

*Indian Standard*SAFETY REQUIREMENTS FOR THE USE,  
CARE AND PROTECTION OF ABRASIVE GRINDING WHEELS

## PART 2 HANDLING AND STORAGE

*( Second Revision )*

Abrasive Sectional Committee, EDC 13; Grinding Wheels Subcommittee, EDC 13 : 1 [ Ref : Doc : EDC 13 ( 4714 ) ]

**1. Scope** — This standard ( Part 2 ) deals with handling and storage of abrasive grinding wheels.

**2. Handling**

**2.1** All abrasive wheels are breakable and some are very fragile. Therefore, care shall be exercised in handling and storage to prevent damage, which might cause a wheel to fly apart when speeded up.

All abrasive wheels must be handled carefully. Abrasive wheels are necessarily manufactured in varying strengths to grind properly.

Some abrasive wheels are stronger than others, but all abrasive wheels can be broken by mishandling.

**2.2** While handling abrasive wheels, following rules which are based on experience, shall be observed.

**2.2.1** Handle the wheels carefully to prevent dropping or bumping.

**2.2.2** Do not roll wheels ( hoop fashion ).

**2.2.3** Use trucks or other suitable conveyance for transportation of all such wheels which cannot be carried by hand. These conveyances shall provide support and protection to the wheels.

**2.2.4** Place wheels carefully on a shelf or rack or in bins, boxes or drawers.

**2.2.5** Stack the wheels carefully in trucks, trolleys or other conveying machinery. Heavy materials or tools shall not be placed over the wheels. Stacking shall be such as not to allow toppling over the wheels.

**2.2.6** Pack the wheels suitably to minimize any damage during transit.

**2.2.7** Arrest the wheels suitably to avoid rolling off during transit.

**3. Storage**

**3.1** Suitable racks, bins or drawers, having ample strength shall be provided to store the various types of wheels ( see Fig. 1 ).

**3.1.1** Wheels shall not be stored subject to:

- a) Exposure to water or other solvents, and
- b) Any temperature low enough to cause condensation on the wheels when moving them from storage to an area of higher temperature.

**3.1.2** Wheels should not be stored subject to:

- a) High humidity, and
- b) Freezing temperatures.

**3.2** Wheel storage room shall not be subject to extreme temperatures and shall always be kept dry.

Grinding wheels must be protected while awaiting use. Wheel storage should be arranged to allow for removal of wheels without disturbing or damaging other wheels. Storage and records should also be set up to allow for wheel use on rotational basis so that the wheels will be in storage for a minimum length of time. This minimizes the possibility of damage from lengthy storage. Such suitable storage should be available for partly used wheels. Special care should be taken to prevent problems with wheel support and environmental conditions for wheels stored in mobile storage areas such as:

- a) Rescue squad trucks,

Adopted 23 November 1987

© October 1988, BIS

Gr 2

- b) Field contractors, and
- c) Barges and boats.

Abrasive wheel storage racks should be designed, constructed and located to fit the needs of the users. The following factors should be kept in mind:

- i) *Location* — All abrasive wheels should be stored in a dry area in rooms not subject to extreme temperature changes since some bonds may be affected by dampness, excessive humidity and extreme temperature differentials. Racks should be located as near as practical to the grinding location, but never where there is danger of damage from passing trucks, crane handling or excessive vibration.
- ii) *Storage methods* — The racks, bins or drawers should be constructed so that each of the various types of wheels can be stored in an orderly and safe manner. Wheel selection should be possible with a minimum of handling. The selection of racks, bins, boxes or drawers for storage depends on the size and type of wheels. Generally, the following points should be observed:
  - 1) The organic bonded wheels, such as those used for cutting off, should be laid flat on a flat surface of steel or similar rigid material away from excessive heat, moisture and other liquids to prevent warpage. Loose blotters should not be placed between stacked thin wheels. If thin wheels are supplied with blotters attached, suitable separators should be used to preserve flatness.
  - 2) Large diameter wheels ( Type 1, 5, 7, 20, 21, 22, 23, 24, 25 and 26 ) of appreciable thickness are best supported in racks. Such racks should provide cushioned two point cradle support to prevent the wheels from rolling. Partitions are helpful in facilitating wheel selection with a minimum of handling.
  - 3) Taper cap ( flaring cup ) wheels ( Type 11 ) are best stored as shown in Fig. 1, to prevent chipping of edges.
  - 4) Cylinder wheels or large straight cup wheels may be stacked on flat sides with corrugated paper or other cushioning material between them, or they may be stored on edge in racks similar to those used for large straight wheels.
  - 5) Small wheels ( approx 100 mm or less in diameter ) except taper cup ( flaring cup ) wheels, are often stored in boxes, bins or drawers.

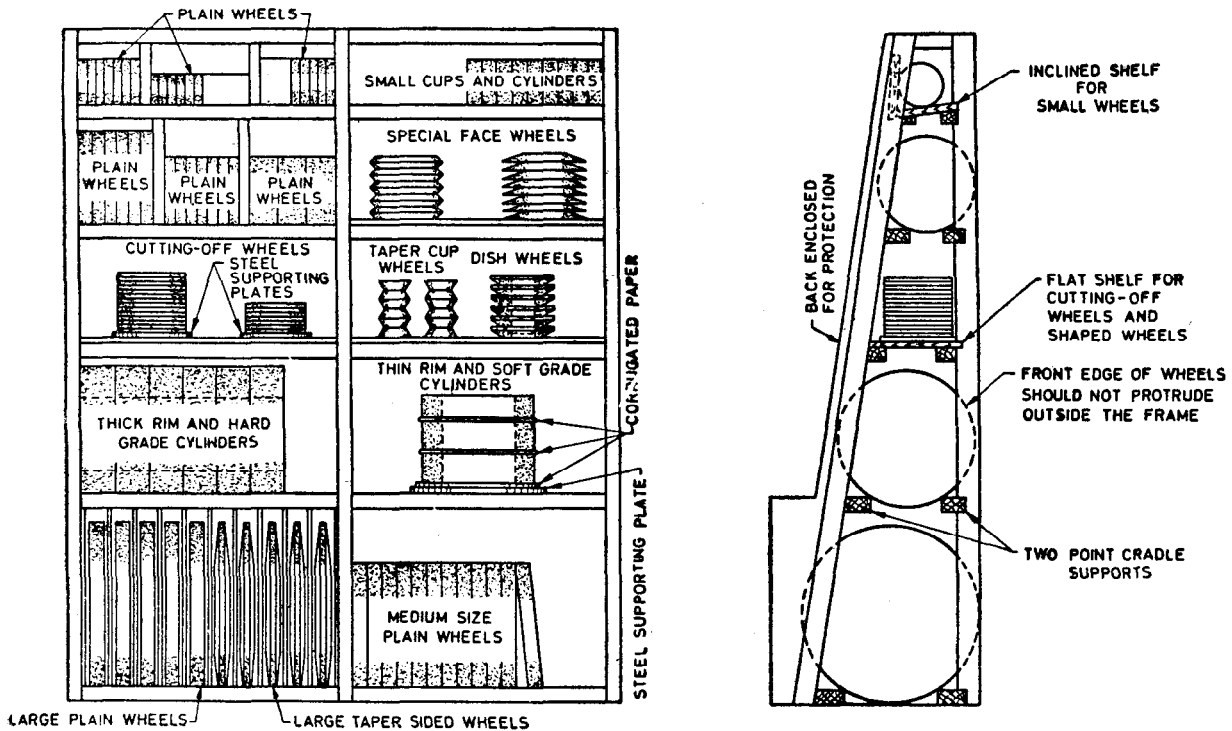


FIG. 1 TYPICAL STORAGE OF WHEELS

**3.3 Ageing Effect on Grinding Wheels** — Resinoid bonded abrasive products have a definite storage life as such these must be used before the expiry period mentioned by the manufacturers on the products whereas the vitrified bonded abrasive products can be stored for any long period and these can be used at any time. The shelf life of vitrified bonded products has no limit.

**4. Acceptance of Shipment** — The first inspection shall be made on the original container. If there is a visible evidence of damage to the container, the shipment should not be accepted.

**Note** — For inspection procedures prior to mounting, see Part 6 of this standard.

**EXPLANATORY NOTE**

The safe operation of abrasive wheels requires the understanding and cooperation of many diverse groups and of all individuals concerned with their use or operation. This has been the basic viewpoint in establishing these safety requirements for the guidance of manufacturers, users and others involved in handling these products.

A thorough knowledge of nature and characteristics of abrasive wheels, the grinding machines on which they are used and the safety and protection devices which can and shall be used to limit, if not eliminate, injury or damage in case of accidental wheel breakage, is necessary for proper understanding of these safety requirements. These safety requirements may be used as a guide and not as an alternative to constant educational programmes at all levels which are the best insurance against those unforeseen conditions or circumstances which result in an industrial accident.

The mandatory requirements are printed in normal ( 10 points ) type and the explanatory information in smaller ( 8 point ) type. This is intended to facilitate a condensed document of mandatory requirements together with supporting tables and a figure. The explanatory information gives the basic reasons for the rules to encourage their implementation in practice. However, it may not be termed as part of the standard. The explanatory material has been included to encourage compliance and it is given only where it amplifies or clarifies a requirement.

Operating rules are not included in these safety requirements unless they are of such a nature as to be important safety requirements equal in importance to other requirements included in this standard.

This standard was first issued in 1962 and its first revision was taken up in 1973, based on ANSI B 7.1-1970.

In order to review the individual section at any time and also for technical and drafting reasons alike, this standard has been split up in the following ten parts:

- Part 1 Scope and definitions
- Part 2 Handling and storage
- Part 3 General machine requirements
- Part 4 Safety guards
- Part 5 Flanges
- Part 6 Mounting and inspection
- Part 7 Standard speeds
- Part 8 Special speeds
- Part 9 General operating rules
- Part 10 Mounted wheels

While splitting, this part ( Part 2 ) of the standard has also been revised and the details have been made more explicit. More data has also been included.

While revising this standard, assistance has also been taken from the following publications:

'European safety requirement for the use, care and protection of abrasive wheels', issued by the Federation of European Producers of Abrasive Products ( FEPA ).

ANSI B 7.1-1978 'Safety requirement for the use, care and protection of abrasive wheels', issued by the American National Standards Institute, USA.