EXITFLEX®

SWITZERLAND

TAILOR MADE TO MEET ALL YOUR GRINDING & CUTTING NEEDS

Exitflex Supreme Depressed centre & cutting wheels are manufactured by Ital Plastic Compounds Pvt. Ltd., an associate company of Exitflex SA Gland Switzerland. **EXITFLEX** with subsidiaries in Germany, UK, Sweden, Poland, Australia and the USA are worldwide market leaders in the manufacture of carbide cutting tips and spray nozzles.

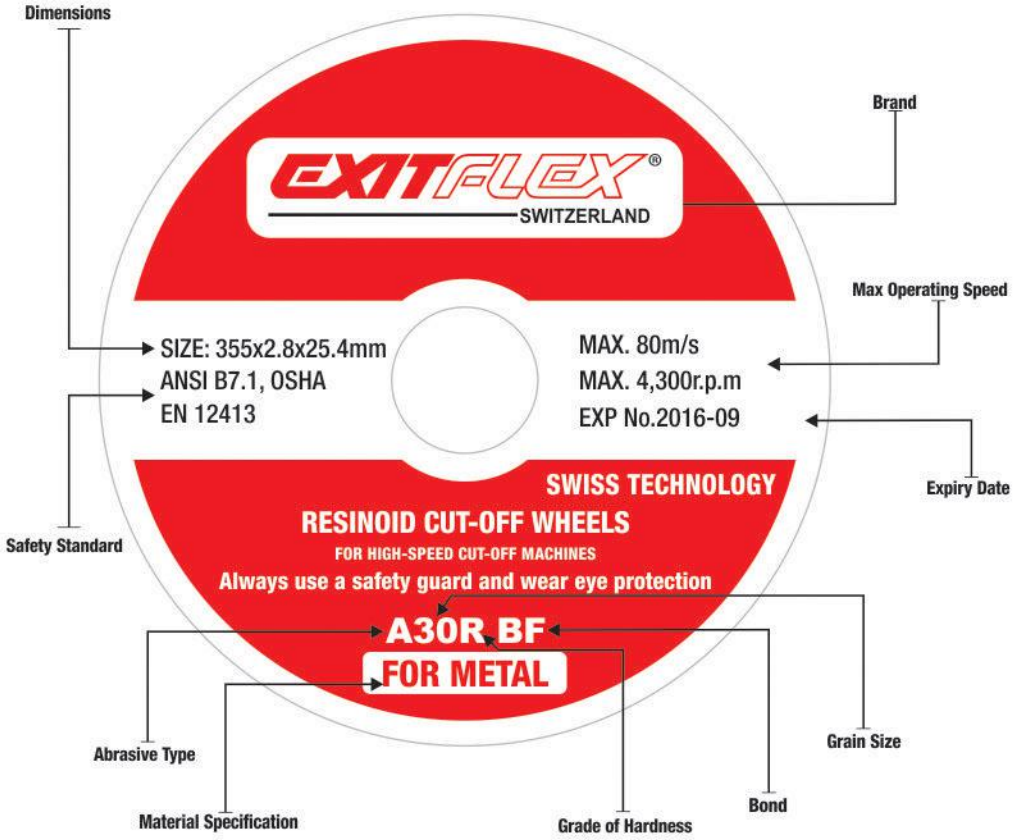
Quality & safety being the very foundation of the manufacturing policy, Exitflex Abrasives are manufactured to meet exacting standards in one of the most modern and eco friendly plants with technical know - how support from Nippon Resibon of Japan - one of the world largest manufacturers of bonded abrasives.

Spread over a plinth area of more than 150,000 sq. ft. in Irungattukottai, Chennai India and equipped with the latest moulding machines, tunnel ovens, testing and storage facilities, Exitflex abrasives are guaranteed to give their best in terms of grinding/cutting performance, life and safety. Certainly proving to be a cut above the rest.

While the exhaustive program of Exitflex abrasives will cater to most grinding and cutting needs, grinding and cutting wheels could be custom manufactured for specific applications.

To ensure utmost safety to the user, all Exitflex abrasives are manufactured in compliance with EN12413 standards.

LABEL DECIPHERMENT



LAYERS OF GRINDING DISC

CHOICE OF GRINDING WHEELS

The choice of the right grinding wheel depends on :

1. Material to be ground and its hardness.
2. Amount of stock removal and finish required.
3. Wet or dry grinding.
4. Wheel speed.
5. Area of grinding contact.
6. Severity of grinding operation.
7. Condition of machine.

The Three components of a grinding wheel are:

1. The ABRASIVE grains that do the actual cutting.
2. The BOND which holds the abrasive grains together.
3. The STRUCTURE which is the void or air space between adjacent abrasive grains coated with bond, so as to provide chip clearance.

The inter-relation between the factors affecting choice of wheel and the components of the wheel are elaborated below :

ABRASIVE	GRIT SIZE	GRADE	STRUCTURE	BOND
Aloxite : Best suited for alloy, carbon & high speed steel all with high tensile strength. **Silicon Carbide :** Ideal for materials with low tensile strength, like cast iron and also non-ferrous and non-metallic materials.	This is the grain size measured by the number of linear openings per inch in the final screen used to size the grains. The range is from 8, used in very coarse wheels, to 320, used in very fine wheels.	This indicates the relative strength or hardness of the bond which holds the abrasive grains. The range is from F, for soft wheels to Z for very hard wheels.	Structure is the grain spacing, and is determined by the proportion and arrangement of the abrasive grains and bond in the wheel. The range is from 0, indicating dense structure, to 15, indicating open structure.	Commonly used bonding materials are : **Vitreous or Ceramic :** Suited for wheel speeds less than 33m/sec (6500 sfpm). (Code V) **Resinoid :** Suited for wheel speeds greater than 33m/sec.

FACTORS

- **Abrasive, Grit Size and Grade**
- **Grit size and Bond**
- **Grade**
- **Bond**
- **Grit Size, Grade and Structure.**
- **Abrasive and Grade.**

1. **Material to be ground and its hardness :**

   This affects choice of abrasive, grit size and grade.

   Abrasives : The two main abrasive materials used are aloxite and silicon carbide. Aloxite is best suited for alloy, carbon and high speed steels, all having high tensile strength . Silicon carbide is ideal for metals of low tensile strength like cast iron , non-ferrous metals and other non-metallic materials.

   Grit Size : This means the grain size measured by the approximate number of openings per linear inch in the final screen used to size the grains. There are 23 standard grit sizes ranging from 8, used in coarse wheels to 320, used in very fine wheels. However, commonly used sizes are in the range of 16 to 120. A relatively fine grit works best on hard, brittle material; while a coarse grit can be used advantageously on soft and ductile materials.

   Grade : This indicates the relative strength or holding power of the bond which supports the abrasive grains in a wheel. The grade of the wheel is represented by letters which move in the order of the alphabets. F is extremely soft, while Z is very hard. For most precision jobs, the grades required fall between F and N, while the grades for rough grinding and snagging range from M to Z.

   A harder grade of wheel should be used on soft materials and soft wheels on hard materials. This is because a hard wheel used on hard material will tend to dull the wheel surface faster.

2. **Amount of stock removal and finish required :**

   This affects grit size and bond.

   Grit Size : As a rule, a coarse grit is selected for fast cutting; and fine grit, for high finish.

   Bond : This is the adhesive substance which holds the abrasive grains. Commonly used bondings are vitreous and resin. The former is used for fast cutting and commercial finish, while the latter, for high finish.

3. **Wet or dry grinding :**

   This affects choice of grade. Soft grade wheels must be used in dry grinding to minimize heat generation. In wet grinding, one grade harder wheel may be used, as the coolant reduces heat generated.

4. **Wheel speed :**

   The wheel speed dictates the type of bond. Vitrified bond wheels should not be used where peripheral speeds exceed 33metres per second (6,500 feet per minute).

   In all cases, the safe operating speed shown on the label or blotter and measured in rpm, should never be exceeded.

5. **Area of Grinding contact :**

   This affects choice of grit, grade and structure.

   Grit Size : A coarse grit is required for a relatively large surface area. However, as the area of contact becomes smaller a finer grit should be used.

   Grade : Similarly, a soft grade of wheel is preferable for large surface areas; and harder grades, when area of contact becomes smaller.

   Structure : Grain spacing in the wheel is indicated by a number and is determined by the proportion and arrangement of the abrasive grains and bond. When the abrasive grains are close together, the wheel has a denser structure as indicated by a lower structure number such as 4 or 5(refer structure chart).

GRIT SIZE

Coarse ..... to ..... Fine

8	16	36	70	120	240
10	20	46	80	150	280
12	24	54	90	180	320
14	30	60	100	220	

GRADE

Soft ..... to ..... Hard

F G H I J K L M N O P Q R S T U V W X Y Z

STRUCTURE

Dense ..... to ..... Open

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

BOND : Resinoid

MEASURING THE PERFORMANCE OF A GRINDING WHEEL

The performance of the grinding wheel can be evaluated by measuring the Grinding Removal Ratio (GRR).

GRR can be measured by the following method

1. Weigh a new (unused) grinding wheel and a part of the work piece on weighing scale and note its weight.

2. Grind the work piece for a set time

3. After grinding weigh the work piece and the grinding wheel.

4. GRR can be calculated as follows:

   Material loss/Wheel loss

   Where material loss = Weight of work piece before grinding - weight of work piece after grinding

   Wheel loss = Weight of grinding wheel before grinding - weight of grinding wheel after grinding.

   The higher the numbers better the performance of the wheel.

   Average range values for 180mm grinding wheels are 10 to 14.

   GRR should not be less than 6

MEASURING THE PERFORMANCE OF A CUTTING WHEEL

The performance of a cutting wheel can be measured by Cutting Index that is a ratio which measures the number of cuts a wheel will produce on a particular application.

The Cutting Index can be measured by the following method.

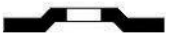
1. Measure the diameter of the wheel before cutting and calculate the surface area of the workpiece that needs to be cut.

2. Determine the number of cuts on the workpiece.

3. Now measure the diameter of the wheel after the cutting and calculate the surface area of the used wheel. Multiply the surface area of the workpiece into the number of cuts to calculate the total surface area of the cut work piece

4. Cutting index = $\frac{\text{Surface area of the cut workpiece}}{\text{Surface area of the cutting wheel before cutting - the surface area of the workpiece after cutting.}}$

ABRASIVES PROGRAM



Type 27 DEPRESSED CENTRE GRINDING WHEEL

Order no. (Diamond)	Diameter	Thickness	Bore Diameter	Specifications	Package Quantity
T27 DC 100 X 4	100	4	16	A36QBF	25
T27 DC 100 X 6	100	6	16	A36QBF	25
T27 DC 115 X 6	115	6	22.23	A36QBF	25
T27 DC 125 X 6	125	6	22.23	A36QBF	25
T27 DC 180 X 6	180	6	22.23	A30QBF	25
T27 DC 230 X 6	230	6	22.23	A30QBF	25

TYPE 41 FLAT CENTRE REINFORCED CUT- OFF WHEELS

Order no. (Super Cut)	Diameter	Thickness	Bore Diameter	Specifications	Package Quantity
T41 CO 105 X 1	105	1	16	A60TBF	50
T41 CO 105 X 2	105	2	16	A60TBF	50
T41 CO 100 X 3	100	3	16	A46QBF	25
T41 CO 115 X 1	115	1	22.23	A36QBF	50
T41 CO 115 X 3	115	3	22.23	A36QBF	25
T41 CO 125 X 3	125	3	22.23	A36QBF	25
T41 CO 180 X 3	180	3	22.23	A36QBF	25
T41 CO 230 X 3	230	3	22.23	A30QBF	25
T41 CO 305 X 3	305	3	25.4	A30QBF	25
T41 CO 355 X 3	355	3	25.4	A30QBF	25
T41 CO 355 X 2.8	355	2.8	25.4	A30QBF	25

TYPE 42 DEPRESSED CENTRE CUT OF WHEEL

Order no. (Supreme)	Diameter	Thickness	Bore Diameter	Specifications	Package Quantity
T42 CO 100 X 3	100	3	16	A36QBF	25
T42 CO 115 X 3	115	3	22.23	A36QBF	25
T42 CO 125 X 3	125	3	22.23	A36QBF	25
T42 CO 180 X 3	180	3	22.23	A36QBF	25
T42 CO 230 X 3	230	3	22.23	A36QBF	25

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