

## COMP<sup>o</sup> WA-8

is a flexible, solid woven, asbestos based friction material made from asbestos yarn, spun around brass wire, which contributes considerably to its strength.

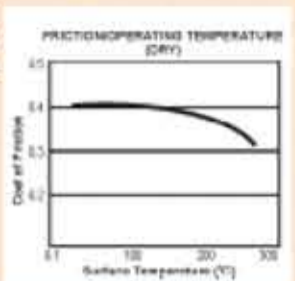
WA-8 has a medium/high co-efficient of friction combined with moderate temperature and wear resistance.

WA-8 is available in roll form. Segments, Cones and special shapes can easily be cut from it. Being a flexible material, it is possible to form it to radius when fitting it. Forming can be made easier by placing the material in an oven at a temperature of not more than 100°C (212°F) until it has heated throughout to soften the impregnant. WA-8 is designed solely for use under dry conditions (i.e. it is not suitable for use in oil). WA-8 can also be supplied with both surfaces ground.



### APPLICATIONS:

Industrial band and drum brake Linings ; Industrial band, plate and cone clutch linings (eg. cranes, lifts, excavators, winches, concrete mixers, drop hammers, mine widening appliances, underground haulages, tippers, oil well draw works, road rollers, sugar mill centrifuges), certain heavy road transport vehicles and tractors.



### TECHNICAL DATA:

Friction  $\mu$  for design purposes 0.35

### PHYSICAL PROPERTIES:

Data based on standard test methods  
Specific gravity : 1.6  
ult. tensile strength : 246 kg/cm<sup>2</sup>  
ult. compressive strength : 630 kg/cm<sup>2</sup>  
Rivet holding capacity : 900 kg/cm<sup>2</sup>

### RECOMMENDED OPERATING RANGE:

Maximum temperature : 260°C  
Maximum continuous temperature : 125°C

### NOTE:

The continuous temperature quoted is for constant slip conditions. For intermittent applications, bulk temperatures of 160°C are acceptable for long periods.

### RECOMMENDED MATING SURFACE:

Good quality fine grained pearlitic cast iron. Cast steel is not a suitable mating surface but forged or cold rolled steel with a Brinell hardness of 200 or more may be used.

### DESIGN VALUE:

The co-efficient of friction for design should be based upon the graph, the severity of application and maximum anticipated operating temperature being taken into account. Normal engineering practice should be followed in applying an appropriate safety factor to torque requirements of brake / clutch units.

### MACHINING:

High speed steel tools are recommended for use with this material.

### SIZE RANGE (NOMINAL):

Supplied in rolls of approximately 15 meters (50 ft) in thickness from 4.8 mm (3/16") to 19mm (3/4") and width from 25.4 mm (1") to 635.0 mm (25")

## COMP<sup>o</sup> MAGMA 23

is a semi-rigid, solid woven asbestos based friction material incorporating zinc wire in its construction. Its specially developed impregnant has high temperature resistance, giving the material excellent anti-fade and wear properties. This material is available in roll, lining, disc and flat sheet forms. It is suitable for use under dry operating conditions only (i.e. it is not suitable for use in oil).

MAGMA 23 is the metallic version of MAGMA 13. The fade resistance is improved by the metallic content. This makes the material particularly suitable for arduous applications such as excavator band brakes and clutches. In view of the wide application of MAGMA 23 the availability of any particular size, thickness or shape should be checked with Hindustan Composites Ltd. before specifications are finalised.



### APPLICATIONS:

Automotive drum brakes  
Industrial drum brakes  
Industrial band brakes and clutches  
Industrial plate clutches

### TECHNICAL DATA:

Friction  $\mu$  = 0.4 for design purposes (see curve below)

### PHYSICAL PROPERTIES:

Specific Gravity : 1.65  
Ultimate tensile strength : 190 kg/cm<sup>2</sup>  
Ultimate compressive strength : more than 1600 kg/cm<sup>2</sup>

### RECOMMENDED OPERATING RANGE:

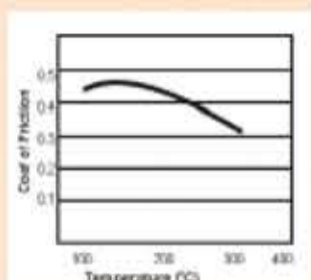
Unit pressure : 1-7 kg/cm<sup>2</sup>  
maximum velocity : 18m/sec  
Maximum temperature : 350°C  
Maximum continuous temperature : 150°C

### BONDING:

MAGMA 23 may be bonded with any of the established bonding adhesives although for the best results thermosetting adhesives should be used.

### RECOMMENDED MATING SURFACE:

Good quality fine grained pearlitic cast iron. Cast steel is not suitable as a mating surface but forged or cold rolled steel with a Brinell hardness of 150 or more may be used.



### SIZE RANGE

**FLAT SHEETS:**  
Thickness (6.4 mm to 19.0 mm)  
Width - (25.4 mm to 304.8 mm)  
Length - (838 mm) max

### ROLLS:

Thickness - (4.8 mm to 12.7 mm)  
Width - (25.4 mm to 177.8 mm)

### LENGTH OF ROLLS :

Appx 15 metres for thicknesses of 4.8 mm & 6.4 mm.  
Appx 7.5 metres for thicknesses of 7.9 mm, 9.5 mm & 12.7 mm

### RECOMMENDED OPERATING RANGE:

Maximum temperature : 300°C  
Maximum continuous temp. : 120°C  
Unit pressure 5 kg/cm<sup>2</sup>

### NOTE:

It is possible to exceed the recommended maximum temperature for short periods.

### BONDING:

CR-1 can be bonded with any of the established bonding adhesives although for best results, thermosetting adhesives should be used. CR-1 is supplied ground on both surfaces and so may be bonded on either surface as required.

### RECOMMENDED MATING SURFACE:

Good quality fine grained pearlitic cast iron. Cast steel is not suitable as a mating surface, but forged or cold rolled steel with a brinell hardness of 200 or more may be used.

### MACHINING:

High speed steel tools are satisfactory for use with this material.

### SIZE RANGE:

Liners  
Width : 25.4 mm (1") to 127.00 mm (5")  
Thickness : 3.97 mm (5/32") to 12.7 mm (1/2")  
Rolls  
Width : 25.4mm(1") to 101.6mm (4")  
Thickness : 3.969mm(5/32") to 12.7 mm (1/2")

## COMP<sup>o</sup> WA-10

is a semi-rigid, solid woven, asbestos-based friction material with a brass wire content. It is primarily intended for use under oil immersed conditions, but can also be used dry.

When in use for an oil-immersed application, should the supply of lubricant fail, WA-10 will continue to function and avoid immediate failure of the unit. It is available in Roll lining form only.

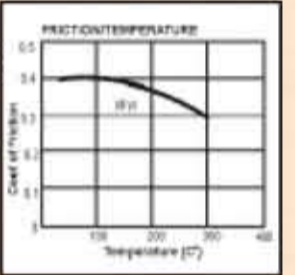


### APPLICATIONS:

Oil immersed brakes, plate and cone clutches for industrial usage, earth-moving equipment, agricultural machinery etc.,

### PHYSICAL PROPERTIES (NOMINAL):

Data based on standard test methods:  
Ultimate tensile strength : 240 kg/cm<sup>2</sup>  
Ultimate shear strength : 125 kg/cm<sup>2</sup>  
Ultimate compressive strength : 700 kg/cm<sup>2</sup>  
Rivet holding capacity : 1000 kg/cm<sup>2</sup>  
Specific Gravity : 1.9



### RECOMMENDED OPERATING TEMPERATURES:

Maximum temperature : 260°C  
Maximum continuous temperature : 125°C

### NOTE:

It is possible to exceed the recommended maximum temperature for short periods. The recommended maximum continuous temperature is commensurate with a reasonable rate of wear.

### RECOMMENDED MATING SURFACE :

Good quality close grain or alloy cast iron. If steel, then forged or cold rolled with a Brinell hardness of 150 or over. Cast steels are not recommended for use as mating surface.

## COMP<sup>o</sup> CR-1

is a flexible moulded non-metallic friction material with a random fibre asbestos base. It possesses stable co-efficient of friction and provides consistently good performance over a fairly wide range of operating conditions.

It offers smooth and powerful braking, free from judder or brake squeal.

It is available in both liner and roll form and is suitable for use under dry operating conditions only (i.e. it is not suitable for use in oil).

Owing to its flexibility, it is easy to form to any radius to accommodate itself on the shoe. CR-1 is also supplied with wire backed reinforcement as CR-1K

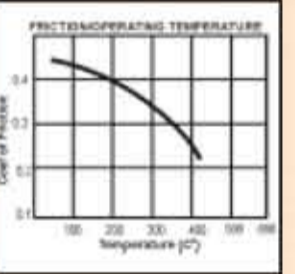


### APPLICATIONS:

Automotive drum brakes.  
Light trucks and commercial vehicles drum brakes.  
Industrial drum brakes, Band brakes, Moped and Scooter brakes.

### TECHNICAL DATA:

Friction  $\mu$  for design purposes (see curve) : 0.35 (dry)



### PHYSICAL PROPERTIES:

Data based on standard test methods  
Ultimate tensile strength : 98kg/cm<sup>2</sup>  
Ultimate compression strength : 562 kg/cm<sup>2</sup>  
Ultimate shear strength : 140 kg/cm<sup>2</sup>  
Rivet holding capacity : 440 kg/cm<sup>2</sup>  
Shore hardness D : 60  
Specific Gravity : 1.9

### NOTE:

The continuous temperature quoted is for constant slip conditions. For intermittent drum brake applications, bulk temperatures of 250°C are acceptable for long periods.

### BONDING:

CR-2 may be bonded with any of the established bonding adhesive although for the best results, thermosetting adhesives should be used. CR-2 is supplied ground on both surfaces and so may be bonded on either surface.

### RECOMMENDED MATING SURFACE:

Good quality fine grained pearlitic cast iron. Cast steel is not suitable as a mating surface but forged or cold rolled steel with a Brinell hardness of 200 or more may be used.

## COMP<sup>o</sup> WA-42

is a semi-rigid non-metallic, woven asbestos friction material bonded by a high temperature impregnant to give it enhanced mechanical strength and good antifead and wear properties.

The material is sufficiently flexible to accommodate small changes in radius and to make it suitable for use as a band lining. The impregnant does not soften when heated and large changes in radius should not be attempted.

WA-42 is available in liner and roll form and is suitable for use under dry operating conditions (i.e. it is not suitable for use in oil).

### APPLICATIONS:

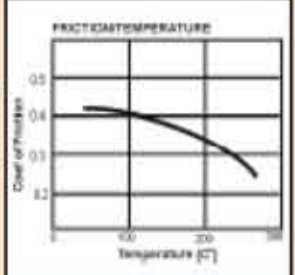
General purpose automotive drum brakes, Industrial Drum Brakes, Industrial band brakes and clutches (on e.g. excavators, cranes, lifts, electro-magnetic brakes), drive shaft transmission brakes, miscellaneous friction devices.

### TECHNICAL DATA:

Friction  $\mu$  for design purpose : 0.38

### PHYSICAL PROPERTIES:

Data based on standard test method  
Tensile strength : 210 kg/cm<sup>2</sup>  
Ultimate Compressive strength : 1266 kg/cm<sup>2</sup>  
Rivet holding capacity : 970 kg/cm<sup>2</sup>  
Specific Gravity : 1.48



### BONDING:

WA-42 may be bonded with suitable bonding adhesive. For best results thermosetting adhesives are recommended. The lining surface should be prepared for bonding by grinding, shot blasting, finishing etc.

### SIZE RANGE (NOMINAL):

Supplied in rolls of approximately 15 metres (50 ft.), for thicknesses 4.763 mm (3/16") and 6.4 mm (1/4") and in rolls of approximately 7.5 metres (25 feet) for thicknesses 7.9 mm (5/16"), 9.5 mm (3/8") and 12.7 mm (1/2"). The widths available are from 25.4 mm (1") to 177.8 mm (7").

## COMP<sup>o</sup> CR-2

is a flexible moulded, non-metallic friction material, light grey in colour and having a random fibre asbestos base. It is available in roll and strip form and is suitable for use under dry operating conditions only (i.e. it is not suitable for use in oil).

Although having a high friction level, CR-2 is silent in operation with excellent temperature and wear resistance. Being ground on both surfaces, CR-2 is perfect for bonding on either surface as well as for attaching with rivets.

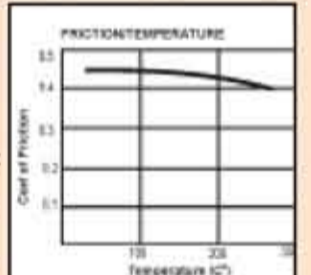


### APPLICATIONS:

Scooter and moped drum brakes and clutches, automotive drum brakes, industrial drum brakes, industrial band brakes, excavator brake and clutch band linings.

### TECHNICAL DATA:

Friction  $\mu$  for design purposes (see curve) : 0.40 (dry)



### PHYSICAL PROPERTIES:

Data based on standard test methods:  
Specific gravity : 2.0  
Ultimate tensile strength : 140 kg/cm<sup>2</sup>  
Ultimate compressive strength : 566 kg/cm<sup>2</sup>  
Ultimate shear strength : 77 kg/cm<sup>2</sup>  
Rivet holding capacity : 527 kg/cm<sup>2</sup>  
Share hardness "D" : 50-70

### RECOMMENDED OPERATING RANGE:

Unit pressure : 1.0-7 kg/cm<sup>2</sup>  
Maximum velocity : 18 m/sec  
Maximum temperature : 350°C  
Maximum continuous temperature : 150°C

### Recommended Mating Surface:

(a) Good quality fine grained or alloy cast iron.  
(b) If steel, then forged or cold rolled with a brinell hardness of 150 or over. Cast steels are not recommended for use as mating surfaces.

### Recommended Operating Temperatures:

Maximum temperature : 350°C  
Maximum continuous temperature : 150°C

### Note:

It is possible to exceed the recommended maximum temperature for short periods. The recommended maximum temperature is commensurate to a reasonable rate of wear.

## COMP<sup>o</sup> Asbestos Free Roll Lining HCAF 10 GG

COMP<sup>o</sup> HCAF 10 GG is one of the range of Non-asbestos Friction materials, it is a flexible moulded product, Grey Black in colour and having a basis of processed mineral fibre and other metallic powder substances in a random dispersion.

This material is produced in roll and strip forms only and is suitable for use under dry operating conditions only (i.e. it is not suitable for use in oil).

It has a high co-efficient of friction, it is flexible to facilitate fitting it to metal brake bands or brake shoes. Either process of rivetting or bonding may be used to attach the material to the metal part. Additional heat treatment during bonding reduces the flexibility of the material but remains fully adequate to use as a brake lining. It is a high friction material, with excellent temperature and wear resistance, and is silent in operation, suitable for use on a wide range of applications and at a variety of duty levels. The material is manufactured with a ground finish on both the surfaces so may be bonded on either side.

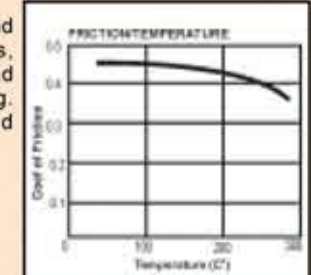


### APPLICATION:

Scooter and Moped Drum Brakes and Clutches. Industrial Drum brakes, Industrial band brakes. Crane and Excavator brakes and clutch lining. Vehicle brake linings (In selected cases)

### TECHNICAL DATA:

Friction  $\mu$  for design purpose : 0.45



### PHYSICAL PROPERTIES:

Data based on standard test method and standard samples.  
Specific Gravity : 1.75  
Hardness : 55 to 65 Shore "D"  
Ultimate Compressive Strength : 600 kg/cm<sup>2</sup>  
Ultimate shear strength : 80kg/cm<sup>2</sup>  
Ultimate Tensile Strength : 130kg/cm<sup>2</sup>  
Rivet Holding Capacity : 550 kg/cm<sup>2</sup>