools.

This Document is applicable to the inspection of the rotating strength of bonded abrasive tools, coated abrasive tools and super-hard abrasive material products.

2 Normative References

The provisions in following documents become the essential provisions of this Document through reference in this Document. For the dated documents, only the versions with the dates indicated are applicable to this Document; for the undated documents, only the latest version (including all the amendments) is applicable to this Document.

GB 2494 Bonded abrasive products - Safety requirements

GB/T 16458 Terminology for abrasives and abrasive products

GB/T 43134 Super-abrasive products - Safety requirements

GB/T 43323 Coated abrasives - General safety requirements

3 Terms and Definitions

For the purposes of this Document, the terms and definitions given in GB/T 16458 apply.

4 Testing Equipment

4.1 Rotary test machine

4.1.1 The rotary test machine shall be selected according to the specifications and clamping methods of the abrasive tools.

4.1.2 The rotary test machine shall raise speed uniformly.

4.1.3 The relative error range of the spindle speed of the rotary test machine is ±1.0%.

4.1.4 The radial runout of the spindle of the rotary test machine for bonded abrasives and coated abrasives shall be no greater than 0.03mm; and the radial runout of the spindle of the rotary test machine for super-abrasive products shall be no greater than 0.02mm. The measurement position is: half of the exposed effective part of the spindle (for a spindle with a chuck, it is 5mm~10mm away from the spindle end face after the chuck is removed).

4.1.5 The rotary test machine shall be equipped with a timing control device to realize that the timing can be automatically started after the spindle speed reaches the setting speed; and the speed can be kept stable within the setting time period; and the speed can be automatically reduced at the end of the setting time.

4.1.6 The rotary test machine shall be able to record or display the maximum speed reached by the spindle or the speed at which the mold breaks during the rotating test.

4.1.7 The noise sound pressure level of the rotary test machine when it is unloaded shall not exceed 85dB(A).

4.1.8 The hood of rotary test machine shall be firm to ensure that the rotating test can be carried out safely.

4.1.9 The rotary test machine shall be calibrated regularly; and the recalibration interval shall not exceed one year. The rotary test machine shall be recalibrated after repair.

4.2 Chucks and partitions for rotating test

4.2.1 The tensile strength of the chuck and partition materials shall be no less than 415N/mm^2 (45 steel is recommended).

4.2.2 The shapes and sizes of chucks and partitions for bonded abrasives, coated abrasives and super-abrasive products are shown in Appendixes A, B and C respectively.

5 Test Requirements

5.1 The abrasives (except for the grinding heads with handles and the flap wheels with shafts) installed on the main shaft of the rotary test machine shall be fastened with chucks at both ends; the grinding heads with handles and the flap wheels with shafts shall be fastened with collets; and the overhang length of the handle or shaft L_0 = 0mm.

5.2 When the hole diameter of the abrasive tool is larger than the outer diameter of the main shaft of the rotary test machine, sleeve shall be allowed to use; and the tensile strength of the sleeve material shall be no less than 415N/mm^2.

5.3 During the safety speed test, it is allowed to install multiple abrasives on the main shaft of the rotary test machine at the same time. The abrasives shall be separated by partitions. The outer diameter and the width of the clamping surface of the partition shall be equal to that of

the chuck; during the rupture speed test, only one abrasive is allowed to be installed for each test.

5.4 When taking rotating test for the abrasives with a special installation method, it shall be installed according to the installation method when it is used.

6 Test Methods

6.1 Turn on the power switch of the rotary test machine; and set the rotating strength test parameters (test speed, retention time when the test speed is reached) according to the provisions of GB 2494, GB/T 43134, GB/T 43323 or the provisions of relevant product standards.

6.2 Lock the hood of the rotary test machine; start the rotary test machine to idle; and confirm that the test parameter settings meet the requirements and the rotary test machine is running normally before subsequent operations can be carried out.

6.3 Install the abrasive tool on the main shaft of the rotary test machine according to the provisions of Clause 5.

6.4 Lock the hood of the rotary test machine and start the rotary test machine.

6.5 After the rotary test machine stops rotating, open the hood of the rotary test machine and remove the abrasive tool.

6.6 If the abrasive tool breaks during the rotating test, the rotating test shall be stopped immediately. Other rotating tests can only be continued after confirming that the rotary test machine is intact.

7 Test Report

The test report shall at least give the following contents:

--- Abrasive tool name and product mark;

--- Standards for rotary strength test parameters (including the year of publication);

--- Standards for rotary test methods (this Document number);

--- Test results;

--- Observed abnormal phenomena;

--- Test personnel;

--- Test date.

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