

Cariflex® Polyisoprene Products

The Clear Alternative

Manufacturers are faced with increasing consumer demands for the latest and most cost-effective alternatives in rubber-based products: medical stoppers should be safe but convenient, shoe soles must combine comfort, long-life and fashion trends; protective gloves should be strong, but tactile and kind to skin. The pressure is on to find raw materials that can meet these challenges, and help keep customers' products competitive.

For applications where strength, comfort and protection are key, the demands placed on raw materials are particularly high. Cariflex IR, with its non-allergenic character, transparency, lack of odor, softness, hysteresis and good consistency, offers the ideal alternative to existing material solutions.

Traditionally, natural rubber has been selected for use in a wide range of applications because of its key properties: durability, high tensile strength, tear resistance, ready availability and relatively low price. However, naturally occurring substances present in natural rubber are the source of a brownish color, odor and lack of consistency. Substances such as protein and protein derivatives can also cause skin irritation and allergies. These are major challenges for certain finished products subject to stringent regulations or for applications where transparency is preferred. In such situations, Cariflex IR synthetic polyisoprene rubber provides a valuable alternative to natural rubber as it can improve the overall quality and performance of finished products without sacrificing the benefits of natural rubber.

Cariflex IR has similar performance benefits as natural rubber, such as elasticity and durability, but also offers the added advantages of transparency, light color, softness, lack of odor and absence of natural proteins.

Table 1

	IR0307	IR0310
Characteristics/applications		Easy processing version of IR0307
Cis-1,4 content %, min	90	90
Volatile matter ¹ max	0.5	0.5
Total ash ¹ max	0.1	0.1
Oil ¹ naphthenic	0.0	0.0
Stabiliser ¹ non-staining	0.06-0.1	0.1-0.3
Limiting viscosity number, dl/g	6.7-9.2	6.5-9.5
Mooney viscosity ² , MU	n/a ³	40-50

For test methods – see relevant grade data sheets:

1. % mass;
2. MML + 4 (100 °C);
3. Data not available for this grade which is specified by limiting viscosity number.



Minimizing Allergenic Reactions

The high quality of Cariflex IR is derived from the simplicity and efficiency of the polymerization process – an anionic solution polymerization initiated by an alkyl-lithium catalyst. A very low amount of catalyst (a few parts per million) is required to polymerize the isoprene monomer. Residual monomer content in the final product is also kept extremely low because the process enables high conversion of isoprene and removal of residuals.

With the exception of an antioxidant, no other additives are used in the production of the clear Cariflex IR grades.

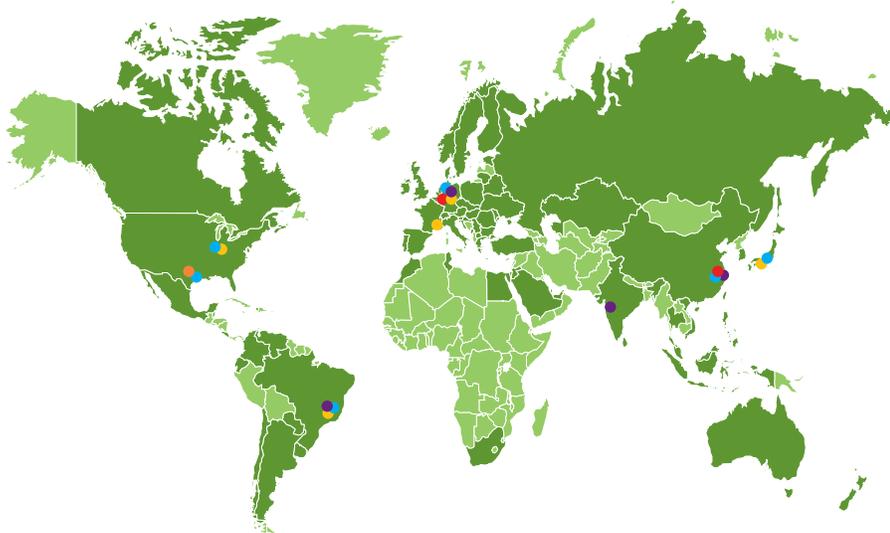
The anionic solution polymerization process helps to avoid branching. Lack of branching eliminates the presence of particles that cannot be dissolved or melted, commonly referred to as 'gels', and a more consistent finished product can be achieved.

Since Cariflex IR is a totally synthetic product not expected to contain natural proteins, the possibility of skin irritations and allergies caused by these proteins in finished products can be reduced to the minimum.

To help manufacturers source a rubber with the appropriate properties for their application, Cariflex IR is available in two grades (see table 1).

Company Profile

Kraton Performance Polymers, Inc. is a leading global producer of engineered polymers used to enhance the performance of products that touch virtually every aspect of our lives. The original inventor of styrenic block copolymer (SBC) chemistry in the 1960s, Kraton has a history of innovation dating back more than 50 years. Used in a myriad of applications, Kraton adds utility, value and customer appeal to products ranging from adhesives and coatings, paving and roofing to personal care items, medical supplies, electronic and automotive components. Kraton offers its products to a diverse group of more than 800 customers in over 60 countries worldwide. Dedicated to “Giving Innovators Their Edge,” we also collaborate with manufacturers on custom solutions to specific needs.



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