KGA ENTERPRISES

Excellence is our Standard...

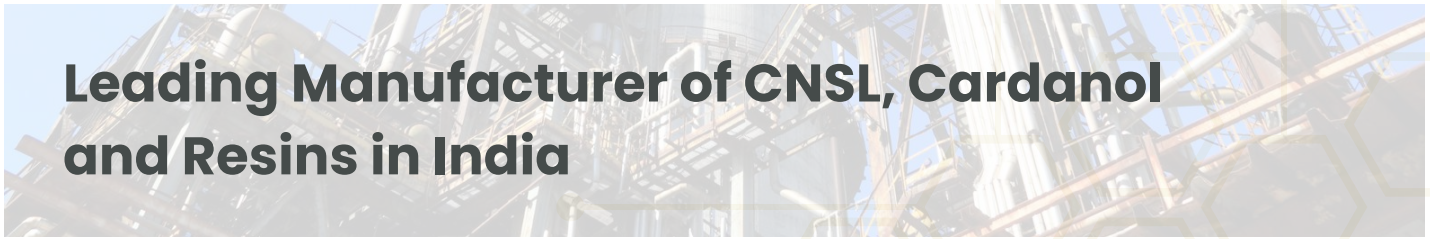
PRODUCT BROCHURE

About Company

Welcome to KGA Enterprises. We are a leading manufacturer and supplier of **CNSL (Cashew Nut Shell Liquid)** and its derivatives including **Cardanol, CNSL Resin**, and other chemical solutions catering to various industries such as coatings, adhesives, and laminates. Based in **Sirsa, Haryana, India,** our company is built on a strong foundation of innovation, research, and commitment to excellence.

We pride ourselves on offering top-tier products, a fast and efficient response to customer needs, and unbeatable prices. Our team is dedicated to continuous research and development, focusing on innovative CNSL-based solutions for advanced polymer materials. By leveraging our expertise, we aim to deliver high-performance products that meet the ever-evolving demands of the industry.

At KGA Enterprises, we believe in building lasting relationships with our clients by offering quality, value, and unparalleled service.



Our Mission

With a commitment to continuous innovation and research, we aim to meet the dynamic needs of industries worldwide, providing solutions that enhance performance and support long-term growth.

Our Vision

To lead by example, creating a positive impact on both the industry and the planet using technology and sustainable practices., and fostering long-term relationships based on trust, quality, and innovation.

Why KGA Enterprises?

Top-Quality Products

We are committed to delivering premium CNSL and chemical products, made with the latest technology and sustainable practices.

Scalable Volume & Flexibility

Whether you require small quantities or large-scale orders, we can accommodate any volume with efficiency with production capacity of 1,28,000 metric tons

Global Shipping

No matter your location, we offer dependable worldwide shipping. We deliver products that meet high standards, ensuring the right grade and specifications every time.

Advanced Packaging Solutions

Our packaging options include M.S. Drums (Mild Steel), and PVC Drums (Polyvinyl Chloride), ensuring optimal protection throughout the entire process.

We meet international standards for purity, performance, and safety

KGA offers unique chemical and physical properties that make it ideal for:

Epoxy Resin Systems | Friction Products | Adhesives & Sealants | Rubber Additives

Laminates & Varnishes | Corrosion-Resistant Coatings and more..

Our USP

Manufacturing Excellence

Our manufacturing plant is equipped with:

Advanced extraction and distillation units

On-site quality control and R&D laboratory

Automated packaging and storage systems

Environmentally conscious waste management

We maintain stringent process controls at every stage—from raw material sourcing to final dispatch, to ensure that our customers receive products that meets client specifications and international benchmarks.

Our products are just not a product— it's a step toward a greener future.

Sustainability Commitment

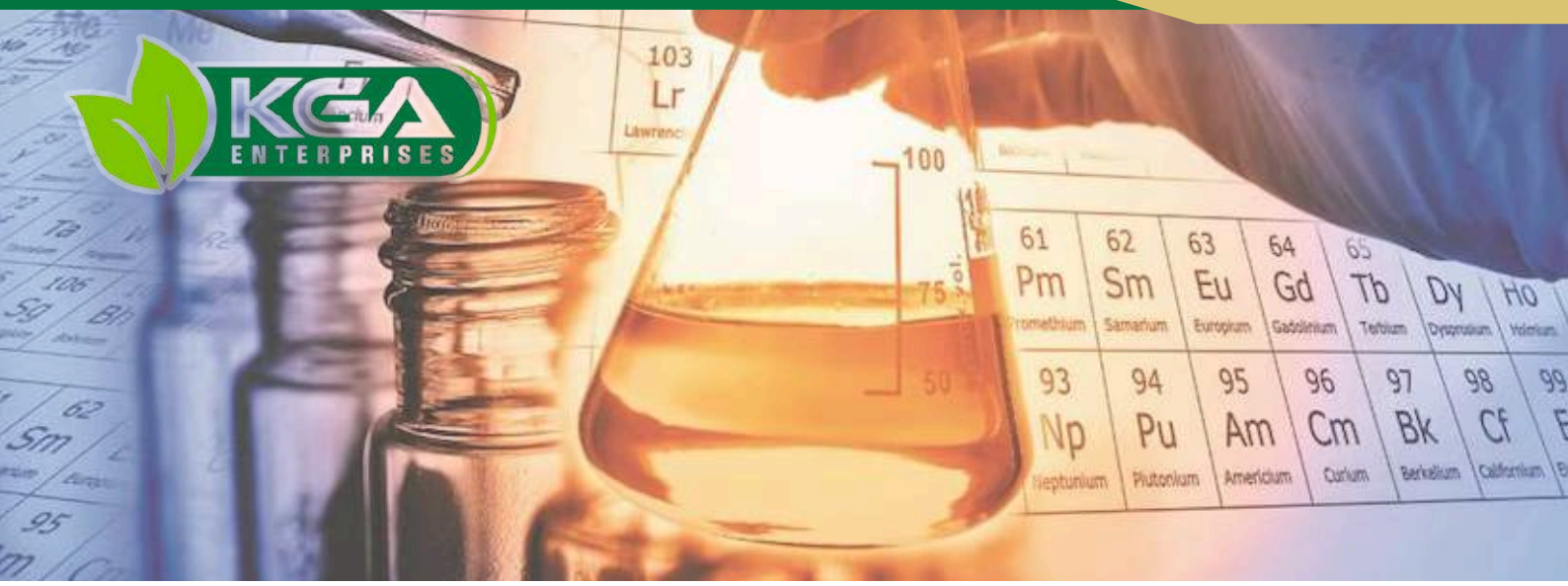
By using agricultural waste from cashew processing, we reduce environmental impact while promoting circular economy practices. Our operations are designed with sustainability at the core, including:

Renewable raw material sourcing

Reduced carbon emissions

Waste-to-energy initiatives

Water and energy efficiency protocols



Compliance

Laboratory Setup

The KGA Enterprises Quality & Application Lab is equipped to conduct in-depth physicochemical analysis and application-based testing of bio-based materials like Cardanol Residue, Cardanol, and CNSL derivatives.

Lab Testing

Testing is available to evaluate the consistency, suitability, and safety of CNSL, Cardanol Residue & Resins for your industrial applications.

Documentation & Reporting

All test results are recorded in Lab Test Logs and issued via Technical Data Sheets (TDS). Batch Certificates of Analysis (COA) are provided with dispatches.

R&D Support

With the right R&D lens, it can be custom-engineered into next-gen bio-phenolic materials across coatings, adhesives, plastics, and more.

Industries We Serve

Automotive & Transport | Electrical & Electronics | Paints & Coatings
Construction | Packaging | Marine & Offshore

Whether you're a manufacturer, distributor, or R&D innovator, we offer flexible supply solutions tailored to your industry needs.

Contact us today for a quote, technical data sheet, or product sample

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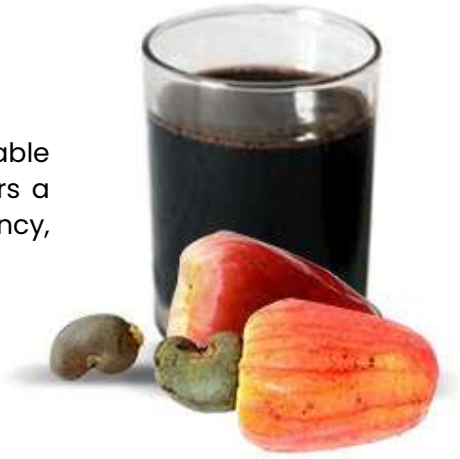
Factory: VPO Theri Baba Sawan Singh, Distt. Sirsa - 125060 (Haryana)
GSTIN: 06AGMPR7624P2ZI

Our Products

CNSL (Cashew Nut Shell Liquid)

Cashew Nut Shell Liquid (CNSL) is a naturally occurring, renewable phenolic compound extracted from the shell of cashew nuts. It offers a unique combination of sustainability, performance, and cost-efficiency, making it an essential raw material across various industries.

Used in coatings, adhesives, friction materials, laminates, rubber additives, and eco-friendly resins across multiple industries.



CNSL Resin

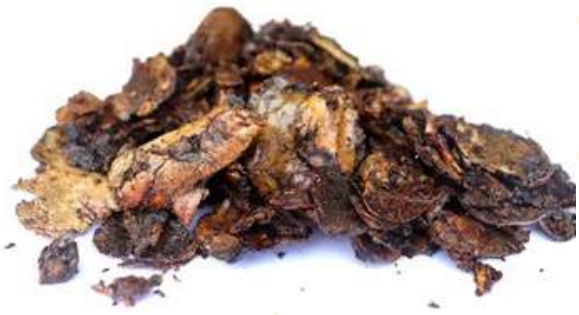
CNSL resin is derived from the natural Cashew Nut Shell Liquid, a phenolic compound rich in anacardic acid, cardanol, and cardol. These active components give CNSL resin its high heat resistance, excellent chemical resistance, and robust durability.

Used in protective coatings, adhesives, laminates, and insulation materials for its durability, flexibility, and chemical resistance.

Cashew Shell Cake

Cashew Shell Cake is made by transforming cashew shells, a waste product from cashew nut processing, into a valuable, eco-friendly resource.

Used as a high-calorific biomass fuel in industrial boilers, Renewable Energy Projects, Waste-to-Energy Systems.

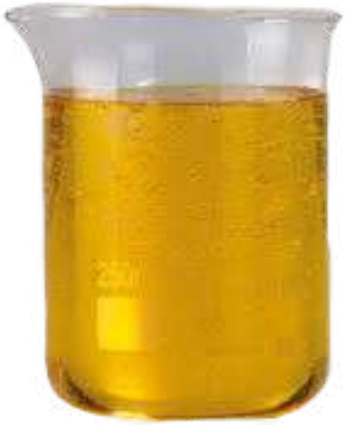


Our Products

Cardanol

Cardanol, derived from Cashew Nut Shell Liquid (CNSL), is a versatile, eco-friendly phenolic compound known for its exceptional chemical properties. As a bio-based material, Cardanol offers sustainable alternatives to petrochemical-based products, delivering superior performance while contributing to environmental preservation.

Used in epoxy resins, curing agents, friction materials, adhesives, polyurethane systems, electrical laminates, and UV-curable coatings for its durability and heat resistance.



Cardanol Residue

Cardanol Residue is the solid byproduct left after the distillation of Cardanol from Cashew Nut Shell Liquid (CNSL). Despite being a residue, it holds substantial value due to its unique chemical properties, offering versatile solutions across several industries.

Used as a biomass fuel for energy generation, an additive in friction materials like brake pads and clutch facings, and a modifier in road construction to enhance the durability of asphalt.

CNSL Derivatives, Cardanol, Resins and Other Eco-chemical Products

Revolutionary Products.
Engineered for Performance.

We are not following trends — we're setting them.

Backed by research, guided by innovation, and driven by a mission to redefine the role of renewable sector, we're proud to be part of a eco-chemical revolution that's just getting started.

At KGA Enterprises, we specialize in the development and supply of high-performance industrial chemicals derived from renewable natural sources — with a focus on Cashew Nut Shell Liquid (CNSL) derivatives. From functional resins and additives to tailored intermediates, our products are engineered for excellence in both application and environmental impact.

We serve a wide range of industries including paints and coatings, rubber, adhesives, foundry, laminates, and friction materials, delivering formulation-grade materials designed to meet global performance and compliance benchmarks.

Our Chemical Portfolio Includes:

- Cardanol (Technical & Distilled) – Phenolic compound for polymers, resins, and additives
- CNSL (Raw & Processed) – Versatile natural oil with reactivity for epoxy, phenolic, and alkyd systems
- Friction Binder Resins – Thermally stable resins for automotive and industrial friction components
- Surface-Active Agents & Modifiers – Derived from cashew shell compounds for coatings, lubricants, and dispersions
- Custom Formulations – Specialty CNSL-based solutions tailored to your needs

Connect With Us

We blend traditional knowledge with modern chemical engineering to help manufacturers around the world replace petrochemicals with renewable, high-performance alternatives. Whether you're developing a next-gen coating, improving resin heat resistance, or seeking an eco-alternative for phenolic inputs, we're ready to support your journey.

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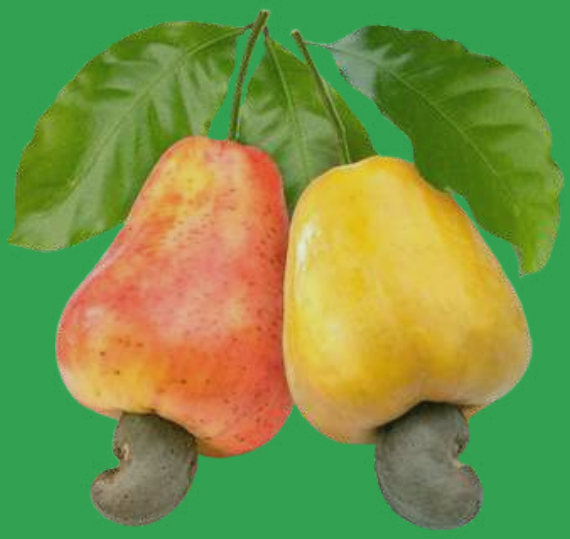
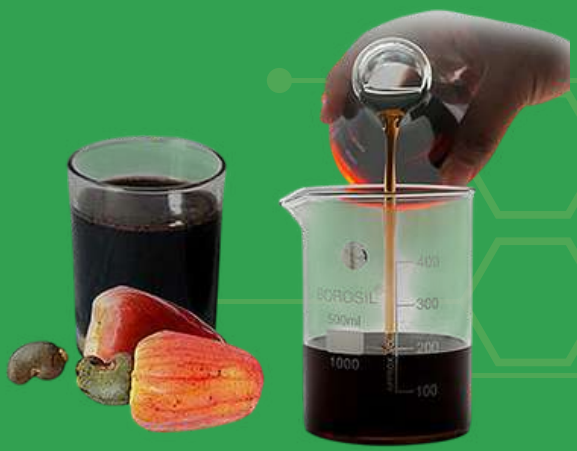
Discover the Power of Nature with CNSL



CNSL (Cashew Nut Shell Liquid)

CNSL is a naturally derived, eco-friendly byproduct of the cashew nut. Extracted from the shells of cashew nuts, CNSL is a versatile and sustainable solution used across multiple industries. Known for its unique chemical properties, CNSL is a key ingredient in advanced polymer materials, coatings, adhesives, and much more. Our CNSL is produced using sustainable practices, ensuring the highest quality product that is both environmentally friendly and effective.



Manufacturing CNSL

At **KGA Enterprises**, our expertise in manufacturing Cashew Nut Shell Liquid (CNSL) sets us apart as a niche in the industry. CNSL is a versatile and eco-friendly industrial raw material derived from cashew nut shells, offering a renewable source of phenolic compounds with diverse applications.

We focus on sustainable practices, leveraging advanced technology and efficient processes to deliver consistent quality. Every batch of CNSL produced at KGA Enterprises undergoes rigorous quality control to ensure it exceeds industry standards.

What is CNSL?

A by-product of the Cashew Industry

The cashew nut shell contains approximately **25-35% Cashew Nut Shell Liquid (CNSL)**, which accounts for nearly 67% of the total weight of the cashew nut. CNSL is a valuable by-product that is extracted during the process of separating the cashew kernel from the nut, making it an efficient use of the raw material while reducing waste.

Why Choose CNSL?

High Thermal and Chemical Stability: CNSL offers exceptional properties, such as high reactivity, water resistance, heat resistance, and antimicrobial characteristics. These qualities make it ideal for use in manufacturing high-performance products like resins, rubber, paints, and more.

Supports Industry-Specific Customization and Formulation Flexibility: CNSL's unique chemical composition allows it to be customized and formulated for a wide variety of industrial uses. It can be modified and blended with other materials to achieve the desired properties for specific applications, CNSL can be engineered to meet specific performance standards for industries ranging from automotive to construction, energy, and consumer goods.

Eco-Friendly Alternative: CNSL is a natural and safe alternative to many synthetic chemicals, with lower toxicity and a smaller environmental footprint. Its use helps reduce dependency on petrochemical-based products, promoting cleaner, greener manufacturing processes.

CNSL Properties

- **High Reactivity**
- **Thermal Stability**
- **High Viscosity**
- **Strong Bonding Ability**
- **Water Resistance**

Applications

Cashew Nut Shell Liquid (CNSL) possesses a range of unique properties that make it a valuable material for various industrial applications.

Polymer Industry

CNSL is a key ingredient in the production of high-performance phenolic resins used in automotive parts, electrical components, and more.

Friction Resistant Material

Ideal for use as a heat-resistant substance or as a cost-saving partial alternative for phenolic resin.

Adhesives and Sealants

CNSL is also used to create strong, durable adhesives and sealants that perform reliably in a range of industrial applications.

Coatings and Paints

With its excellent water resistance and durability, CNSL is a preferred option for eco-friendly paints and coatings, providing a sustainable alternative to traditional materials.

Rubber Industry

CNSL is used as a curing agent and plasticizer in rubber production, improving the durability and flexibility of rubber products.

Chemical Composition

- **Cardanol (80-90%)**: The primary active compound, a monomeric phenol with a long unsaturated hydrocarbon side chain. It imparts thermal stability, chemical resistance, and flexibility to materials.
- **Cardol (5-15%)**: A phenolic compound with conjugated double bonds that provide antioxidant properties and enhance the thermal stability of materials.
- **Anacardic Acid (2-5%)**: Contributes to the adhesion properties and anti-inflammatory activity of CNSL.
- **Fatty Acids and Hydrocarbons**: Include linoleic acid, oleic acid, and various hydrocarbons, enhancing the viscosity and processing properties of CNSL.

KGA ENTERPRISES

Specifications

Parameters	Specification
Specific Gravity @ 30°C	0.950 – 0.965
Viscosity @ 30°C	120 – 180 CPS
Acid value	Max 1
Ash Content	2.o Max
Polymerisation Time	15 Max

Key Benefits of Our CNSL

Pure, High-Quality CNSL

We provide CNSL that meets the highest quality standards, ensuring its suitability for even the most demanding applications.

Tailored Solutions

Whether you need bulk quantities or specialized grades of CNSL, we can meet your specific requirements with precision.

Our Production Capacity

10000 MT

Reliable Supply Chain

With our efficient production and logistics systems, we ensure that your orders are delivered on time, every time—anywhere in the world.

Biodegradable and Non-Toxic

Our product is safe for both human and environmental health, providing a natural alternative to harmful chemicals.

Contact us today for a quote, technical data sheet, or product sample

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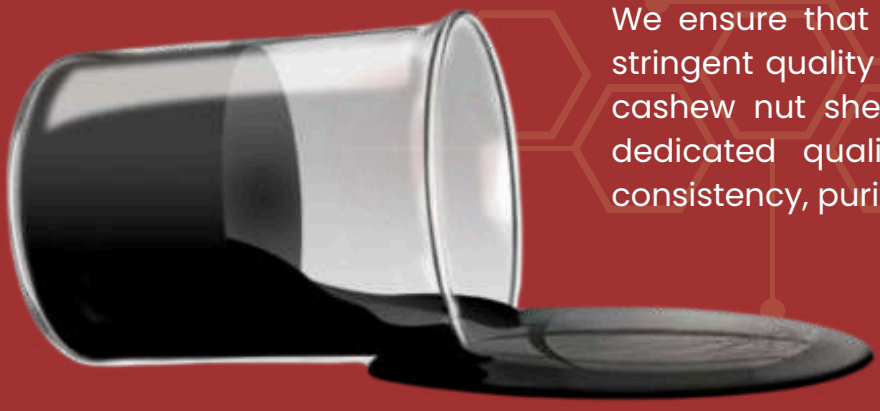
Sustainable, High-Performance

CNSL Resin (Cashew Nut Shell Liquid Resin)

We specialize in the production of high-quality Cashew Nut Shell Liquid (CNSL) resins. Derived from the cashew nut's outer shell, CNSL resins are an eco-friendly, sustainable alternative to petroleum-based resins. Our commitment to innovation and sustainability allows us to deliver premium products that meet the diverse needs of industries worldwide, including automotive, construction, electrical, and more.



Manufacturing CNSL Resin

The CNSL Resin is a viscous translucent resin ideal for surface coating applications that demand excellent film characteristics as well as great resistance to water and chemicals. As a result of its strong water and chemical resistance, CNSL Resin is extensively utilised as a in paint industry as raw material.

We ensure that every batch of CNSL resin meets stringent quality standards. From sourcing the raw cashew nut shells to the final resin product, our dedicated quality control processes guarantee consistency, purity, and reliability.

What is CNSL Resin?

A by-product of the Cashew Industry

CNSL resin is derived from the natural Cashew Nut Shell Liquid, a phenolic compound rich in anacardic acid, cardanol, and cardol. These active components give CNSL resin its high heat resistance, excellent chemical resistance, and robust durability. Unlike traditional synthetic resins, CNSL resin is biodegradable, non-toxic, and made from renewable resources, making it an environmentally friendly alternative to petroleum-based products.

CNSL (Cashew Nut Shell Liquid) resin manufacturing involves extracting the liquid from cashew nut shells, followed by processing and refining to create resins suitable for various applications, including coatings and laminates.

Why Choose CNSL Resin?

FILTRATION

POLYMERISATION

CNSL Resin

Superior Performance and Reliability: Our **CNSL resins** are engineered to deliver top-tier performance, offering outstanding chemical resistance, water repellency, and thermal stability. They are perfect for applications that require durability in harsh environments. CNSL resins provide excellent adhesion, bonding strength, and long-lasting performance in extreme temperatures and demanding conditions.

Versatility Across Multiple Industries: CNSL resins are incredibly versatile, making them suitable for a wide variety of applications. Whether you need high-performance coatings, reliable adhesives, durable rubber products, or innovative composites, CNSL resins deliver outstanding results across diverse industries. Our team works closely with clients to tailor the properties of CNSL resins to meet specific requirements.

Custom Tailored Solutions: We understand that every industry and project has unique needs. Our CNSL resins are customizable in terms of curing time, viscosity, chemical composition, and performance characteristics, providing you with a **bespoke solution** for your specific application. Our team of experts is always ready to provide personalized recommendations and product adjustments to ensure the best fit for your requirements.

CNSL Resin Properties

- **Strong Bonding and Durability**
- **Thermal Stability**
- **High Adhesion**
- **Chemical Resistance**
- **Excellent Electrical Insulation Properties**

Applications

Automotive Industry

CNSL resin is widely used in the automotive sector, especially in the manufacturing of brake pads, bumpers, and other high-performance components as it withstand high temperatures and its excellent durability.

Electrical Industry

CNSL resin is highly effective as an electrical insulator, making it ideal for use in transformers, capacitors, circuit boards, and other electrical components. Its high heat resistance and insulating properties ensure reliable performance in electrical systems.

Friction Resistant Material

Ideal for use as a heat-resistant substance or as a cost-saving partial alternative for phenolic resin.

Construction & Coatings

CNSL-based resins provide excellent adhesion, chemical resistance, and water repellency, making them perfect for exterior and interior coatings that need to withstand the elements.

Rubber Industry

CNSL is used as a curing agent and plasticizer in rubber production, improving the durability and flexibility of rubber products.

Agricultural Products

CNSL derivatives are utilized in the production of organic pesticides, fungicides, and insect repellents, offering an eco-friendly alternative to chemical-based crop protection.

Chemical Composition

- **Cardanol (70–90%)**: Main phenolic monomer providing flexibility, chemical resistance, and thermal stability.
- **Cardol (5–15%)**: Enhances crosslinking and rigidity.
- **Formaldehyde / Paraformaldehyde**: Used in thermosetting resins for crosslinking (novolac or resol types).
- **Epoxy compounds (optional)**: Improve strength, adhesion, and chemical resistance.
- **Anacardic Acid (1–5%)**: Sometimes present; contributes acidity but often removed in high-performance resins.

KGA ENTERPRISES

Specifications

Parameters	Specification
Specific Gravity @ 30°C	0.950 – 0.965
Viscosity @ 30°C	120 – 180 CPS
Acid value	Max 1
Ash Content	2.o Max
Polymerisation Time	15 Max

Key Benefits of Our CNSL Resin

Uncompromising Quality

We ensure that every batch of CNSL resin meets stringent quality standards. From sourcing the raw cashew nut shells to the final resin product, our dedicated quality control processes guarantee consistency, purity, and reliability.

Competitive Pricing

We provide high-quality CNSL resins at competitive prices, ensuring that you get the best value for your investment. We understand the importance of cost-effectiveness in business, which is why we strive to deliver the most affordable solutions without compromising on quality.

Global Distribution Network

Our extensive logistics network ensures that our CNSL resins reach clients worldwide with timely, reliable delivery. Whether you're located in North America, Europe, Asia, or any other region, we have the capability to serve your needs efficiently.

Our Production Capacity

31000 MT

Contact us today for a quote, technical data sheet, or product sample

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Fibrous Residues, A Sustainable, Eco-Friendly Alternative

Cashew Shell Cake

Cashew Shell Cake is a natural by-product derived from the cashew nut shell after the extraction of Cashew Nut Shell Liquid (CNSL). It is a nutrient-rich, fibrous material that holds a variety of benefits across industries. Traditionally considered waste, this by-product is gaining popularity due to its high calorific value, eco-friendly properties, and diverse range of applications.

What is Cashew Shell Cake?

Derived from the shells of cashews, this organic material is transformed into a dense, nutrient-rich cake, ideal for use in various industries. Cashew Shell Cake serves as an environmentally conscious alternative to synthetic materials and offers an innovative solution to the challenges posed by waste disposal in cashew processing.

How is Cashew Shell Cake Made?

A by-product of the Cashew Industry

Cashew Shell Cake is made by transforming cashew shells, a waste product from cashew nut processing, into a valuable, eco-friendly resource. The process begins with collecting the shells, which are then cleaned and dried to remove impurities and moisture. The dried shells are crushed and ground into smaller pieces, which are then compressed into a dense cake form using mechanical presses. After pressing, the cake is dried again to ensure proper moisture content, enhancing its shelf life.

Why Choose Cashew Shell Cake?

Excellent Biofuel

Cashew Shell Cake (CSC) is an outstanding choice as a solid biofuel due to its **high calorific value**, reaching up to **4,800 kcal/kg**. This energy-rich property makes it highly efficient for use in **industrial boilers, biomass gasifiers,** and in the production of fuel pellets and briquettes. Its combustion characteristics are notably clean, producing **low ash content** and generating minimal emissions, making it an environmentally responsible alternative to conventional fossil fuels. With easy handling and storage—especially in briquetted or pelletized form—Cashew Shell Cake serves as a cost-effective and sustainable energy solution for industrial applications.

Cashew Shell Cake is a step toward sustainability, offering an eco-friendly solution to managing waste while providing valuable resources for agriculture, energy, and industry. By choosing Cashew Shell Cake, you're contributing to a greener, more sustainable future and supporting the circular economy.

Cashew Shell Cake Properties

- **Biodegradable**
- **High Calorific Value**
- **Low Moisture Content**
- **High Nutritional Value**
- **Rich in Bioactive Compounds**
- **Chemical Resistance**

Benefits of Cashew Shell Cake

Industrial Fuel (Bioenergy)

CNSL derivatives are utilized in the production of organic pesticides, fungicides, and insect repellents, offering an eco-friendly alternative to chemical-based crop protection.

Soil Enrichment

The organic nature of Cashew Shell Cake makes it a great addition to composts and fertilizers, enriching the soil and promoting healthier plant growth.

Sustainable Energy Source

Cashew Shell Cake has high calorific value, making it a renewable energy source, especially when used in biomass power plants.

Eco-Friendly Waste Management

By using cashew shells, we reduce waste in cashew processing, transforming what would be discarded into a valuable resource.

Cost-Effective

As a byproduct of cashew processing, it is a cost-efficient raw material for various applications, reducing the need for expensive synthetic alternatives.

Nutrient-Rich

Cashew Shell Cake is packed with nutrients, including fiber, protein, and essential minerals.

Our Production Capacity

30000 MT

Contact us today for a quote, technical data sheet, or product sample

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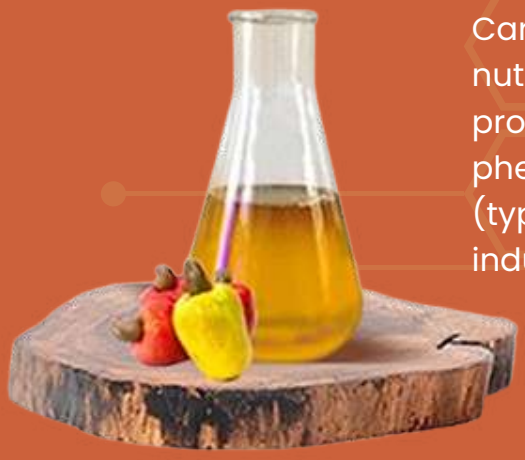
Advanced Phenolic Solutions from Renewable Resources

Your Reliable Cardanol Oil Manufacturer & Global Supplier

KGA Enterprises is a leading manufacturer and exporter of **Cardanol Oil**, an eco-friendly and high-performance industrial raw material derived from cashew nutshell liquid (CNSL). Backed by years of industry expertise, we deliver innovative, sustainable, and customizable Cardanol-based solutions that meet the evolving needs of global industries.

Our company combines traditional extraction methods with modern refining technology to produce Cardanol Oil that consistently meets international standards for purity, performance, and safety.

What is Cardanol oil?



Cardanol oil is a natural, renewable oil derived from cashew nutshell liquid (CNSL), a by-product of cashew nut processing. It's a phenolic lipid, and its structure includes a phenol ring with a long unsaturated hydrocarbon chain (typically C15), which gives it some interesting chemical and industrial properties.

How is Cardanol Made?

A by-product of the Cashew Industry

Cardanol is produced from Cashew Nut Shell Liquid (CNSL), extracted from cashew shells using heat, solvents, or mechanical pressing. The CNSL is then heated to around 200°C, converting anacardic acid into cardanol through a process called decarboxylation. The mixture is purified via vacuum distillation to separate cardanol from other components, yielding a high-purity, amber-colored oil. This bio-based compound is then ready for use in resins, coatings, and industrial formulations.

DECARBOXYYLATION

ANACARDIC ACID CARDANOL + C

0

FILTRATION

CARDANOL

Why Choose Cardanol Oil?

Versatile Chemical Reactivity

The phenolic group and unsaturated aliphatic chain in Cardanol provide reactive sites that make it highly adaptable for chemical modification. This versatility allows Cardanol to serve as a key raw material in the production of phenolic resins, epoxy systems, polyurethanes, and various plasticizers and modifiers. Its structure enables strong bonding, flexibility, and crosslinking potential, making it an ideal component in high-performance, sustainable formulations across multiple industries.

High Thermal & Oxidative Stability

It's long aliphatic side chain resists degradation at elevated temperatures, while the phenolic core provides inherent resistance to oxidative stress. This stability enhances the durability of coatings, adhesives, brake linings, and insulating materials, ensuring consistent performance even under harsh operating conditions. As a result, Cardanol-based products maintain their structural integrity, flexibility, and protective properties over time.

Cardanol Properties

- **High Reactivity**
- **Thermal Stability**
- **High Viscosity**
- **Strong Bonding Ability**
- **Water Resistance**

Molecular Composition & Structural Insights

Cardanol Oil is primarily composed of Cardanol (3-Pentadecenyl phenol), which is a phenolic compound with the following molecular structure:

Phenolic Ring: The core structure of the compound consists of a benzene ring with a hydroxyl group (-OH) attached at the para position, which contributes to its reactivity and ability to undergo nucleophilic substitution and esterification reactions.

Aliphatic Side Chain: The side chain consists of a pentadecyl (C15) hydrocarbon group with a double bond at the 9th position, giving it unsaturation and enabling radical polymerization. The unsaturation makes it reactive in a variety of polymerization and cross-linking processes.

Chemical Composition

Main component: Cardanol (about 60–70% of CNSL)
Structure: A phenol ring with a 15-carbon aliphatic side chain
Other CNSL components: Anacardic acid, cardol, and 2-methyl cardol

- **Monoene Cardanol(40 – 50%)**: One double bond in side chain
- **Diene Cardanol (15 – 20%)**: Two double bonds
- **Triene Cardanol (20 – 25%)**: Three double bonds
- **Saturated Cardanol (5 – 10%)**: No double bonds
- **Other Phenolics / Impurities (<2%)**: Trace amounts of cardol, polymeric phenols

KGA ENTERPRISES

Specifications

Parameters	Single Distilled	Double Distilled
Appearance	Pale Yellow	Pale Yellow
Consistency	Liquid	Liquid
Specific Gravity @ 30°C	0.920 – 0.933	0.920 – 0.933
Viscosity @ 30°C	40 – 60 CPS	40 – 50 CPS
Gardner Scale Colour Value	12	4-6
Acid value	Max 5	Max 5
Iodine Value (Wijs Method)	210 – 230	210 – 230
Hydroxyl value	180 – 200	180 – 200
Polymerisation Time (Mins)	12 Max	12 Max
Solid Content	95% Min	95% Min

Uses of Cardanol Oil

Cardanol oil is prized in industrial applications for its combination of aromatic (phenol ring) and aliphatic (long chain) properties

Resins & Polymers

Used in phenolic resins, epoxy curing agents, and surface coatings. Offers flexibility, chemical resistance, and thermal stability.

Adhesives and Sealants

Bio-based and effective as eco-friendly adhesives.

Laminates and Varnishes

Useful in heat-resistant laminates, paints, and coatings.

Friction Materials

Found in brake linings and clutch facings due to its binding and heat-resistant properties.

Epoxy Curing Agents

Acts as a bio-based curing agent. Adds flexibility, moisture resistance, and toughness to coatings and composites

Antioxidant or Anti-Termite

The phenol structure makes it naturally antioxidant and antimicrobial.

Our Production Capacity

8000 MT

Unlock the Power of Cardanol Oil

Whether you're in automotive, paints, plastics, construction, or green chemistry, Cardanol oil is your natural solution for high-performance innovation.

Contact us today for a quote, technical data sheet, or product sample

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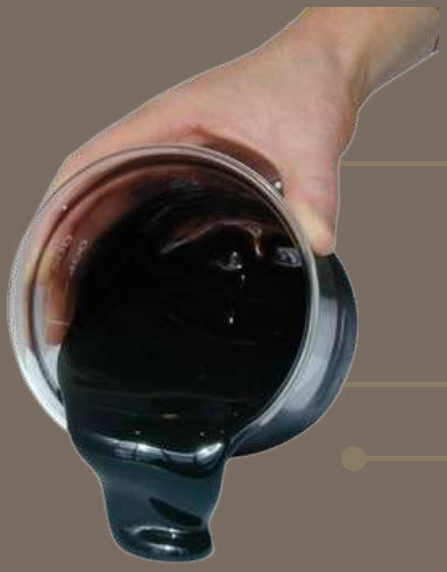
Cardanol Residue: A By-Product with Industrial Potential

Binding Power. Friction Control. Naturally.

Cardanol Residue is a dense, viscous by-product obtained during the vacuum distillation of Cashew Nut Shell Liquid (CNSL) for the extraction of high-purity Cardanol. Though lower in monomeric cardanol content, this residue retains significant quantities of oligomerized phenolic compounds, unsaturated hydrocarbons, and polymeric structures, offering broad utility across multiple industrial sectors.



What is Cardanol Residue?

Cardanol Residue is the bottom fraction left after the distillation or vacuum separation of Cardanol oil from Cashew Nut Shell Liquid (CNSL). It is a complex, viscous material comprising:

Unreacted high-boiling phenolic compounds

Polymeric cardols and cardanols

Alkenyl-substituted phenols and residual hydrocarbons

While often overshadowed by pure cardanol, this residue is chemically rich, thermally stable, and industrially valuable.

Why Cardanol Residue?

Integration into Formulations

Cardanol Residue can be directly introduced into manufacturing streams:

Blended with resins or solvents

Used as a base modifier or extender

Pre-reacted with hardeners in resin formulations

THERMAL DISTILLATION

Cardanol Residue

Custom Modifications (R&D Opportunity)

Cardanol residue can be upgraded into functional materials:

Maleated Cardanol Residue → compatibilizer in plastics
Epoxidized Cardanol Residue → reactive diluent for epoxy systems
Sulfonated Derivatives → emulsifiers or dispersants
Phosphate Esters → fire retardant coatings & polyols

Chemical Properties

Polymerized Cardanol 25–35%
Cardol 20–30%
Resinous Compounds 30–45%
Anacardic Acid (trace) <5%
Moisture <1%

These characteristics make it an ideal material for use in high-heat and pressure environments where stability and resistance to degradation are required.

Viscosity: ~5000 – 8000 cP (depending on temperature)
Flash Point: > 200°C, making it stable for high-temperature applications
Solubility: Insoluble in water, soluble in organic solvents
Appearance: Dark brown to black viscous liquid
Density: 0.94 – 0.97 g/cm³

Cardanol Residue Properties

- **High Reactivity**
- **Thermal Stability**
- **High Viscosity**
- **Strong Bonding Ability**
- **Water Resistance**

Applications of Cardanol Residue

Friction Materials
(Brake Linings, Clutch Facings, Disc Pads)

Cardanol Residue is widely used as a binder and filler in the manufacture of friction materials. Its high thermal stability and adhesive properties make it suitable for use in automotive and industrial brake linings, clutch systems, and disc pads. The residue contributes to the material's thermal resistance, wear resistance, and damping characteristics, which are crucial for high-performance automotive systems.

Bitumen & Asphalt Modification

In the construction industry, Cardanol Residue is used as a plasticizer and modifier in bitumen and asphalt formulations. When blended with hot mix asphalt (HMA) or polymer-modified bitumen (PMB), it improves the flexibility, adhesion to aggregates, and resistance to cracking. It also enhances the long-term durability of road surfaces and provides improved performance in cold weather conditions.

Fuel Additive & Renewable Energy

Cardanol Residue can be used as a fuel extender in furnace oils and biomass-based energy systems. It helps to increase the calorific value of fuels while maintaining combustion efficiency. Its use in biofuels can reduce dependence on traditional fossil fuels, contributing to more sustainable energy solutions.

Polymer and Resin Formulations

Cardanol Residue is used as a reactive diluent or resin extender in the production of phenolic resins, epoxy systems, and other thermoset polymers. It contributes to flexibility, impact resistance, and thermal stability in the final product.

Paints, Coatings, and Inks

In the coatings industry, Cardanol Residue acts as a low-cost extender and binder for industrial paints, primers, and inks. It is particularly valuable in protective coatings for metal surfaces due to its film-forming properties, chemical resistance, and ability to enhance adhesion. This makes it a popular choice in applications requiring durable, corrosion-resistant finishes.

Wood and Laminate Products

Cardanol Residue serves as an adhesive binder in engineered wood products like particle board and medium-density fiberboard (MDF). It enhances the dimensional stability and moisture resistance of wood panels while providing an environmentally friendly, bio-based alternative to traditional phenolic resins. It is also used in decorative laminates, offering improved bonding strength.

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Specifications

Parameters	Single Distilled	Double Distilled
Appearance	Pale Yellow	Pale Yellow
Consistency	Liquid	Liquid
Specific Gravity @ 30°C	0.920 – 0.933	0.920 – 0.933
Viscosity @ 30°C	40 – 60 CPS	40 – 50 CPS
Gardner Scale Colour Value	12	4-6
Acid value	Max 5	Max 5
Iodine Value (Wijs Method)	210 – 230	210 – 230
Hydroxyl value	180 – 200	180 – 200
Polymerisation Time (Mins)	12 Max	12 Max
Solid Content	95% Min	95% Min

Customized Specifications

We offer tailor-made variants of Cardanol Residue based on your specifications:

- **Adjusted viscosity**
- **Enhanced flash point**
- **Blended formulations for specific use-cases (e.g., road, rubber, resin, fuel)**

Whether you're in coatings, foundry, automotive, construction, or green energy, we'll help you get the right blend for your process.

Talk to us today about how Cardanol Residue can be integrated into your application pipeline.

Our Production Capacity

10000 MT

Contact us today for a quote, technical data sheet, or product sample

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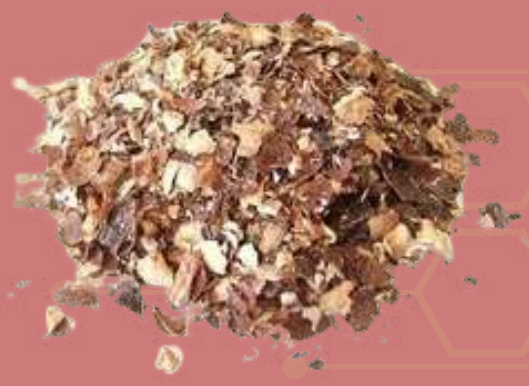
Cashew Husk: A Natural Byproduct with Diverse Applications

Utilizing cashew husk promotes a zero-waste approach in the cashew processing industry.

Cashew husk, also known as cashew seed coat or testa, is the thin, reddish-brown outer skin that covers the cashew kernel. It is a byproduct generated during the processing of cashew nuts. While often discarded or underutilized, cashew husk is gaining attention for its nutritional, agricultural, and industrial potential.



Key Features:

Plant-Based & Biodegradable: Cashew husk is 100% natural and decomposes easily, making it environmentally friendly.

Rich in Polyphenols & Tannins: It has antioxidant properties that can be useful in livestock feed, organic farming, or natural dye production.

High Fiber Content: It can be used as a fiber additive or processed into compost and organic fertilizer.

Low-Cost Biomass Source: Cashew husk can serve as a fuel alternative in industrial boilers and rural energy applications.

What is Cashew Husk ?

A by-product of the Cashew Industry

Cashew husk, also called cashew testa, is the thin, reddish-brown skin that clings tightly to the surface of the cashew kernel. It is not the outer shell (which contains cashew nut shell liquid, CNSL), but the inner protective layer that is removed during kernel peeling.

How Cashew Husk is Derived

Harvesting Cashew Nuts:
Cashew nuts are harvested from the cashew apple. Each nut is enclosed in a hard outer shell containing cashew nut shell liquid (CNSL).

Shelling:
The hard outer shell is removed to extract the cashew kernel. This kernel is still covered with a thin reddish-brown skin known as the husk or testa.

Drying and Roasting:
To make the husk easier to remove, the kernels are often steamed or dried. This loosens the skin without damaging the kernel.

Peeling:
The cashew husk is separated manually or mechanically during the peeling process. This is usually done after the kernel is dried to reduce moisture, which makes the husk brittle and easier to peel off.

Collection:
Once removed, the husk is collected as a byproduct of the peeling process. It is then either disposed of, composted, or processed further depending on its intended use.

Husk Composition

Composition & Value of Cashew Husk
Rich in tannins, polyphenols, and fibrous compounds.

Uses of Cashew Husk

Biofuel and Renewable Energy

Due to its fibrous and carbon-rich composition, cashew husk serves as a valuable biomass fuel. It can be burned directly in industrial boilers or converted into biochar and briquettes for cleaner, renewable energy. These husk-based fuels are particularly useful in rural areas, agro-industries, or decentralized energy setups as a cost-effective and eco-friendly alternative to wood or coal.

Natural Dye and Craft Applications

Thanks to its reddish-brown color and high tannin content, cashew husk is used in natural dye production for fabrics, paper, and handicrafts. It offers an eco-friendly option for artists and small-scale industries looking to replace chemical dyes with sustainable alternatives. The dye extracted is also used in ayurvedic and herbal preparations in some regions.

Tannin Extraction

Cashew husk contains a significant amount of tannins and polyphenols, which are industrially valuable. These compounds are extracted for use in leather tanning, natural adhesives, dyeing processes, and even corrosion inhibitors.

Eco-Friendly Packaging and Fillers

When processed into pulp or powder, it can be added to biodegradable plastics, compostable trays, and molded packaging items. This innovation supports the movement toward zero-waste packaging solutions in the food and agriculture sectors.

Our Production Capacity

10000 MT

Where Circular Innovation Begins: Cashew Husk

Contact us today for a quote, technical data sheet, or product sample

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sales@kgaenterprises.com

KGA ENTERPRISES

Our Products

Cashew Nut Shell Liquid (CNSL)

CNSL Resin

Cashew Shell Cake

Cardanol

Cardanol Residue

Excellence is our Standard...

KGA Enterprises is a leading manufacturer of Cashew Nut Shell Liquid (CNSL) and its eco-friendly derivatives, including Cardanol and CNSL Resin. Based in Sirsa, Haryana, the company serves global industries with sustainable chemical solutions for coatings, adhesives, and advanced polymers, KGA is committed to quality, performance, and building a greener future...

Industries We Serve

Automotive & Transport | Electrical & Electronics | Paints & Coatings
Construction | Packaging | Marine & Offshore

Whether you're a manufacturer, distributor, or R&D innovator, we offer flexible supply solutions tailored to your industry needs.

Contact us today for a quote, technical data sheet, or product sample

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