



Protobind™ 2400

New Generation raw material for the Friction industry

Protobind™ 2400 is a high-purity natural polyphenolic material especially formulated to be used as a partial replacement of phenolic novolac resins used as binders in Brake Linings, Disc pads, Clutch facings, Heavy Duty Linings, etc.. This product is now being industrially produced in India in dry powder form using state-of-the-art proprietary and patented Swiss technology. ALM India exclusively markets and promotes this product in India.

Properties of Protobind™ 2400

Non volatile content (%)	97±1
pH (10% aqueous suspension)	3-4
Softening temperature (°C)	~130
Bulk Density (gms/cc)	0.45 - 0.60
Solubility in water (acid or neutral)	Nil
Solubility in aqueous alkali	Very High
Solubility in Phenol	Very High
Solubility in Furfuryl Alcohol	Very High

Protobind™ 2400 is a new generation product obtained by an extensively researched technology that offers modern, environment friendly and economical raw materials to industry. By replacing petrochemical based raw materials with the Protobind products, users will have a price-competitive alternative to oil-based products.

Protobind™ 2400 is highly compatible with phenolic novolac resins. The performance properties of system based on phenolic novolac resins can be maintained or improved using Protobind 2400 replacement levels in the range of 10-20%

Protobind™ 2400 substitution for part of the phenolic novolac resins in brake lining application generally results in comparable rigid molding, strength properties, coefficient of friction, thermal stability, wear, etc.

Typical properties of Phenolic novolac resins AND with Protobind™ 2400 blend

Typical properties	Phenolic novolac resins	Phenolic resin+Protobind 2400 blend*
Appearance	White/creamish	Comparable
Gel time @ 150 °C (sec)	30-60	30-60
Norton flow (mm)	25-50	25-45
Melting point (°C)	90-100	90-100

* @ 10% replacement

Advantages

- Helps in brake noise reduction
- Cost effective
- Forms homogeneous mix, disperses well in the system
- Good bonding
- Better coefficient of friction
- Heat resistance yield good friction & lower wear
- Crack free brake pads

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