 **RISHABH RESINS & CHEMICALS**

**(AN ISO 9001:2008 CERTIFIED COMPANY)**

***Office & Factory*: Plot No.15 E & F, Sri Venkateshwara Co-op. Industrial Estate,**

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**CNSL (CASHEW NUT SHELL LIQUID)**

**INTRODUCTION:**

**The crude CNSL** (English: Cashew Nut Shell Liquid) is obtained by cold pressing or solvent extraction from cashew nut shells. It comprises about 70% anacardic acid, 18% cardol, cardanol 5%, and the remainder is composed of other compounds from the group of phenols, and polar compounds.

**Technical CNSL (TCNSL)** is obtained by further processing of the crude CNSL in the heating process, leading to Decarboxylation anacardic acid, thus yielding a cardanol. Technical CNSL contains about 52% cardanol, cardol 10%, 30% polymeric material, and the residue is composed of other chemical compounds.

**Features**:

* The versatility of the polymerization and chemical modification
* The possibility of developing a high-performance polymers
* Improved properties of synthetic phenols include flexibility, dizałanie corrosion, resistance to mechanical damage, faster heat dissipation when used as friction material in the automotive industry.
* Excellent performance as a binder (liquid resin) and friction material (Friction Dust) for the manufacture of brake linings
* Very good insecticidal and anti-bacterial
* Very high resistance to alkaline and acidic substances
* Very good resistance to mineral oils and fats

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**Application**:   
CNSL is a cheap substitute for phenol is used in industries using polymeric materials such as paints and varnishes, resins and rubber laminates, friction materials. It is used for the production of polyurethanes, surfactants, epoxy resins, is used as a binder in the foundry industry and is used as a surface tension lowering agent.

|  |  |
| --- | --- |
| Applications | Characteristic |
| Enamel / industrial paint coatings  in marine paints to  paint resistant  coatings | * Coatings based on CNSL have excellent gloss and surface finish at an optimal level of hardness and flexibility. * Antibacterial, resistant and anti-corrosion properties are applied to protect the bottom of the hulls of ships and boats. Because of its dark color, their use is limited to anti-corrosion primer, black enamel, marine paints and antifouling. * CNSL is an excellent material for many anti-corrosion paint formulations. * CNSL modified by heating in the presence of certain accelerators give baked enamels resistant to alkaline and acid solutions, mineral acids, oils and various organic solvents. * The coating compositions having insecticidal properties is obtained by adding DDT, γ-hexachlorocyclohexane, etc. to CNSL or chlorinated CNSL, after treatment with formaldehyde, rubber, resin, or a drying oil. |
| Cardanol (phenol derivatives) | * [Cardanol (called Card Phenol or Cashew Phenol)](http://www.senesel.pl/pl/zastosowanie/kardanol) |
| Binders | * CNSL is used as a substitute for the linseed oil is used as a binder in the foundry core industry. |
| Rubber | * Used as an auxiliary agent which improves the properties of the vulcanization? CNSL increases the solubility of natural rubber vulcanizates in petroleum solvents. * CNSL is used to provide resistance to oxidation of sulfur-based products, natural rubber. * Sulfur-based CNSL is added to the rubber or Nitrile rubber to improve the processability, mechanical properties and resistance to cracking and cutting. |
| Adhesives | * Adhesives suitable for plywood obtained CNSL by oxidation with potassium permanganate or manganese dioxide at 100 ° C, by reaction with Para-formaldehyde and CuCl2. * Adhesives for plywood also CNSL modified furfural, aniline, xylol. |
| Resins based on CNSL | * Application of protective coatings that require high-quality surfaces and very high resistance to water and chemicals. |
| CNSL based resin and formaldehyde (Novolac) | * These resins may be used for the coating of oil or without modification at the required high chemical resistance. |
| CNSL based resin and an Aldehyde | * Perfect material for the manufacture of insulating coatings, powders, casting, brake linings in the composition as a binder and as a friction material. |
| Based on the Resol resin, and formaldehyde CNSL | * Based on the Resol resin, CNSL and formaldehyde is used as glue for the preparation of composite wood, chipboard, medium density boards etc. |
| Casting resins | * Proven material in the manufacture of foundry cores |
| Rubber-based resins | * Inclusion of CNSL into rubber products improves strength and abrasion resistance, reduced voltage increases the adhesion of rubber to the wire contributes to the activity against oxidation and anti-ozone. Fast-reacting phenol-formaldehyde resins CNSL based products to increase their resistance to aging, chemical reactions, and to solvents and acids. |
| Friction Dust | * [Friction materials (Ex: Friction Dust)](http://www.senesel.pl/pl/zastosowanie/materialy_cierne) |
| CNSL derivatives:  Curing Epoxy curing agents, antioxidants, plasticizers,  recipients for rubber components,  modifiers for plastics  binders for foundry | * [CNSL derivatives](http://www.senesel.pl/pl/zastosowanie/cnsl/pochodne_na_bazie_cnsl) |