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ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION

R 525

BONDED ABRASIVE PRODUCTS — GENERAL FEATURES

DESIGNATION — RANGES OF DIMENSIONS — PROFILES

1st EDITION

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BRIEF HISTORY

The ISO Recommendation R 525, *Bonded Abrasive Products — General Features — Designation — Ranges of dimensions — Profiles*, was drawn up by Technical Committee ISO/TC 29, *Small Tools*, the Secretariat of which is held by the Association Française de Normalisation (AFNOR).

Work on this question by the Technical Committee began in 1950 and led, in 1963, to the adoption of a Draft ISO Recommendation.

In September 1964, this Draft ISO Recommendation (No. 735) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies:

Argentina	India	Spain
Australia	Iran	Sweden
Austria	Israel	Switzerland
Canada	Italy	Turkey
Chile	Japan	U.A.R.
Czechoslovakia	Korea, Rep. of	United Kingdom
France	Netherlands	U.S.A.
Germany	New Zealand	Yugoslavia
Greece	Poland	

Two Member Bodies opposed the approval of the Draft:

Belgium
U.S.S.R.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in November 1966, to accept it as an ISO RECOMMENDATION.

CONTENTS

ISO Recommendation R 525 November 1966

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DESIGNATION — RANGES OF DIMENSIONS — PROFILES

FOREWORD

The letter symbols used for dimensions in this ISO Recommendation may be replaced in national standards by those in conformity with the current practice of the country in question, until an international agreement regarding a uniform symbol system is reached.

1. SCOPE

This ISO Recommendation relates to bonded abrasive products in general, excluding diamond abrasive products. It comprises

- the designation of bonded abrasive products (shapes, sizes, specifications),
- the ranges of nominal dimensions (outside diameters, thicknesses, holes),
- the symbols for the profiles of plain non-cylindrical grinding wheels.

Tolerances on dimensions will be covered by a separate ISO Recommendation to be issued later.

The dimensions standardized for each class of product are, or will be, the subject of individual ISO Recommendations, the first of which is ISO Recommendation R...,* *Bonded Abrasive Products. Grinding Wheel Dimensions (Part 1)*.

2. COMMENTARY

Designation and specification

The usefulness of a uniform system of designation and marking for grinding wheels and bonded abrasive products has been recognized by manufacturers and users.

The main obstacle to a uniform marking system, however, as far as specifications are concerned, lies in the fact that similarly marked grinding wheels produced by different manufacturers do not necessarily give the same results in use.

With regard to these specifications, therefore, it is important to emphasize that the present standardization applies solely to the marking and not to the performance of the grinding wheel in operation; grinding wheels with the same standard symbols, but from different sources, may therefore behave differently from one another when in use.

The symbols adopted constitute a codification of the practices most generally in force. Particular attention is drawn to the fact that the symbols for the size of grain are only simple conventional numbers which are valid pending some future logical standardization of the sizes of granular or powdered materials in general.

Dimensional ranges

The nominal dimensions in this ISO Recommendation have been selected to provide convenient ranges satisfying all requirements as far as possible.

Outside diameters and thicknesses are given in two columns, one in millimetres and the other in inches, which show opposite each other the values considered to be practically equivalent in the two systems of units.

* At present Draft ISO Recommendation No. 736.

The values standardized for the holes are identical, whether expressed in inches or in millimetres. In the recommended series, the inch values are conversions from the round metric values up to 40 mm, and the metric values are conversions from the round inch values above that diameter.

A supplementary table gives the values below 2 in (50.8 mm), the use of which is also recognized for a transitional period.

3. DESIGNATION OF BONDED ABRASIVE PRODUCTS

The complete designation of a bonded abrasive product consists of indications of the shape, dimensions and specifications of the internal nature of the product, in that order.

Example :	Shape	Dimensions	Specification
	Type 1	300 × 40 × 32 (12 × 1½ × 1.26)	51A — 36 — L — 5 — V23

3.1 Shapes and dimensions

3.1.1 *Plain wheels — Dish wheels — Depressed-centre wheels*

Write the following in the order shown:

— the type, this marking remaining optional, however, for Type 1:

Type 1 for plain wheels, without recess,
Type 5 or 7 for plain wheels with one or two recesses respectively,
Type 12 for dish wheels,
Type 27 for depressed-centre wheels.

— the three dimensions, in the following order, separated by the multiplication sign: outside diameter D, thickness E and hole d.

In addition, state the following where necessary:

— below the type number, the letter symbolizing the profile of plain non-cylindrical wheels (see section 5, page 8).

— below the three main dimensions, for plain recessed wheels:

the number, diameter and depth of the recesses.

Example :	Type 7 F	300 × 50 × 127 2 — 190 × 6 (12 × 2 × 5 2 — 7½ × ¼)

3.1.2 *Cup wheels*

Write the following in the order shown:

— the type:

Type 6 for straight cup wheels,
Type 11 for taper cup wheels.

— the three dimensions, outside diameter D, thickness E and hole d, in that order, separated by the multiplication sign.

For taper cup wheels, give the two diameters D and D_1, separated by an oblique line.

— below these three main dimensions and in the following order:
the wall thickness and thickness through the back,

each preceded by a conventional letter designating the wall and back respectively (the choice of these two letters is left to each national standards institute).

Examples :

— straight cup: Type 6 — 125 × 50 × 22.23 (5 × 2 × $^{7}/_{8}$
*B*25 $E_1$20 *B*1 $E_1{}^{3}/_{4}$)

— taper cup: Type 11 — 125/100 × 50 × 22.23 (5/3 $^{3}/_{4}$ × 2 × $^{7}/_{8}$
*B*25 $E_1$20 *B*1 $E_1{}^{3}/_{4}$)

3.1.3 *Cylinder wheels*

Write the following in the order shown:

— the type (Type 2);
— the diameter *D* and thickness *E*, in that order, separated by the multiplication sign;
— the wall thickness, preceded by a conventional letter designating the wall (see above).

Example : Type 2 — 400 × 125 *B*40
(16 × 5 *B* 1½)

3.1.4 *Bricks and sticks*

To avoid any confusion with the dimensions of wheels, write the three dimensions in the following order:

height × width × length.

For segments of wheels with trapezoidal section, give the two widths separated by an oblique line.

3.2 Specifications

3.2.1 The designation of specifications comprises seven symbols (three of which are optional) which should be arranged in the following order:

0 — Type of abrasive, manufacturer's own (optional).
1 — Nature of abrasive.
2 — Grain size.
3 — Grade.
4 — Structure (optional).
5 — Nature of bond.
6 — Type of bond, manufacturer's own (optional).

Symbols 1 to 5 should be selected from the standard symbols given in clause 3.2.2 below.

If he considers it worth while, each manufacturer may, in addition,

— precede the letter designating the nature of abrasive (symbol 1) with a symbol of his choice (0) indicating the type and origin of the abrasive;
— follow symbol 5 with a 6th symbol corresponding to his own type of bond identification mark.

3.2.2 *Standard symbols*

3.2.2.1 *Nature of abrasive*

A — for aluminium abrasives;

C — for silicon carbides.

3.2.2.2 *Grain size*

The grain size, from the coarsest to the finest, is designated by the following numbers:

8 — 10 — 12 — 14 — 16 — 20 — 24 — 30 — 36 — 46 — 54 — 60 — 70 — 80 — 90 — 100 — 120 — 150 — 180 — 220 — 240 — 280 — 320 — 400 — 500 — 600, number 8 being the coarsest and 600 the finest.

Manufacturers may follow the grain size number with a symbol indicating combinations of different sizes.

3.2.2.3 *Grade*

The grade, from the softest to the hardest, is designated by a letter of the alphabet from A to Z, A being the softest and Z the hardest.

3.2.2.4 *Structure*

The structure is optionally designated by a number (from 0 to 14 or higher); the higher the number, the more widely spaced the grains.

Higher numbers may be used as and when required by manufacturing developments.

3.2.2.5 *Nature of bond*

V = vitrified.

S = silicate.

R = rubber.

RF = rubber with fabric reinforcement.

B = resinoid (synthetic resins).

BF = resinoid (synthetic resins) reinforced.

E = shellac.

Mg = magnesia.

3.2.3 *Marking of grinding wheels (specifications and operating speed)*

An example of complete marking of grinding wheel specifications in conformity with the designation recommended above is given on page 8 in Annex A.

The reader is also reminded, considering the importance of this safety requirement (and although safety regulations are outside the scope of this ISO Recommendation), that the maximum operating speed should be marked either on the wheel itself or on a ticket accompanying it.