Kraton® Isoprene Rubber

Kraton isoprene rubbers (IR) are high molecular weight, anionically polymerized polyisoprene that can be processed in the same way as a natural rubber, including vulcanization. They combine the key qualities of natural rubber such as good mechanical properties and hysteresis with superior features such as high purity, excellent clarity, good flow, low gel content, no nitrosamines, and no natural rubber proteins. Kraton IR polymers are available as bales of rubber or as a latex. Use of IR polymers is beneficial for the production of gloves, medical products, adhesives, tackifiers, paints, coatings, and photoresistors.

Kraton IR Selector

Use the dropdown to select your region and click on the arrows to sort the data. Download the Adobe Acrobat Reader. To browse a wider range of Kraton products, visit the Product Selector

Grade	Structure	% Styrene	Hardness	% Diblock	% Oil	Solution Viscosity	Melt Flow	Data Doc	MSDS
IR-305	IR	0	-	-	0	-	-		
IR-307	IR	0	-	-	0	-	-		
IR-307	IR	1	-	-	1	-	-		-
IR-309	IR	0	-	-	0	-	-		
IR-310	IR	0	-	-	0	-	-		

Properties Legend

Property	Units
%Styrene	wt%
Hardness	Shore A
%Diblock	wt%
%Oil	wt%
Solution Viscosity	Pa.s @ 25% in Toluene @ 25C
Melt Flow	grams/10 min @ 200C, 5 kg

K0020 Global Nov. 2003	Kraton® IR-307 polymer	Data Document

Description

Kraton® IR-307 polymer is a solution polymerised polyisoprene with a high cis-1,4 content. It has a high molecular weight as indicated by its limiting viscosity number of 7.75 dl/g.

A non-staining stabiliser is added at the typical value of 0.1%.

Kraton IR-307 polymer is used as a replacement for natural rubber in a wide range of compounds, offering advantages of light colour, uniformity and low levels of impurities. Its good flow characteristics produce improvements in mixing and moulding behaviour. It is used for food and pharmaceutical packaging and seals, baby bottle teats and health care, adhesives, chemical derivatives of rubbers and very light coloured or transparent articles.

Kraton IR-307 polymer is manufactured to the highest standards but special requirements apply to certain sensitive applications such as food contact and pharmaceuticals. Reference should always be made to local legislation regulating these applications.

The following shows the compound recipe for the preparation of the vulcanised test pieces used for the measurement of the specified mechanical performances:

Test formulations (ISO 2303)

	Parts by mass
Polymer	100.0
IRB7 industry reference oil furnace carbon black	35.0
Zinc Oxide	5.0
Sulphur	2.25
Stearic Acid	2.0
N-tert-butyl-2-benzothiazile sulphenaminde (TBBS)	0.7

Sales Specifications

Property	Test Method	Units	Sales Specification Range
Raw polymer			
Cis-1,4 content	KM32	%	≥90
Volatile matter	ASTM D5668	%mass	≤0.5
Ash	ASTM D5667	%mass	≤0.1
Stabiliser	KM31	% mass	0.06 - 0.1
Limiting viscosity number	KM33	dl/g	6.5 - 9.0
Mooney viscosity [a]	ASTM D1646	MU	

[a] Data not available for this grade which is specified by limiting viscosity number

Typical Properties (These are typical values and may not routinely be measured on finished product)

Property	Test Method	Units	Typical Value
Test compound			
Tensile strength [b]	ISO 2393/ISO 37	MPa	≥21.6
Elongation at break [b]	ISO 2393/ISO 37	%	≥428
Modulus 300% [b]	ISO 2393/ISO 37	Mpa	8.6 - 13.5

[b] Cure:40mins at 135 ºC

Packaging

Kraton IR-307 polymer is supplied in bales weighing ca. 25kg. Bales are wrapped in 80 micron polyethylene film. Thirty bales (nominal 1 MT) are packed in a wooden crate (Flotainer).

Storage

Kraton IR-307 polymer should be stored in an adequately ventilated area where it will no be subjected to sunlight, extreme temperatures or sources of ignition. Under correct conditions IR-307 should have a storage life of at least two years from the date of production.

End Use Requirements

If the finished article is intended for use in food contact and packaging applications, toys, or human contact areas, manufacturers of the final product should observe all relevant regulations. Some of these regulations require tests to be carried out on the final product, e.g. migration. These are the responsibility of the final product manufacturer.
Information on the food packaging clearances of individual products is available from Kraton Polymers.

Medical, Healthcare and Cosmetic Applications and Trademark Usage

Kraton Polymers products should not be used in any devices or materials intended for implantation in the human body as defined by the U.S. Food and Drug Administration under 21 CFR 812.3(d) and 21 CFR 860.3(d).
Kraton Polymers products may, in certain circumstances, be used in the following products or applications with prior written approval for each specific product or application:
(a) Cosmetics (exclusive of packaging or delivery applications).
(b) Drugs and other Pharmaceuticals (exclusive of packaging or delivery applications).
Kraton Polymers trade names, trademarks, logos or other similar identifying characteristics should not be used in the manufature, sale, or promotion of cosmetics, drugs, and pharmaceutical products or other medical/healthcare applications or materials.
Kraton Polymers has no specific expertise in these markets and applications, and does not intend to perform testing, clinical studies or other investigations of the suitability of its products for specific applications.
Each customer or user of Kraton Polymers products is solely responsible for determining the suitability of the materials it selets for the intended purpose and acknowledges that it has not relied on any representations of Kraton Polymers regarding suitability for use in its intended cosmetics, drugs, pharmaceutical products or materials.
Please contact your Kraton Polymers Sales Representative for more details before using our products in these specific applications.

Safety and Handling Precautions

Read the Safety Data Sheet carefully and thoroughly before beginning any work. Additional information relating to the health, safety, storage, handling and processing of Kraton Polymers products can be found in "Health and Safety Aspects of Kraton D and Kraton G Polymers" (Document K0155), available from your local Sales Representative or the company website. Kraton Polymers also recommends that customers or users consult other sources of safety information, for example, the current edition of the "Code of Practice on the Toxicity and Safe Handling of Rubber Chemicals," British Rubber Manufacturers Association Limited.
Kraton Polymers products and compounds can accumulate electrostatic charges when rubbed, chafed or abraded. Processing and storage equipment for use with Kraton Polymers products should provide a means of dissipating any charges that may develop.
When processing Kraton Polymers products, maintain a fire watch if the material reaches 225°C (437°F) for Kraton IR and Kraton D (polymers and compounds), and 280°C (536°F) for Kraton G (polymers and compounds). The temperatures listed above are indicated only for safety reasons (risk of fire and product degradation) and are not necessarily recommended for processing. Degradation of the polymer (polymer breakdown) will start at lower temperatures depending on the specific processing conditions. Therefore, operating below these temperatures does not guarantee the absence of product degradation.
Kraton Polymers products (the neat resin or the base product) are high molecular weight polymers which are non-toxic and biologically inactive.

Warranty

The information contained in this publication is, to the best of Kraton Polymers' knowledge, true and accurate, but any recommendations or suggestions that may be made are without guarantee or warranty of any kind whatsoever, since the manufacturing conditions to which Kraton Polymers' products will be subject are beyond Kraton Polymers' control. Customers of Kraton Polymers must make their own assessment to determine the suitability of a Kraton Polymers product for a particular purpose. Further, nothing contained herein shall be construed as a recommendation to use any Kraton Polymers product in conflict with existing patents of Kraton Polymers or any third party. All products purchased from or supplied by Kraton Polymers are subject to the terms and conditions of sale set out in the applicable contract, order acknowledgement and/or bill of lading. Kraton Polymers warrants only that its products will meet the specifications designated in any such contract, order acknowledgement or bill of lading.
Kraton POLYMERS MAKES NO OTHER WARRANTIES REGARDING ITS PRODUCTS, WHETHER OF FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR OTHERWISE, AND NONE SHALL BE IMPLIED. FURTHER, Kraton POLYMERS MAKES NO REPRESENTATIONS AND ASSUMES NO RESPONSIBILITY WHATSOEVER WITH RESPECT TO FREEDOM FROM INFRINGEMENT OF ANY PATENT AND/OR COPYRIGHT RESULTING FROM ITS CUSTOMERS' USE OF Kraton POLYMERS' PRODUCTS OR INFORMATION.

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In South America		Australia	+61-41-937-5055
Fax:	+55-(0)19-3874-7275	Or contact your local Kraton Polymers Representative **Visit us at www.kraton.com** **Email info@kraton.com**	

DDa-03E
IR-307 polymer
Nov. 2003

K0283 Global Nov. 2003	Kraton® IR-307 non-food polymer	Data Document

Description

Kraton® IR-307 non-food polymer is a solution polymerised polyisoprene with a high cis-1,4 content. It has a high molecular weight as indicated by its limiting viscosity number of 7.75 dl/g. It contains up to 0.5% of a non-staining naphtenic oil covered by registry number CAS: 64741-96-4 and EINECS: 2650976. The oil is classed as non-hazardous, but is not approved for food contact applications.

A non-staining stabiliser is added at the typical value of 0.1%.

Kraton IR-307 non-food polymer is used as a replacement for natural rubber in a wide range of compounds, offering advantages of light colour and uniformity. Its good flow characteristics produce improvements in mixing and moulding behaviour, for compression as well as injection moulding. It is used for very light coloured, translucent or transparent industrial articles, such as shoe sole applications.

The following shows the compound recipe for the preparation of the vulcanised test pieces used for the measurement of the specified mechanical performances:

Test formulations (ISO 2303)

	Parts by mass
Polymer	100.0
IRB7 industry reference oil furnace carbon black	35.0
Zinc Oxide	5.0
Sulphur	2.25
Stearic Acid	2.0
N-tert-butyl-2-benzothiazile sulphenaminde (TBBS)	0.7

Sales Specifications

Property	Test Method	Units	Sales Specification Range
Raw polymer			
Oil [a]	BAM 905	%mass	≤0.5
Cis-1,4 content	KM32	%	≥89.5
Volatile matter	ASTM D5668	%mass	≤0.7
Ash	ASTM D5667	%mass	≤0.15
Stabiliser	KM31	% mass	0.05 - 0.3
Limiting viscosity number	KM33	dl/g	6.3 - 9.2
Mooney viscosity [b]	ASTM D1646	MU	

[a] This grade is not suitable for food packaging or food contact applications

[b] Data not available for this grade which is specified by limiting viscosity number

Typical Properties (These are typical values and may not routinely be measured on finished product)

Property	Test Method	Units	Typical Value
Test compound			
Tensile strength [c]	ISO 2393/ISO 37	MPa	≥19.6
Elongation at break [c]	ISO 2393/ISO 37	%	≥428
Modulus 300% [c]	ISO 2393/ISO 37	Mpa	8.0 - 13.5

[c] Cure:40mins at 135°C

Packaging

Kraton IR-307 non-food polymer is supplied in bales weighing ca. 34kg. Bales are wrapped in 80 micron polyethylene film. Thirty bales (nominal 1 MT) are packed in a wooden crate (Flotainer).

Storage

Kraton IR-307 non-food polymer should be stored in an adequately ventilated area where it will no be subjected to sunlight, extreme temperatures or sources of ignition. Under correct conditions IR-307 non-food polymer should have a storage life of at least two years from the date of production.

End Use Requirements

If the finished article is intended for use in food contact and packaging applications, toys, or human contact areas, manufacturers of the final product should observe all relevant regulations. Some of these regulations require tests to be carried out on the final product, e.g. migration. These are the responsibility of the final product manufacturer.
Information on the food packaging clearances of individual products is available from Kraton Polymers.

Medical, Healthcare and Cosmetic Applications and Trademark Usage

Kraton Polymers' products should not be used in any devices or materials intended for implantation in the human body as defined by the U.S. Food and Drug Administration under 21 CFR 812.3(d) and 21 CFR 860.3(d).
Kraton Polymers' products may, in certain circumstances, be used in the following products or applications with prior written approval for each specific product or application:
a. Cosmetics (exclusive of packaging or delivery applications).
b. Drugs and other Pharmaceuticals (exclusive of packaging or delivery applications).
Kraton Polymers' trade names, trademarks, logos or other similar identifying characteristics should not be used in the manufacture, sale, or promotion of cosmetics, drugs, and pharmaceutical products or other medical/healthcare applications or materials.
Kraton Polymers has no specific expertise in these markets and applications, and does not intend to perform testing, clinical studies or other investigations of the suitability of its products for specific applications. Each customer or user of Kraton Polymers' products is solely responsible for determining the suitability of the materials it selects for the intended purpose and acknowledges that it has not relied on any representations of Kraton Polymers regarding suitability for use in its intended cosmetics, drugs, pharmaceutical products or materials.
Please contact your Kraton Polymers Sales Representative for more details before using our products in these specific applications.

Safety and Handling Precautions

Read the Material Safety Data Sheet for Kraton Polymers' products carefully and thoroughly before beginning any work with such products. Additional information relating to the health, safety, storage, handling and processing of Kraton Polymers' products can be found in the Kraton Polymer HSE Fact Sheet (K0155), available from your local Kraton Polymers Sales Representative. Kraton Polymers also recommends that customers or users consult other sources of safety information, for example, the current edition of the "Code of Practice on the Toxicity and Safe Handling of Rubber Chemicals," British Rubber Manufacturers Association Limited (www.brma.co.uk).
Kraton Polymers products' and compounds can accumulate electrostatic charges when rubbed, chafed or abraded. Processing and storage equipment for use with Kraton Polymers' products should provide a means of dissipating any charges that may develop.
When processing Kraton Polymers' products, maintain a fire watch if the material reaches 225°C (437°F) for Kraton IR and Kraton D (polymers and compounds), and 280°C (536°F) for Kraton G (polymers and compounds). The temperatures listed above are indicated only for safety reasons (risk of fire and product degradation) and are not necessarily recommended for processing. Degradation of the polymer (polymer breakdown) will start at lower temperatures depending on the specific processing conditions. Therefore, operating below these temperatures does not guarantee the absence of product degradation.
Kraton Polymers' products (the neat resin or the base product) are high molecular weight polymers which by all accounts are non-toxic and biologically inactive.

Warranty

The information contained in this publication is, to the best of Kraton Polymers' knowledge, true and accurate, but any recommendations or suggestions that may be made are without guarantee or warranty of any kind whatsoever, since the manufacturing conditions to which Kraton Polymers' products will be subject are beyond Kraton Polymers' control. Customers of Kraton Polymers must make their own assessment to determine the suitability of a Kraton Polymers product for a particular purpose. Further, nothing contained herein shall be construed as a recommendation to use any Kraton Polymers product in conflict with existing patents of Kraton Polymers or any third party. All products purchased from or supplied by Kraton Polymers are subject to the terms and conditions of sale set out in the applicable contract, order acknowledgement and/or bill of lading. Kraton Polymers warrants only that its products will meet the specifications designated in any such contract, order acknowledgement or bill of lading.
Kraton POLYMERS MAKES NO OTHER WARRANTIES REGARDING ITS PRODUCTS, WHETHER OF FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR OTHERWISE, AND NONE SHALL BE IMPLIED. FURTHER, Kraton POLYMERS MAKES NO REPRESENTATIONS AND ASSUMES NO RESPONSIBILITY WHATSOEVER WITH RESPECT TO FREEDOM FROM INFRINGEMENT OF ANY PATENT AND/OR COPYRIGHT RESULTING FROM ITS CUSTOMERS' USE OF Kraton POLYMERS' PRODUCTS OR INFORMATION.

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In South America		Australia	+61-41-937-5055
Fax:	+55-(0)19-3874-7275	Or contact your local Kraton Polymers Representitive	
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		Email info@kraton.com	

DDa-03E
IR-307 non-food polymer
Nov. 2003

K0022 Global Nov. 2003	KRATON® IR-310 polymer	Data Document

Description

KRATON® IR-310 polymer is a solution polymerised polyisoprene with a high cis-1,4 content. It has a high molecular weight as indicated by its limiting viscosity number of 8.0 dl/g.

A non-staining stabiliser is added at the typical value of 0.15%.

KRATON IR-310 polymer is an easy-processing version of KRATON IR-307 polymer.

KRATON IR-310 polymer is used as a replacement for natural rubber in a wide range of compounds, offering advantages of light colour, uniformity and low levels of impurities. Its good flow characteristics produce improvements in mixing and moulding behaviour. It is used for food and pharmaceutical packaging and seals, baby bottle teats and health care, adhesives, chemical derivatives of rubbers, and very light coloured or transparent articles.

KRATON IR-310 polymer is manufactured to the highest standards but special requirements apply to certain sensitive applications such as food contact and pharmaceuticals. Reference should always be made to local legislation regulating these applications.

The following shows the compound recipe for the preparation of the vulcanised test pieces used for the measurement of the specified mechanical performances:

Test formulations (ISO 2303)

	Parts by mass
Polymer	100.0
IRB7 industry reference oil furnace carbon black	35.0
Zinc Oxide	5.0
Sulphur	2.25
Stearic Acid	2.0
N-tert-butyl-2-benzothiazile sulphenaminde (TBBS)	0.7

Sales Specifications

Property	Test Method	Units	Sales Specification Range
Raw polymer			
Cis-1,4 content	KM32	%	≥90
Volatile matter	ASTM D5668	%mass	≤0.5
Ash	ASTM D5667	%mass	≤0.1
Stabiliser	KM31	% mass	0.1 - 0.3
Limiting viscosity number	KM33	dl/g	6.5 - 9.5
Mooney viscosity	ASTM D1646	MU	40 - 50
Test compound			
Tensile strength [a]	ISO 2393 / ISO 37	Mpa	≥21.6
Elongation at break [a]	ISO 2393 / ISO 37	%	≥428
Modulus 300% [a]	ISO 2393 / ISO 37	Mpa	7.3 - 12.2

[a] Cure:40mins at 135ºC

Packaging

KRATON IR-310 polymer is supplied in bales weighing ca. 34kg. Bales are wrapped in 80 micron polyethylene film. Thirty bales (nominal 1 MT) are packed in a wooden crate (Flotainer).

Storage
KRATON IR-310 polymer should be stored in an adequately ventilated area where it will no be subjected to sunlight, extreme temperatures or sources of ignition. Under correct conditions IR-310 should have a storage life of at least two years from the date of production.

End Use Requirements

If the finished article is intended for use in food contact applications, toys, or human contact areas, manufacturers of the final product should observe all relevant regulations. Detailed information is available from KRATON Polymers.
For food packaging, manufacturers of the final product should ensure that all ingredients used comply with applicable regulations. Some of these regulations require tests to be carried out on the final product, e.g. migration. These are the responsibility of the final product manufacturer.

Restrictions on Medical/Healthcare Applications

Products or compounds made from KRATON Polymers' products shall not be used in any of the following applications: (a) cosmetics, (b) drugs and other pharmaceuticals, and (c) Class II and Class III Medical Devices, as defined in 21 CFR 860.3 (hereinafter collectively referred to as "Medical/Healthcare Applications"). KRATON Polymers requires that it give its prior written approval before its products are used in such Medical/Healthcare Applications. Please contact your KRATON Polymers Sales Representative for more details before using our products in these specific applications.
KRATON POLYMERS HAS NO SPECIFIC EXPERTISE IN THE MEDICAL/HEALTHCARE MARKET OR MEDICAL/HEALTHCARE APPLICATIONS AND DOES NOT INTEND TO PERFORM TESTING, CLINICAL STUDIES OR OTHER INVESTIGATIONS OF THE SUITABILITY OF ITS PRODUCTS FOR THESE SPECIFIC APPLICATIONS. KRATON POLYMERS MAKES NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE (INCLUDING MEDICAL/HEALTHCARE APPLICATIONS) FOR ITS PRODUCTS.
EACH CUSTOMER OR USER OF KRATON POLYMERS' PRODUCTS IS SOLELY RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE MATERIALS IT SELECTS FOR THE INTENDED PURPOSE. FOR MEDICAL/HEALTHCARE APPLICATIONS, EACH CUSTOMER OR USER MUST CONDUCT ITS OWN STUDIES, REGISTRATIONS, AND OTHER RELATED ACTIVITIES TO ESTABLISH THE SAFETY AND EFFICACY OF ITS PRODUCTS.
Do not use KRATON Polymers' tradenames, trademarks, logos or other similar identifying characteristics for the manufacture, sale or promotion of products intended for Medical/Healthcare Applications.

Safety and Handling Precautions

Read the Material Safety Data Sheet for KRATON Polymers' products carefully and thoroughly before beginning any work with such products. Additional information relating to the health, safety, storage, handling and processing of KRATON Polymers' products can be found in the KRATON Polymer HSE Fact Sheet (K0155), available from your local KRATON Polymers Sales Representative. KRATON Polymers also recommends that customers or users consult other sources of safety information, for example, the current edition of the "Code of Practice on the Toxicity and Safe Handling of Rubber Chemicals," British Rubber Manufacturers Association Limited (www.brma.co.uk).
KRATON Polymers' products and compounds can accumulate electrostatic charges when rubbed, chafed or abraded. Processing and storage equipment for use with KRATON Polymers' products should provide a means of dissipating any charges that may develop.

When processing KRATON Polymers' products, maintain a fire watch if the material reaches 225°C (437°F) for KRATON IR and KRATON D (polymers and compounds), and 280°C (536°F) for KRATON G (polymers and compounds). The temperatures listed above are indicated only for safety reasons (risk of fire and product degradation) and are not necessarily recommended for processing. Degradation of the polymer (polymer breakdown) will start at lower temperatures depending on the specific processing conditions. Therefore, operating below these temperatures does not guarantee the absence of product degradation.

KRATON Polymers' products (the neat resin or the base product) are high molecular weight polymers which by all accounts are non-toxic and biologically inactive.

Warranty

The information contained in this publication is, to the best of KRATON Polymers' knowledge, true and accurate, but any recommendations or suggestions that may be made are without guarantee, since the conditions of use and storage are beyond KRATON Polymers' control. The customer understands that it shall make its own assessment to determine the suitability of a KRATON Polymers' product for a particular purpose. Further, nothing contained herein shall be construed as a recommendation to use any KRATON Polymers product in conflict with existing patents. All products purchased from or supplied by KRATON Polymers are subject to terms and conditions set out in the applicable contract, order acknowledgement and/or bill of lading. KRATON Polymers warrants only that its products will meet those specifications designated therein.
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DDa-03E
IR-310 polymer
Nov. 2003