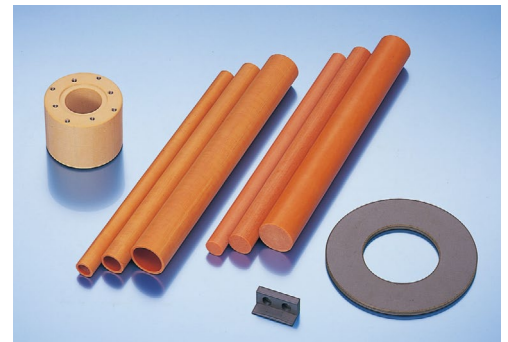
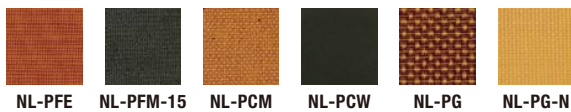


# 積層板の種類

## フェノール樹脂積層板

## Phenolic Resin Laminated Sheets



古くから広い分野に、かつ多量に使用されており、用途や目的にあわせて紙、綿布、ガラス布などを基材に用います。樹脂自体の耐熱性が一般より優れている上、強固で各溶剤・酸性薬品に対して安定しており、電気特性・機械特性・加工性・コストパフォーマンスなど全般的にバランスのとれた絶縁材料です。特に布基材の積層板は機械加工性・耐衝撃性に優れています。電装・機械部品(スタータ・歯車)をはじめ、幅広い用途があります。

Phenolic resin laminated sheets have been used for various purposes in large quantities. Paper, cotton cloth, or glass fiber cloth is used as base material depending on the use application and purpose. Since phenolic resin is superior to others in heat resistance, its laminated sheet is hard and stable against every solvent and acidic chemicals, and it is a wellbalanced electric insulator in terms of its electrical properties, mechanical properties, processing properties and cost performance. Especially, phenolic resin laminated sheets made with cotton are excellent in terms of machinery workability and impact strength. These products have a wide range of applications in such areas as electric equipment and machine parts (e.g. starters, gears).

### ●摩擦係数・耐摩耗性

### Data of Friction coefficient and Abrasion resistance

歯車や軸受けなど、部品同士が擦れて摩耗してしまうと、部品の破損や精度の低下を招くおそれがあります。機械部品にはこうしたリスクがつきものですから、動きをスムーズにしたい時は「摺動」が欠かせません。摺動性に求められるのは、滑り面が低発熱、低動力消費、静動摩擦係数の差が小さい低摩擦係数である事。そして、自己潤滑性や高速滑り性を持ち、摩擦音や摩擦振動を発生させない耐摩耗性である事が求められます。熱硬化性樹脂積層板の摺動材は可塑性樹脂の成形品と比較し、耐熱や強度、耐摩耗性が優れております。弊社では摺動性に優れた樹脂に自己潤滑性に優れた添加物を加え、数種の基材との組み合わせにより、状況に応じた特性を持つ摺動材をラインナップしています。

The abrasion of parts, such as gear and bearing, can cause a breakage or a decrease in accuracy. For the smooth movements of the parts to reduce these risks normally associated with mechanical parts, "Sliding property" is essential. The elements required for sliding property are low-heat-generating surface, low power consumption, and low friction coefficient with small difference between dynamic friction coefficient and static friction coefficient. In addition, self-lubricating, high-speed slipperiness, and abrasion resistance without spirant and frictional vibration are also required. Comparing to molding parts made of thermoplastic, our sliding parts made of thermosetting plastic laminated sheet have advantages in heat resistance, mechanical strength and abrasion resistance. products are combinations of resin with excellent sliding property, self-lubricating additive, and several base materials, which enables us to offer various kinds of sliding materials to meet varying requirements accordingly.

### ●摩擦係数

Friction coefficient

#### ◎試験条件

Test condition

試験片サイズ：63×63mm

Size of specimen

試験片質量：200g

Weight of specimen

試験速度：100mm/min

Speed

相手材料：SUS304

Object material

JIS K7125に準拠して

測定を実施

\*TEST METHOD: JIS K7125

	静摩擦係数 Coefficient of static friction	動摩擦係数 Coefficient of dynamic friction
NL-PFE	0.28	0.25
NL-PCW	0.25	0.23
NL-PFM-15	0.27	0.24
NL-ET	0.29	0.24
NL-EG	0.32	0.27
NL-IG-13	0.32	0.29
GL-EM	0.34	0.31
GL-MN-PO	0.37	0.33

### ●耐摩耗性

Abrasion resistance

#### ◎試験条件

Test condition

摩耗相手の材質：SK85

Object material

幅：3mm 半径：15mm

Width Diameter

摩 耗 速 度 1.9m/s

Wear rate

試 験 荷 重：2kg又は5.5kg

Load

試 験 時 間：3分

Time

摩 耗 距 離：342mm

Wear distance

試 験 方 法：大越式摩耗試験

	摩耗量(mm <sup>3</sup> ) Abrasion loss	
荷重 Load	2kg	5.5kg
NL-PFE	0.152	0.251
NL-PCW	0.046	0.068
NL-PFM-15	0.113	0.175
NL-ET	0.441	-
NL-EG	0.378	0.758
GL-EM	0.503	1.429
GL-MN-PO	0.471	1.261