Technical information

Rubber guide

Rubber is a versatile material used in many different areas, from the automotive industry to medical equipment and everything in between. But which rubber material is best suited to a par-ticular application? And what is the difference between the different types of rubber?

In this guide to rubber, you'll find answers to these questions and more. Here we go through the most common rubber materials, their properties and uses, and provide practical tips and advice for choosing the right rubber product for your specific application. Whether you are a professional technician or just interested in rubber as a material, there is something here for you.

Welcome to explore our rubber guide!

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EPDM Rubber

EPDM is a modern rubber compound with unique properties that provide high resistance to weather conditions, diluted acids and bases, and polar liquids such as water. In addition, EPDM has excellent heat and cold performance and is a good electrical insulator. EPDM is not as resistant to mineral oils and greases, but works well with silicone oils. It is important to note that the chemical structure of EPDM makes it difficult to bond.

There are several applications for EPDM, particularly where there are requirements for age and weather resistance, such as gaskets and seals. The working temperature of EPDM varies between -40 °C and +120 °C.

Natural rubber (NR)

Natural rubber, often abbreviated as NR, is known for its excellent strength, elasticity and durability, as well as retaining its flexibility even in cold temperatures. It also has good properties to resist weak acids and alkalis. However, its weather, heat and oil resistance is not so good. The surface of natural rubber is waxed, which can make it difficult to glue.

Natural rubber is often used for vibration dampers and wear protection.
The working temperature of natural rubber is between -40 °C and +70 °C.

Neoprene rubber (CR)

Neoprene is a material often associated with soft materials used in diving suits. However, it is important to note that Neoprene is actually a trademark of the American company DuPont and refers to an ingredient, not a finished product. Chlorinated rubber is the actual name of Neoprene, and it can be used for everything from soft rubber materials to hard rubbers and latex gloves. Therefore, it is a material that is widely used in various industries.

Neoprene rubber is also called CR, which stands for Chloroprene Rubber. CR is an all-round material that is good at many things but not necessarily the best at anything specific. It has excellent mechanical properties and is relatively age-resistant. In addition, it is resistant to oils, greases, weather, diluted acids and bases, making it suitable for use in situations where you need to combine weather and oil resistance.

Another advantage of Neoprene rubber is that it is easy to glue, which is not always the case with other rubber rubbers. Neoprene is often used for gaskets and shims where a combination of weather and oil resistance is necessary. In addition, CR is commonly used in piping systems during welding operations, thanks to its all-round properties and self-extinguishing ability.

Neoprene rubber can handle a working temperature between -25 °C and +100 °C.

Styrene rubber (SBR)

Steering rubber, or SBR as it is often abbreviated, is a rubber of varying quality. High quality SBR is often used in conjunction with natural rubber to create durable rubber, while lower quality is often used in the manufacture of inexpensive products where no higher standards are required. SBR has some form of weather resistance, but because it is often made from lower quality, it does not have very good weather resistant properties. However, one advantage of SBR is that it retains its flexibility in the cold because of the plasticizers added. Otherwise, it has no distincti-ve properties.

SBR contains plasticizers that can make it difficult to bond over time.

SBR is often used as an intermediate layer where there are no specific requirements from the customer, except that they want the cheapest possible solution.

The working temperature for SBR is between -25 °C to +70 °C.

Nitrile rubber (NBR)

Nitrile rubber is also known as NBR (nitrile-butadiene rubber) or Buna-N. Nitrile rubber is a synthetic rubber type known for its good chemical resistance to oils, fuels and chemicals, making it a popular choice of material for gaskets, seals and hoses used in applications where contact with oils and chemicals is common.

The advantages of nitrile rubber include its high mechanical strength and abrasion resistance, as well as its anti-static properties that prevent the build-up of static electricity. In addition, nitrile rubber is easier to bond than many other rubber materials. Nitrile rubber's working temperature of -30°C to +100°C also makes it suitable for applications that require high temperature performance.

Butyl rubber (IIR)

Butyl rubber is usually abbreviated as IIR, which is short for "isobutylene-isoprene rubber". Butyl rubber is a synthetic rubber type that has similar properties to EPDM rubber, but with higher temperature resistance and better chemical resistance. One of the most prominent features of butyl rubber is its low gas permeability, which means it has a high degree of gas tightness.

Butyl rubber is also easy to bond and is often used in applications where high demands are placed on gas tightness and adhesion. It can be used in the same applications as EPDM, but with higher gas tightness requirements.

The working temperature range of butyl rubber is between -40 °C and +130 °C, which gives it a higher temperature resistance than EPDM rubber.

Polyurethane (PU)

Polyurethane is a polymer characterized by very good mechanical resistance, wear resistance and tear resistance. This makes the material very suitable for use in applications that require high strength and durability. Polyurethane is also highly resistant to oils and weather conditions, making it ideal for outdoor applications.

Polyurethane is often used in applications that require wear parts and wear protection. It can come in the form of coatings, seals, springs, wheels and much more. The working temperature range for polyurethane is from -40 °C to +100 °C.

Viton ® (FKM)

Viton is also known by its chemical name, which is fluorethylene-propylene rubber (FKM). Viton is a high-performance fluoroelastomer that has unique properties that make it ideal for applications in extreme environments. Viton has the ability to withstand very high temperatures, making it ideal for use in high temperature environments where other rubber materials would fail. The working temperature range of Viton is between -20 °C to +250 °C, making it one of the most high temperature resistant rubber materials available.

Viton also has excellent resistance to water, chemicals, oil and petrol, making it very suitable for use in industrial environments where chemical resistance is important. Viton is also weather resistant and virtually unaffected by ozone.

It is important to note that Viton does not perform well at low temperatures, meaning that it is not suitable for use in cold environments. Another characteristic of Viton is that it is difficult to bond due to its fluoride properties, meaning that it is most often used in high temperature environments where bonding is not possible or recommended.

Viton is often used for gaskets and seals in extreme environments, such as in the oil and gas, aerospace and chemical industries. Viton is also suitable for use in medical applications, as it is sterilisable and resistant to many chemicals.

Hypalon ®

Hypalon is a synthetic rubber known for its high resistance to chemicals, water, ozone and UV radiation. It also has a high temperature resistance and can withstand high temperatures up to 125 °C. Hypalon is very similar to chloroprene (CR) rubber in properties but with even better chemical resistance.

However, Hypalon is not as strong as other rubber materials and its mechanical properties are not as good as CR rubber. However, hypalon is still an excellent choice for applications where high demands are placed on chemical and thermal resistance.

Hypalon is easy to bond, making it easy to assemble and use in various applications. It is often used for gaskets, seals and coatings in extreme environments where high demands are placed on the material’s durability and chemical resistance.

The working temperature range of hypalon extends from -35 °C to +125 °C, making it a versatile material that can be used in a variety of applications.

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