

*DISCOVER HOW DPR®
LIQUID NATURAL RUBBER
CAN WORK FOR YOU...*

DPR®
INDUSTRIES
DIVISION OF PACER INDUSTRIES INC.

LIQUID NATURAL RUBBER

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 MANUFACTURED IN THE USA

**ISO 9001:2015
CERTIFIED**
Quality Management



DPR®
DE-POLYMERIZED RUBBER

LIQUID NATURAL RUBBER

Low molecular weight, liquid polymer of natural rubber. Cures by the same mechanism as natural rubber and becomes part of the polymer matrix, non-fugitive. **Solvent and additive free.**



DPR Products begin with nature, harvested from the naturally occurring latex that flows from the Hevea Brasiliensis Rubber Tree.

DPR is low molecular weight natural (trees) rubber (cis-1,4 polyisoprene) converted from solid form to liquid and remains liquid until used. Combined with solid rubber in a mixer it reduces viscosity. DPR offers processing flexibility and performance options for a wide range of applications.

INDUSTRIES SERVED

RUBBER COMPOUNDING

DPR can be reacted over the entire cure spectrum of natural rubber, making it particularly useful as a general rubber compounding ingredient. When used as processing aids (plasticizers) and reactive vehicles for rubber chemicals that must be dustless, pre-disbursed and/or pre-measured, DPR provides unique benefits due to the liquid rubber being easy to process and becoming non-fugitive later.



No matter your market, using DPR during the tire manufacturing process has many unique benefits.



Our new modern facility, situated on 23 semi-rural acres in scenic Chester County Pennsylvania.

TIRE & AUTOMOTIVE INDUSTRY

Tire manufacturers are able to take advantage of these inherent characteristics with the introduction of DPR in various components of tire construction:

Bead Insulation/Apex Area

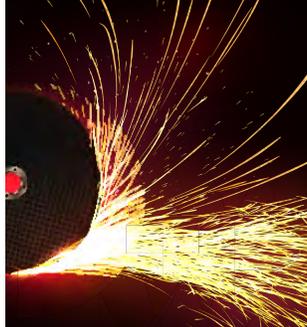
By using a highly loaded carbon black compound with DPR as a reactive plasticizer, processability of very stiff compounds can be achieved without sacrificing the permanence of cured compound.

Skim-Coat Compounds

In order to become soft enough for application, several Banbury passes may be needed. The reactivity of DPR makes this critical compound adhesion achievable while avoiding the use of large amounts of plasticizer. Once cured, it will not migrate over time as typical oils do

Other Benefits

DPR is reported to have greater adhesion & penetration with steel wire and steel belts. It has a wider molecular weight than synthetic does which may help with green strength and cured crosslinking with solid natural rubber. Since it wets carbon black and synthetic fibers very well, DPR may help with highly loaded off-road tires.



DPR is beneficial when used as an asphalt modifier.



GRINDING WHEELS

For many decades DPR has been an important ingredient in special grinding wheels made by numerous companies. It is a strong binder designed to hold large quantities of abrasive grain and fillers. Because the wheels are run at high speeds, centrifugal force is high and the binder must be very strong.

The elastomer *best* able to provide the strength, heat resistance, adhesion to particles and proper elasticity has been DPR.

FRICTION PRODUCTS

Brake linings also have a high percentage of dry ingredients and are hard products. DPR® has an affinity to wet large amounts of dry ingredients and it has the ability to cure to a very hard matrix.

LUBRICANTS

DPR improves stability of heavy-duty lubricants by increasing resistance to flow on vertical surfaces and by holding dry ingredients in a more stable suspension. It performs as a rheology modifier.

ASPHALT MODIFIER

A minor addition of DPR to asphalt reduces flow at high temperatures and maintains flexibility at low temperatures.

OTHER CHARACTERISTICS

DPR reduces the viscosity of uncured rubber when added at levels of 5 to 20 parts. This **reduces power requirements, improves blend consistency and reduces risk of scorching.** It can be used with synthetic polymers such as polychloroprene, EPDM, polybutadiene, SBR and acrylonitrile-isoprene.



DPR is a strong binder for grinding & friction products.



DPR liquid rubber offers processing flexibility and performance options for a wide range of applications.



GRADES OF DPR

There are four grades, all the same chemical but with different viscosities. They range from the most viscous, DPR-400, to the least, DPR-35. Molecular weight of the most viscous grade is about double that of the least viscous.



DPR-400

Highest viscosity. It accepts the maximum extension of plasticizer and filler. When used as a processing aid, it demonstrates higher retention of cured physical properties as compared to the lower viscosity grades of liquid natural rubber.



DPR-75

It offers an intermediate viscosity grade. Its viscosity provides an optimum balance between the lower viscosity needed for easy processing and the thickness required to bind aggregates and other highly loaded systems.



DPR-40

It is a low viscosity grade. When used as a processing aid, it demonstrates greater reduction in plasticity than the higher viscosity grades. This is the grade generally used for tire applications.



DPR-35

Lowest viscosity. It is easiest to pour and the most efficient plasticizer of liquid rubber products. It increases the polymer's capacity for fillers and improves the acceptance of non-compatible reinforcement.

Viscosity (cps) of all grades is relatively high at near room temperature of 77 deg F (25 C) but decreases significantly at higher temps. It drops about 60% at 100 deg and about 85% at 125 deg.



TYPICAL PROPERTIES

DPR liquid rubber provides many performance properties into the finished polymer system. The attributes result from the inherent properties of natural rubber. The physical characteristics of the liquid polymers include the following:

Attributes	DPR-400	DPR-75	DPR-40	DPR-35
Color	Dark Brown	Dark Brown	Dark Brown	Visual
Viscosity, cps @ 38 C (100 F)	400,000	75,000	40,000	35,000
Average Molecular Weight	80,000	45,000	40,000	38,000
Manufacturing Viscosity Tolerances	270,000 to 550,000	45,000 to 95,000	35,000 to 55,000	25,000 to 40,000
Density, lb/gal	7.7	7.7	7.7	7.7
Specific Gravity, g/cc	0.92	0.92	0.92	0.92
Flash Point, deg C	271	255	246	240



Packaging options include 55-gallon drums, 5 gallon pails and 4.4 lb low melt poly-bags.

OTHER APPLICATIONS

- *Reactive vehicle for rubber additives*
- *Rheology modifier for lubricants*
- *Polymer base for molding and tooling systems*
- *Polymer base for electrical encapsulates*
- *Polymer base for automotive sealants*
- *Active ingredient in self-sealing tires*
- *Trans-ocean cable insulation*

PACKAGING

DPR products normally are packaged in 350 lb. 55-gallon steel open-head drums. They also are available in 5- gal pails and 4.4 lb (2 kg) or other low melt poly-bags. The poly-bags can be placed directly into a Banbury mixer when used for tire or other application. Alternatively, a pre-weighed amount can be poured into the mixer.

The liquid rubber products are stable over a wide temperature range. They are not damaged by freezing temperatures or occasional short term exposure to temperatures of 150 deg F. Shelf life is a minimum of two years in unopened container.

They are viscous polymers. Heating the drum reduces viscosity for easier handling. Vent drums before heating to avoid pressure build up.

Refer to Safety Data Sheet for detailed information.



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