

A Guide to Hydrocarbon Resins





At Hanwha, we provide product and service solutions to customers in a wide range of industries. From aerospace and mechatronics to chemicals and materials to leisure and lifestyle, we embrace innovation and pursue opportunities to build a better future with a higher standard of living and quality of life for everyone.

One of the markets we target to achieve this goal is the chemical and materials industry. We transform raw and basic compounds into advanced materials, such as hydrocarbon resins, fuels, and other high-value-added products. Currently, we're working on completing our large-scale expansion project that is aimed toward increasing our ability to produce resins. Upon completion, this expansion will allow us to better compete in this business and deliver products that help our customers grow.

The following eBook highlights one of our core chemical products—hydrocarbon resins. These materials are utilized in the production of adhesives, which are then employed in products and applications across a diverse set of industries. Additionally, hydrogenated resins are known to improve the quality and performance capabilities of the products that are manufactured with their inclusion.

Properties and Features of

Hydrocarbon Resins



Tackifiers are low-weight molecular compounds added to the formulations of adhesives to increase tack and peel strength and decrease shear strength. Tack is a measure of the stickiness of an adhesive—i.e., how well an adhesive sticks to the application surface. While some adhesives lack the tack to form strong adhesive bonds on their own, the addition of hydrocarbon resin or another tackifier can improve their stickiness. Peel indicates how easily an adhesive can be removed from the application surface. It is a measure of the force needed to break the bond between the adhesive and the surface with a specific peel angle and direction, application pressure, and rest time.

Hydrocarbon resins are one of the most commonly used types of tackifiers. They are produced from petroleum feedstock. Compared to those made from natural feedstock, they may have a slightly small compatibility range with base polymers. However, when hydrogenated, they can offer similar or better performance.

In addition to tack and strength, the hydrocarbon resin chosen may affect other properties of the adhesive. As such, it is important to select it carefully. Some of the key features to consider are:

Color

Hydrocarbon resins come in many different colors, from brown to yellow to colorless, in various intensities, shades, and hues. The color of a particular hydrocarbon resin depends on the color of the petroleum feedstocks and the amount of hydrogenation it undergoes. While the color may not be important for some applications (e.g., in applications where the adhesive will not be seen), it may be important for other applications (e.g., in medical applications that want to suggest cleanliness).

Thermal stability

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Softening point

Hydrocarbon resins undergo polymerization to increase their softening points. They can be made with a variety of softening points to suit different adhesive applications.

Molecular weight

Hydrocarbon resins generally have low molecular weight. However, the exact weight depends on their formulation. It can range from 420 g/mol to 850 g/mol.

Hanwha has developed a colorless and transparent hydrogenated hydrocarbon resin (H-HCR) with low odor, excellent thermal stability, and well-balanced adhesive properties.

The Importance of

Compatibility in Hydrocarbon Resins

The performance of an adhesive compound is highly dependent on the compatibility between the tackifier and the base polymer. In most cases, a compatible tackifier will lead to an adhesive that demonstrates the desired tack and peel properties, while an incompatible tackifier will lead to an adhesive that does not demonstrate the desired tack and peel properties.

The simplest way to determine whether a particular tackifier and base polymer are compatible is through trial and error—i.e., combining them together and seeing the resulting properties. However, advanced analysis techniques can offer more accurate results. These methods keep in mind molecular weight, solubility, and other mechanical and chemical properties of the materials.

Hanwha's hydrocarbon resins for adhesive products can be dropped into various formulas from the top-producing companies. Our product is compatible with other industry-standard resins for similar applications.



FDA and EU Approved

Hydrocarbon Resin Products at Hanwha

At Hanwha, we are committed to achieving and maintaining excellence in all of our products, especially those for customers in the food processing and packaging industries. Our products for these industries, including our hydrocarbon resins, adhere to all relevant Food and Drug Administration (FDA) and European Union (EU) standards. They undergo rigorous toxicological testing to ensure they do not cause acute toxicity, skin corrosion/irritation, eye irritation, or skin sensitization.

Our ongoing list of FDA and EU approvals includes:

FDA

- 21 CFR 175.105: Adhesives
- 21 CFR 175.125: Pressure-sensitive adhesives
- 21 CFR 176.180: Components of paper and paperboard in contact with dry food
- 21 CFR 175.300: Resinous and polymeric coatings
- 21 CFR 175.320: Resinous and polymeric coatings for polyolefin films
- 21 CFR 176.170: Components of paper and paperboard in contact with aqueous and fatty foods
- 21 CFR 177.1210: Closures with sealing gaskets for food containers
- 21 CFR 177.1520: Olefin polymers
- 21 CFR 177.2600: Rubber articles intended for repeated use
- 21 CFR 178.3800: Preservatives for wood

EU

- EC 1935/2004: Food contact materials – regulation
- EU 10/2011: Plastic materials and articles intended to come into contact with food as regards information in the supply chain
- 94/62/EC EU: Packaging Directive

Typical Applications of Hydrocarbon Resins

Hydrocarbon resins are found in the adhesives used in a variety of industries and applications. From bookbinding to non-woven and food packaging to woodworking, they ensure adhesives have the necessary properties to stick and unstick properly.

Hanwha hydrocarbon resins offer a wide compatibility range; they can be dropped in against many similar resins in different products from industry-leading adhesive manufacturers. Below, we cover some of their most common applications.



In the *food packaging industry*, our hydrocarbon resins are integrated into adhesives for various food packaging needs. They are used in fast-setting adhesives for corrugated packaging as well as clear and odorless adhesives for frozen meal packaging.

In the ***non-woven product industry***, our hydrocarbon resins are added to adhesives for a wide range of hygienic, non-woven products. They are used in adhesives for diapers, sanitary napkins, and more.



In the ***pressure-sensitive adhesive industry***, our hydrocarbon resins are commonly used in the production of tapes and other similar PSA products.

In the ***bookbinding industry***, our hydrocarbon resins help ensure the formation of a strong adhesive bond between the book pages and book cover.



In the ***road marking industry***, our hydrocarbon resins are combined into hot-applied thermoplastic road marking materials to ensure pavement markings are durable and visible.

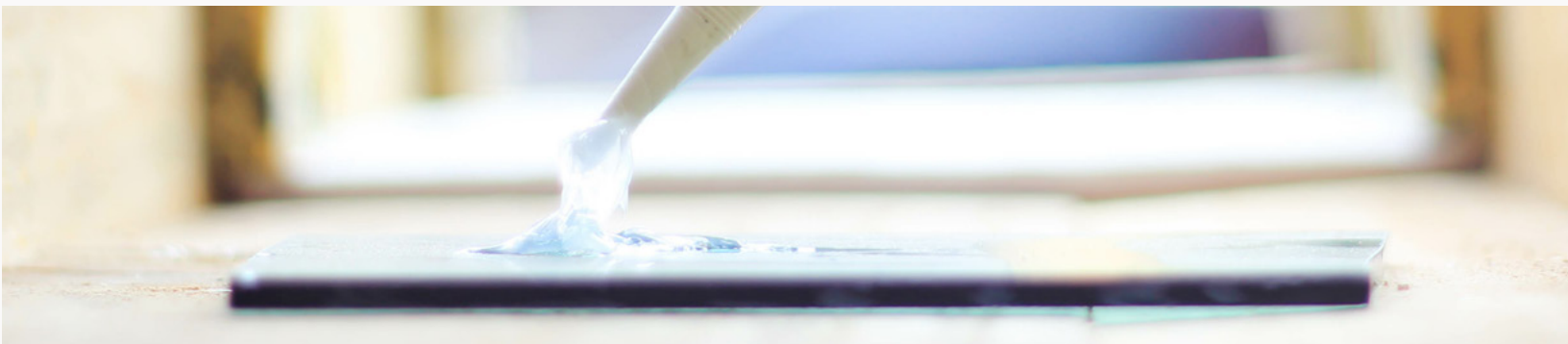
The use of hydrocarbon resins in adhesives is also gaining traction in many other industries besides the abovementioned due to the compounds' color, low odor, and customizability. The latter is particularly important as more and more industries call for application-specific adhesives. It allows users to tailor softening point, thermostability, compatibility range, and other properties to their exact needs. For example, woodworkers can modify adhesive formulations to achieve specific processability properties and ensure reliable product quality.

Partner with

Hanwha for Your Hydrocarbon Resin Needs

Hydrocarbon resins are a key component in adhesives. By providing them with the proper tack and peel properties, they ensure the formation of the right type of adhesive bond. For this reason, it is vital to choose the correct type of HCR from a reliable supplier. Hanwha is committed to this market and can deliver the product you need.

Need hydrocarbon resins for your adhesive product? Hanwha has what you need. We provide quality hydrocarbon resins that can be easily integrated in various adhesive formulations. **Contact us today** to learn more about our products and services or discuss your needs with one of our experts.



About Hanwha

“Across the entire range of our businesses, we deliver energy to customers, partners, and communities now and for generations to come to make our future more vibrant and sustainable.”

Contact Us

