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Indian Standard

METHODS FOR SAMPLING OF COATED ABRASIVES

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(*Continued on page* 2)

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(*Continued from page* 1)

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Indian Standard

METHODS FOR SAMPLING OF COATED ABRASIVES

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 12 November 1965, after the draft finalized by the Abrasives Sectional Committee had been approved by the Mechanical Engineering Division Council.

0.2 The sampling procedures as laid down in this standard are specifically intended for the inspection of lots of coated abrasives by the consumers with a view to ascertaining their conformity to the requirements of relevant Indian Standard specifications. However, coated abrasives may also be inspected by the manufacturers during production with a view to ensuring uniformity and reducing fluctuations in quality to the minimum, thereby providing greater quality assurance. For a more effective control of quality during production, the use of statistical quality control techniques is recommended. Helpful guidance may be obtained in this respect from IS : 397-1952*.

0.3 This standard is a necessary adjunct to the Indian Standard specifications on coated abrasives.

0.4 A separate standard is envisaged for the methods of tests mentioned in this standard.

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1. SCOPE

1.1 This standard prescribes methods of sampling and the criteria for conformity of coated abrasives.

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definitions shall apply.

2.1 Acceptance Number — The maximum permissible number of defective items in the sample for acceptance of the lot.

*Method for statistical quality control during production by the use of control chart (*tentative*).

2.2 Defect — Failure to meet the requirement with respect to a single characteristic.

2.3 Defective — An item having one or more defects.

2.4 Item — A unit of coated abrasives, such as a sheet, roll, belt, disc, tape or any other shape.

3. GENERAL PRECAUTIONS

3.0 The following precautions shall be taken in drawing and handling of samples and test specimens.

3.1 To ensure the representativeness of the samples drawn, care shall be taken to discard the first few layers of the rolls, tapes, etc, if damaged due to packaging or in transit.

3.2 The material to be sampled shall be protected from abnormal exposure to heat, moisture or any liquids.

3.3 The specimens shall be kept flat, free from wrinkles and folds, and protected from exposure to liquids, excessive heat and other harmful influences.

3.4 Each specimen shall be marked with identification particulars like lot number, date of sampling, etc.

4. SAMPLING FOR VISUAL AND DIMENSIONAL REQUIREMENTS

4.1 Lot — All coated abrasives of the same shape, type and grit number in the same consignment shall constitute a lot.

4.1.1 Coated abrasives shall be selected and examined for each lot separately for ascertaining their conformity to the requirements of the relevant specifications.

4.2 The number of coated abrasives to be selected from a lot shall depend upon the size of the lot and shall be in accordance with col 1 and 2 of Table 1. All these coated abrasives shall be taken at random from the lot.

4.2.1 To ensure the randomness of selection, a random number table as agreed to between the purchaser and the supplier shall be used. In case such a table is not available, the following procedure may be followed:

Starting from any item in the lot, count all the items in one order as 1, 2, 3....., etc, up to r and so on, where r is the integral part of N/n (N being the number of items in the lot and n the number of items to be selected). Every rth item thus counted shall be withdrawn to constitute the sample.

TABLE 1 SCALE OF SAMPLING FOR VISUAL AND DIMENSIONAL CHARACTERISTICS

(*Clauses* 4.2 *and* 4.3)

No. of Items in the Lot	No. of Items in the Sample	Permissible Number of Defectives in the Sample
(1)	(2)	(3)
Up to 15	3	0
16 „ 50	5	0
51 „ 150	8	0
151 „ 500	13	1
501 „ 1 000	20	1
1 001 „ 3 000	32	2
3 001 „ 10 000	50	3
10 001 and above	80	5

4.2.2 If the coated abrasives in the lot are packed in different packages, a suitable number of packages (not more than 20 percent of the total in the lot) shall be selected at random.

4.3 Criteria for Conformity — All the coated abrasives as drawn under **4.2** shall be examined for visual and dimensional characteristics like workmanship, colour of cloth-backing, size, etc. If the number of defective abrasives found in the sample is less than or equal to the corresponding number as specified in col 3 of Table 1, the lot shall be considered as satisfying the requirements for visual and dimensional characteristics. However, if the number of defective abrasives is greater than the corresponding acceptance number, the lot shall be deemed as not having met the visual and dimensional requirements.

5. SAMPLING FOR TENSILE, WORK, WEAR AND GRADING TESTS

5.1 The lot which has been found satisfactory in respect of the visual and dimensional requirements (*see* **4.3**) shall next be tested for physical and operational characteristics like tensile strength, work test, wear test, etc. The abrasives for this purpose shall be taken at random from those already drawn in **4.2**; in case they are fewer than the required number, the balance shall be selected at random from the lot. For sheets, the number of abrasives to be selected for this purpose shall be according to Table 2; whereas for rolls, discs, belts, tapes, etc, it shall be according to Table 3.

TABLE 2 SAMPLING OF SHEETS FOR PHYSICAL AND OPERATIONAL CHARACTERISTICS

(*Clause* 5.1)

Lot Size	Sample Size	
	Tensile Test	Work, Wear and Grading Tests
(1)	(2)	(3)
Up to 500	5	2
501 „ 3 000	5	3
3 001 „ 10 000	10	4
10 001 and above	15	5

TABLE 3 SAMPLING OF ROLLS, DISCS, BELTS, TAPES, ETC, FOR PHYSICAL AND OPERATIONAL CHARACTERISTICS

(*Clause* 5.1)

Lot Size	Sample Size	
	Tensile Test	Work and Wear Tests
(1)	(2)	(3)
Up to 15	1	1
16 „ 50	2	1
51 „ 150	3	1
151 „ 500	4	2
501 „ 1 000	5	2
1 001 and above	6	3

6. SPECIMENS FOR TESTS

6.1 Specimens for Tensile Test for Cloth-Backed Abrasives— Unless specifically agreed to between the parties or provided for in the specification, the following may serve as a guide to cut specimens for tensile test.

6.1.1 In case the abrasive marked for one test comprises of small pieces, then two strips one warp-way and one weft-way each 25 mm wide and 200 mm long shall be cut from each of the pieces provided that the total number of strips is 6 warp-way and 6 weft-way. If required, a higher number of strips either way may be cut from one or more pieces to make up the total number of strips to be 6 each way.

6.2 Specimens for Tensile Test for Paper-Backed Abrasives — Each specimen shall be 25 mm in width and approximately 200 mm in length. The requisite number of such specimen strips for a single test shall be 6 in the machine direction and 6 in the cross direction. As far as possible, guidance for cutting the specimen may be derived from **6.1**.

6.3 Specimens for Work, Wear and Grading Tests — These test methods are under consideration. The number and the sizes of specimens shall be in accordance with the requirements of these test methods (*see* **0.4**).

7. NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

7.1 Number of Tensile Tests

a) *For Sheets* — Each group of five sheets in the sample shall be used for one tensile test.

b) *For Other Forms* — Where the dimensions of the specimen permit, at least one test shall be conducted from the sample selected for the purpose. However, if the sample does not permit the test to be conducted, the purchaser shall be supplied on request a certificate by the manufacturer indicating the compliance of the product with the requirements.

7.1.1 *Criteria for Conformity* — The lot shall be declared as conforming to the requirements pertaining to tensile strength if all the test results in **7.1** satisfy the requirements given in the specification.

7.2 Number of Work Tests and Wear Tests

a) *For Sheets* — Only one work test and one wear test on each selected item in the sample shall be conducted.

b) *For Other Forms* — Where dimensions of the specimen permit, only one work test and one wear test on each selected item in the sample shall be conducted. Specimen strips for the tests shall be cut from positions as agreed to between the parties.

NOTE — As the repeatability and reproducibility of the work test and the wear test are being investigated, in the event of failure of the only sample drawn for the purpose of these tests, two additional samples may be tested if the purchaser and the supplier so agree. Both the samples shall then be required to pass tests in such cases.

7.2.1 *Criteria for Conformity* — The lot shall be declared as conforming to the requirements pertaining to work test and wear test if all the test results in **7.2** satisfy the requirements given in the specification.

7.3 Number of Grading Tests

For Sheets — Only one grading test on each selected item in the sample shall be conducted.

7.3.1 *Criteria for Conformity* — The lot shall be declared as conforming to the requirements pertaining to grading test if the test results in **7.3** satisfy the requirements given in the specification.

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

Quantity	*Unit*	*Symbol*
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	*Unit*	*Symbol*
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	*Unit*	*Symbol*	*Conversion*
Force	newton	N	1 N = 1 kg.1 m/s^2
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m^2
Frequency	hertz	Hz	1 Hz = 1 c/s (s^{-1})
Electric conductance	siemens	S	1 S = 1 A/V
Pressure, stress	pascal	Pa	1 Pa = 1 N/m^2

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