



ESCORTS

RAILWAY EQUIPMENT DIVISION

Transformation through
Engineering and Innovation

**FRICITION &
RUBBER PRODUCTS**



COMPOSITE BRAKE BLOCKS AND RUBBER PRODUCTS

COMPOSITE BRAKE BLOCKS

ESCORTS LIMITED is manufacturing Composite Brake Blocks and Pads for Indian railways and export markets.

The raw materials are sourced from prime manufactures/mines to ensure proper quality. The mixers are PLC controlled to avoid any human error.

High performance presses and program controlled furnaces with graphic print outs ensure highest standard.

Escorts has fully equipped labs for complete testing of raw materials and finished products. All tests are conducted as per international Standards like UIC-541 or ORE-B 126 and BS-AV-142. Process checking for coefficient of friction is conducted on Krauss Friction Tester. Full scale dynamometer testing is conducted on the products on a regular basis.

APPLICATION

1. Passenger Cars
2. EMUs
3. Locomotives
4. Freight Cars

RUBBER PRODUCTS

ESCORTS LIMITED manufactures various types of rubber products for Indian railways.

1. SILENT BLOCKS

- Cylindrical Type Silent Block
- Collar Type Silent Block
- Flange Type Silent Block

APPLICATION

- Silent blocks are widely used to minimize the load bearing problem in vibrating and oscillating systems.
- Also, these blocks find application in linkages in various types of Railway suspensions, Railway Carriages, Couplers and Center Pivot etc.

2. VESTIBULE

Vestibule is also known as an Elastomer flange connection for intercommunication between passenger Coaches has been developed by Escorts. It is made from special purpose fire retardant synthetic polychloroprene rubber.

APPLICATION

- EMUs, MEMUs, DMUs & other passenger coaches
- Any other suburban/mass rapid transport system

3. LOCO RUBBER SIDE BEARER PAD

Conventional side bearer pad is a Rubber to Metal Bonded product for Locomotives bogies. They are used in the secondary stage of suspension of high adhesion bogies of Locomotives.

4. ELASTOMERIC PAD FOR FREIGHT WAGON

Modified Elastomeric Pad is a Rubber to Metal Bonded product for wagons. It acts as primary suspension for wagons.

COMPOSITE BRAKE BLOCK

ESCORTS GRADE F01/KNAC & KNAE (CBB for Passenger Coach & EMU)

Escorts grade F01/KNAC & KNAE is a Non Asbestos composite brake block for railway application. It is a rigid hot process moulded in dark grey color having synthetic, minerals & organic fibers with highly thermally stable "Novalac" Phenolic powder resin as a binder in composition matrix to meet the strength & performance in terms of friction & wear properties.

This product meets the requirements of UIC specification on the Dynamometer.

APPLICATION

This product is suitable for passenger coaches & EMU (Electrical multiple unit) for speed up to 160 KMPH.

TECHNICAL DATA

Average mean coefficient of friction (Dry & Wet) : 0.33 μ

RECOMMENDED OPERATING RANGE

Maximum temperature : 400° C
Maximum Operating temperature : 300° C
Maximum Brake Shoe Force : 2.0 Tons

TYPICAL PHYSICAL PROPERTIES

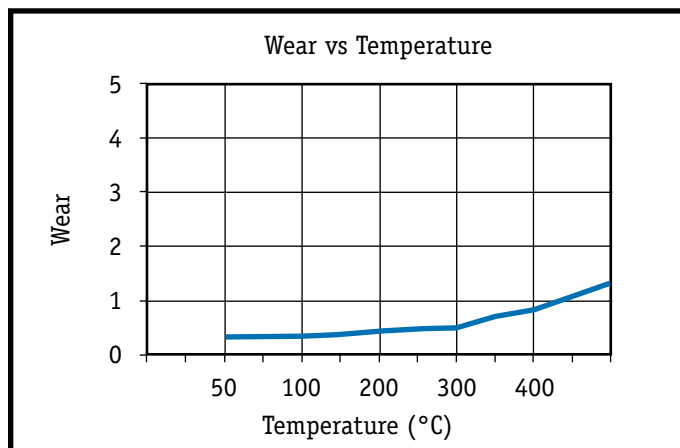
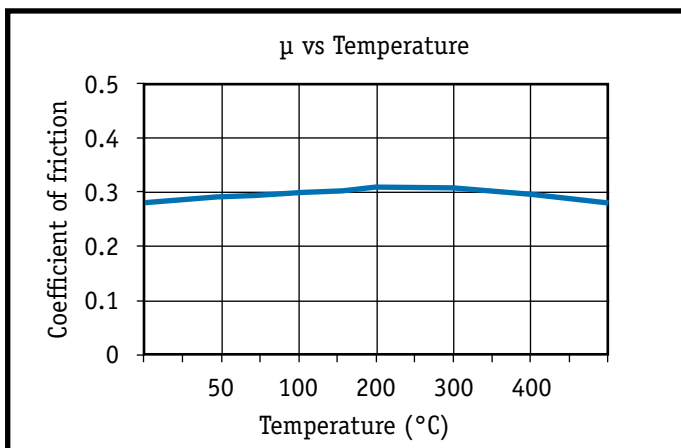
Density (Gm/cc) : 1.80 - 2.10
Hardness (HRX) : 90 - 110
Cross Breaking Strength (Kg/cm²) Min. : 180
Back Plate pull of strength (Ton) Min. : 4.0
Compression Modulus (N/mm²) : 1000 - 2000
Classification as per UIC Specification : K-Type High friction
Average Coefficient of friction : 0.2 - 0.4 μ

TYPICAL CHEMICAL PROPERTIES

Acetone Extract Max. : 3.0 %
Loss on Ignition Max. : 35 %



TYPICAL FRICTION/WEAR PROPERTIES



ESCORTS GRADE F02/KNAP (Brake Pad for Passenger Car)

Escorts/Federal Mogul (Honeywell) Grade Jurid 878I is an organic Non Asbestos composite brake pad for railway application. It is a rigid cold process moulded in dark brown color having synthetic, minerals & organic fibers with highly thermally stable "Novalac" phenolic powder resin as a binder in composition matrix to meet the strength & performance in terms of friction & wear properties.

This product meets the requirements of UIC specification on the Dynamometer.

APPLICATION

This products is suitable for LHB coaches for speed up to 200 KMPH.

TECHNICAL DATA

Average mean coefficient of friction
(Dry & Wet) - : 0.35 μ

RECOMMENDED OPERATING RANGE

Maximum temperature : 500° C
Maximum Operating temperature : 400° C
Maximum Brake Force on Disc : 5.0 Tons

TYPICAL PHYSICAL PROPERTIES

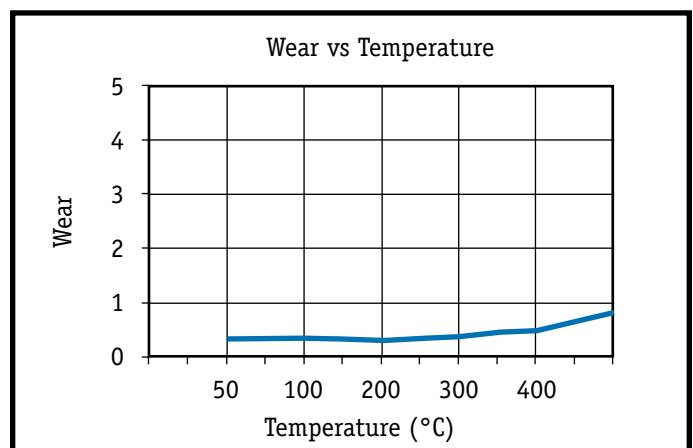
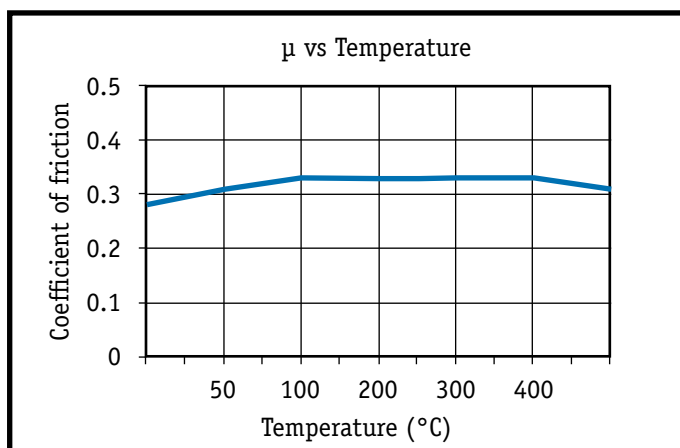
Density (Gm/cc) : 2.40 - 2.70
Hardness (HRX) : 25- 45
Cross Breaking Strength (Kg/cm²) Min. : 100
Shear strength (KN) Min. : 8.0
Compression Modulus (N/mm²) : 1000-3000
Classification as per UIC Specification : K -Type High friction
Average Coefficient of friction : 0.27 -0.42 μ

TYPICAL CHEMICAL PROPERTIES

Acetone Extract Max. : 3.0 %
Loss on Ignition Max. : 15 %



TYPICAL FRICTION/WEAR PROPERTIES



ESCORTS GRADE F03/LNAL (CBB for Diesel & Electric Locomotives)

Escorts grade F03/LNAL is a Non Asbestos composite brake block for railway application. It is a rigid hot process moulded in dark grey color having synthetic, minerals & organic fibers with highly thermally stable "Novalac" Phenolic powder resin as a binder in composition matrix to meet the strength & performance in terms of friction & wear properties.

This product meets the requirements of UIC specification on the Dynamometer.

APPLICATION

This product is suitable for Diesel & Electric Locomotive for speed up to 160 KMPH.

TECHNICAL DATA

Average mean coefficient of friction
(Dry & Wet) - : 0.14 μ

RECOMMENDED OPERATING RANGE

Maximum temperature : 350° C
Maximum Operating temperature : 275° C
Maximum Brake Shoe Force : 5.0 Tons

TYPICAL PHYSICAL PROPERTIES

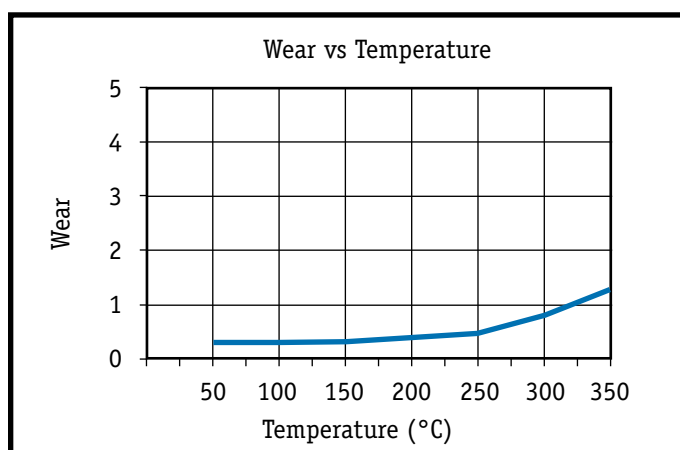
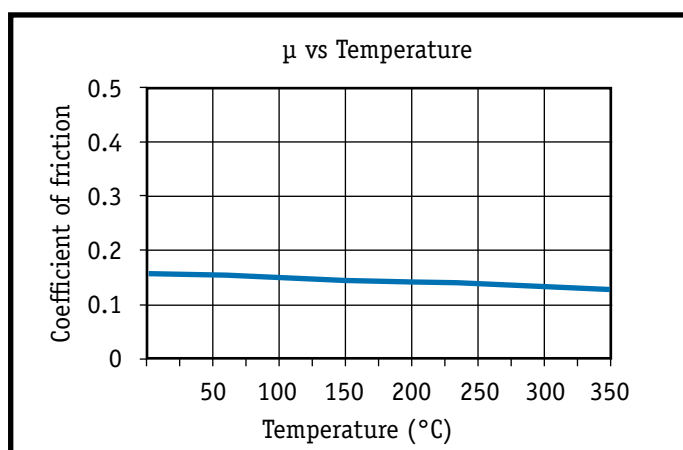
Density (Gm/cc) : 1.65 - 1.80
Hardness (HRR) : 85 - 115
Cross Breaking Strength (Kg/cm²) Min. : 160
Back Plate pull of strength (Ton) Min. : 4.0
Compression Modulus (N/mm²) : 1200 - 3000
Classification as per UIC Specification : L-Type Low friction
Average Coefficient of friction : 0.10 - 0.19 μ

TYPICAL CHEMICAL PROPERTIES

Acetone Extract Max. : 3.0 %
Loss on Ignition Max. : 45 %



TYPICAL FRICTION/WEAR PROPERTIES



ESCORTS GRADE F04/LNAF (CBB for Freight Stock & Container flat Wagons)

Escorts grade F04/LNAF is a Non Asbestos composite brake block for railway application.

It is a rigid hot process moulded in dark grey color having synthetic, minerals & organic fibers with highly thermally stable "Novalac" Phenolic powder resin as a binder in composition matrix to meet the strength & performance in terms of friction & wear properties.

This product meets the requirements of UIC specification on the Dynamometer.

APPLICATION

This products is suitable for Freight stock & Container flat wagons (BOXXN, BOY, BLCA & BLCB) for speed up to 120 KMPH.

TECHNICAL DATA

Average mean coefficient of friction
(Dry & Wet) - : 0.16 μ

RECOMMENDED OPERATING RANGE

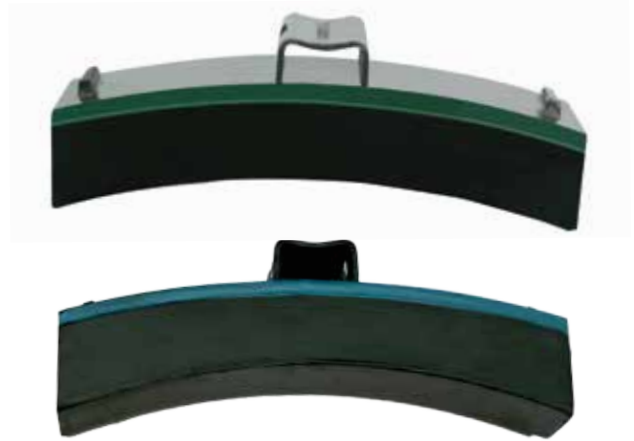
Maximum temperature : 400° C
Maximum Operating temperature : 300° C
Maximum Brake Shoe Force : 4.5 Tons

TYPICAL PHYSICAL PROPERTIES

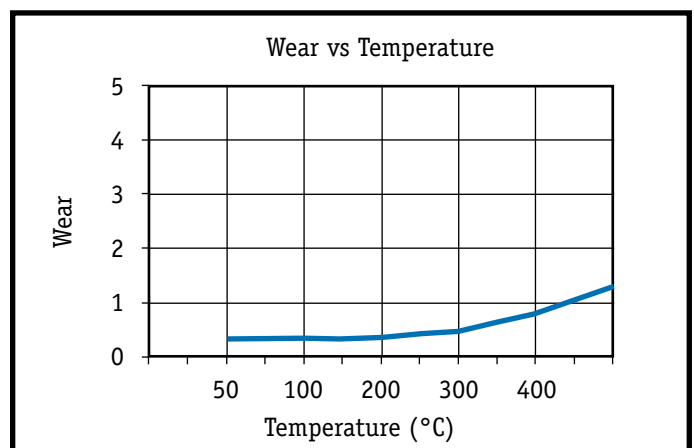
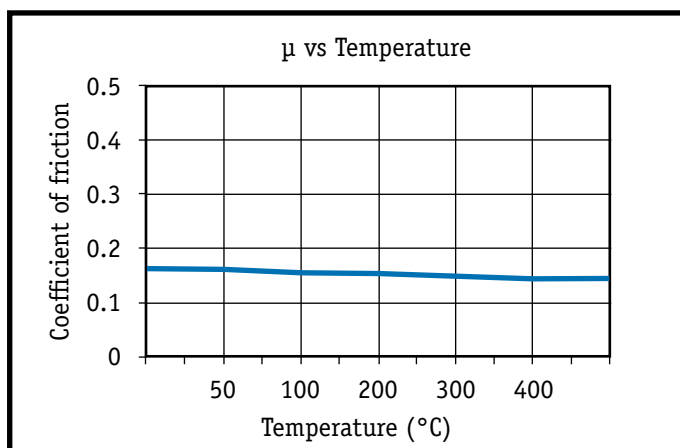
Density (Gm/cc) : 1.75 – 1.90
Hardness (HRX) : 90 – 105
Cross Breaking Strength (Kg/cm²) Min. : 180
Back Plate pull of strength (Ton) Min. : 5.0
Compression Modulus (N/mm²) : 1500 - 3000
Classification as per UIC Specification : L-Type Low friction
Average Coefficient of friction : 0.13 -0.21 μ

TYPICAL CHEMICAL PROPERTIES

Acetone Extract Max. : 3.0 %
Loss on Ignition Max : 40 %



TYPICAL FRICTION/WEAR PROPERTIES



ESCORTS GRADE F05/KNAF (CBB for Freight Stock & Container flat Wagons)

Escorts grade F05/KNAF is a Non Asbestos composite brake block for railway application.

It is a rigid hot process moulded in dark grey color having synthetic, minerals & organic fibers with highly thermally stable "Novalac" Phenolic powder resin as a binder in composition matrix to meet the strength & performance in terms of friction & wear properties.

This product meets the requirements of UIC specification on the Dynamometer.

APPLICATION

This product is suitable for Freight stock & Container flat wagons for speed up to 120 KMPH.

TECHNICAL DATA

Average mean coefficient of friction (Dry & Wet) - : 0.28 μ

RECOMMENDED OPERATING RANGE

Maximum temperature : 400° C
Maximum Operating temperature : 300° C
Maximum Brake Shoe Force : 4.0 Tons

TYPICAL PHYSICAL PROPERTIES

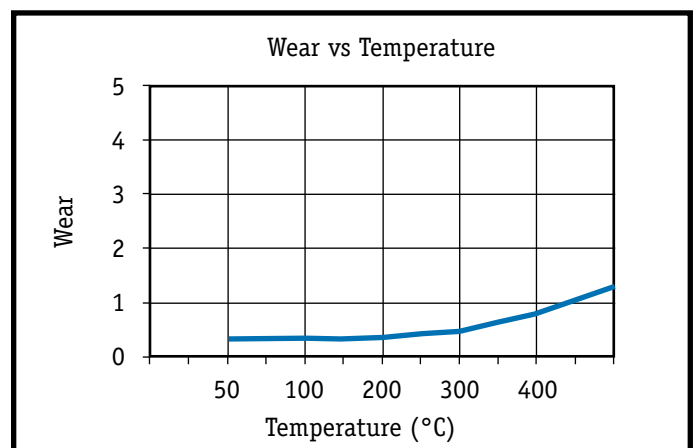
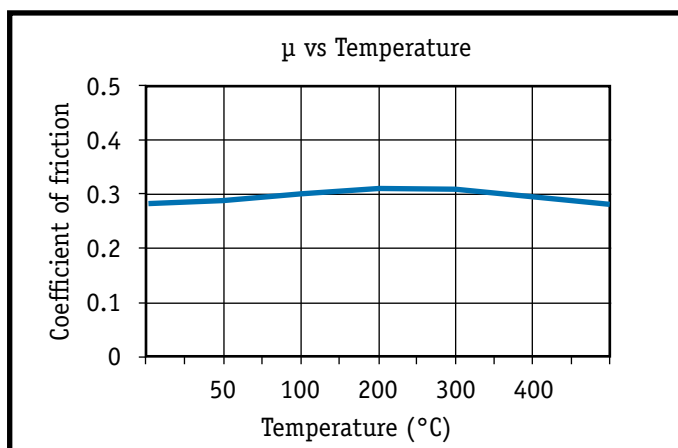
Density (Gm/cc) : 1.90 - 2.10
Hardness (HRX) : 85 - 105
Cross Breaking Strength (Kg/cm²) Min. : 180
Back Plate pull of strength (Ton) Min. : 4.0
Compression Modulus (N/mm²) : 1200 - 3000
Classification as per UIC Specification : K-Type High friction
Average Coefficient of friction : 0.18 - 0.33 μ

TYPICAL CHEMICAL PROPERTIES

Acetone Extract Max. : 3.0 %
Loss on Ignition Max : 40 %



TYPICAL FRICTION/WEAR PROPERTIES



SILENT BLOCK

Silent Blocks are important component for rolling stock, which are made from premium quality of two concentric steel sleeves with rubber that ensures strong design and construction. The rubber is pushed into the gap between two sleeves in order to fill up the void and vulcanized at constant temperature & pressure.

Moreover, the pressure will be added to ensure maximum dynamic strength as well as endurance. The silent block used in Railways are capable of taking various types of torsional, axial & radial load.

TYPES

- Cylindrical Type Silent Block
- Collar Type Silent Block
- Flange Type Silent Block

SALIENT FEATURES

- Pressurized to give maximum strength & endurance.
- It comprises two concentric steel sleeves enabled with rubber that is securely bonded between them.
- The molten rubber is pushed inside space between two sleeves are vulcanized at steady pressure and temperature.
- Specially designed for torsional movement, axial & radial load.

APPLICATIONS

- Silent blocks are widely used to minimize the load bearing problem in vibrating and oscillating systems.
- Also, these blocks find application in linkages in various types of Railway suspensions, Railway Carriages, Couplers and Center Pivot etc.



SILENT BLOCK FOR ANCHOR LINK



SILENT BLOCK FOR SHOCK ABSORBER



SILENT BLOCK FOR COUPLER APPLICATION



SILENT BLOCK FOR CENTER PIVOT-COACHES



VESTIBULE

Vestibule is also known as an Elastomer flange connection for intercommunication between passenger Coaches has been developed by Escorts.

It is made from special purpose fire retardant, halogen free elastomer

SALIENT FEATURES

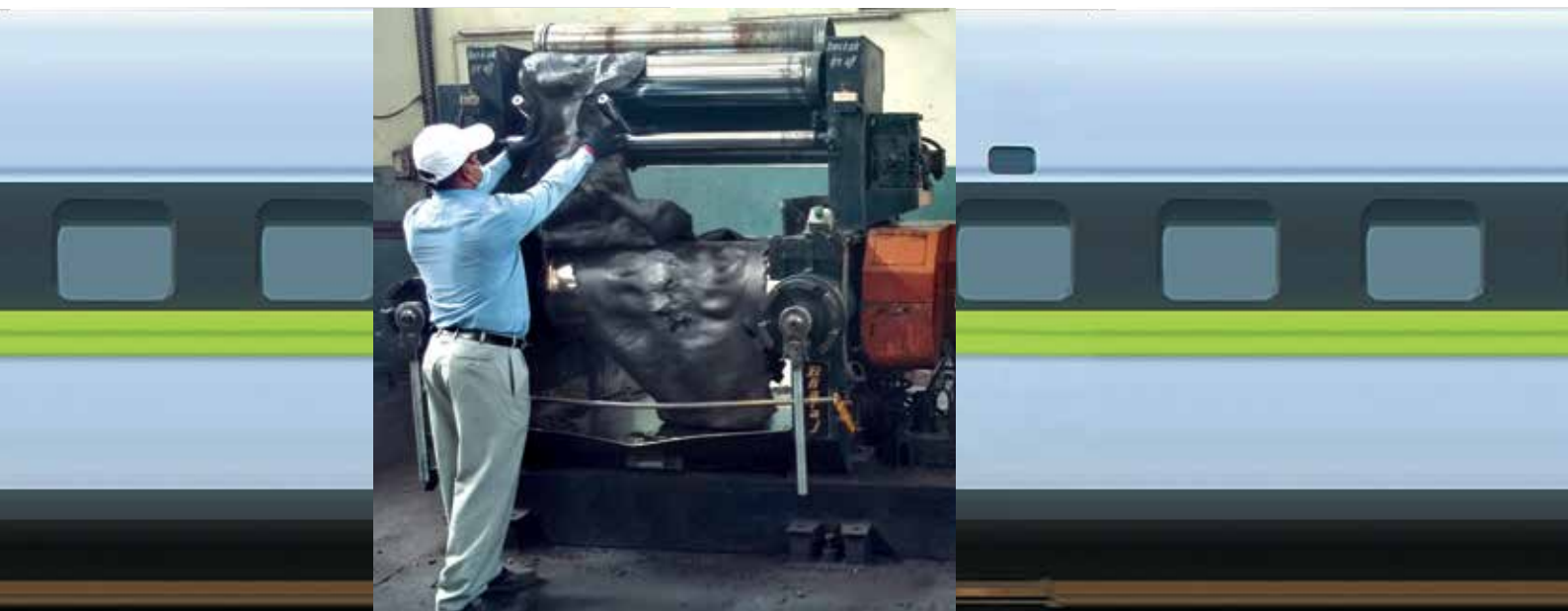
- Fire retardant
- UIC Compliant conforming to UIC Code 845 R & UIC Code 564-2
- Complies with specification. NCD-1409 for toxicity index less than one
- Conforming to EN-45545-2 for heat release rate

APPLICATIONS

- EMUs, MEMUs, DMUs & other passenger coaches
- Any other suburban/mass rapid transport system



RUBBER VESTIBULE



LOCO RUBBER SIDE BEARER PAD

Side bearer is a Rubber to Metal Bonded product for Locomotives bogies. They are used in the secondary stage of suspension of high adhesion bogies of Locomotives.

The rubber side bearer are subjected to static and dynamic loadings both in compressive and shear modes simultaneously during operating condition. The maximum loading on the side bearer including dynamic loading is 16 t in compressive mode and 2.5 t in shear mode.

APPLICATION

Diesel and Electric Locomotives



ELASTOMERIC PAD FOR FREIGHT WAGON

Modified Elastomeric Pad is a Rubber to Metal Bonded product for wagons. It acts as primary suspension in wagons, with differential stiffness in 2 axis for reducing wheel wear. Suitable for high vibration absorption and provides reliable service conditions. Secondary stage of suspension of high adhesion bogies of wagon.

Modified Elastomeric pad placed between side frame and adapter is subjected to compressive and shear forces of the order of 20 and 5 tonnes respectively. It also acts as an anti- vibration member. The pad is capable of withstanding wide climatic variation prevailing in the country without physical deterioration and any marked change of rubber characteristics.

APPLICATION

CASNUB Bogie – 22W, 22W (M), 22NL, 22NLB, 22HS & LCCF 20 (c)





ESCORTS

RAILWAY EQUIPMENT DIVISION

Head Office & Works:

Plot No. 115, Sector 24,
Faridabad - 121 005
Haryana, (India)
Email: rail@escorts.co.in
Web: escortsrailwayproducts.com
Tel.: 91-129-2516382, 6608
Fax: 91-129-2232148

Mumbai Branch:

Times Square, Unit No. A-1,
A-Wing, 3rd floor,
Andheri Kurla Road,
Andheri East
Sakinaka, Mumbai - 400 059
Maharashtra, India
Email: mumbai@escorts.co.in
Tel.: +91-22-24218159
Fax: +91-22-24218153

Chennai Branch:

M-3, "M" Block, 3rd Avenue,
Anna Nagar East,
Chennai - 600 102
Tamil Nadu, India
Email: chennai@escorts.co.in
Tel.: +91-44-26287229
Fax: +91-44-26287341

Kolkata Branch:

South Western Wing,
9th Floor, "AC Market",
1, Shakespeare Sarani,
Kolkata - 700 071
West Bengal, India
Email: kolkata@escorts.co.in
Tel.: +91-33-22825191
Fax: +91-33-22814518