



G-TEX DPL

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G-TEX DPL is a depolymerised natural rubber latex concentrate ⁽¹⁾ produced using a new chemical reaction technique. Unlike an earlier process ⁽²⁾, the method used to produce G-TEX DPL is cleaner and leaves no toxic residues in the resultant product.

G-TEX DPL has been recommended for suitable use in a variety of applications such as adhesives, viscosity-modifiers, plasticizers, textile and paper impregnation and as a component in paint coatings.

1. TYPICAL PROPERTIES

G-TEX DPL consists essentially of depolymerised natural rubber particles suspended in an aqueous medium. Different grades of **G-TEX DPL** are available and can be supplied according to the molecular weight of the depolymerised rubber desired, ranging from Mw (Weight-average Molecular Weight) between 25,000 and 150,000. The final level of depolymerisation in the rubber can be achieved quite reproducibly by regulating the level of reactants and good control of the various processing conditions. Typical general properties of the product are as follows:

Total Solid Content (%)	-	58.0 – 60.0
Dry Rubber content (%)	-	56.0 min.
Non-Rubber Solid (%)	-	2.50 max
Alkalinity (%)	-	0.30 max
MST @ 55% TSC (sec.)	-	800 min.
pH	-	8.0 ± 0.5
Specific Gravity	-	0.94 – 0.95

G-TEX DPL grade		DPL 25	DPL 50	DPL 250
Mn (Number-average M.W.)	-	10,000±1,500	25,000±3,000	125,000±12,000
Mw (Weight-average M.W.)	-	25,000±2,500	50,000 ±5,000	250,000±20,000
Mw/Mn	-	2.60	1.84	1.99
Brookfield Viscosity, s2/r30	-	500	100	70
at 26±2 °C (cP) s2/r60	-	400	85	55

The above information is given in good faith and without liability.

2. APPLICATION

G-TEX DPL is easily miscible with any aqueous emulsion or suspension, just like normal NR latex. Thus it can also be blended with NR latex or any synthetic latex. The higher molecular weight DPL grades may in fact be compounded and used in the conventional way for making various latex products. Blending of DPL with normal field latex can produce rubbers with lower Mooney viscosities, and is therefore one method of producing low and constant Mooney viscosity rubbers without resorting to clonal latex selection. *Figure 1* shows the effect of DPL content on the Mooney and Brookfield viscosities of the resultant DPL/NR blended product. Natural rubbers of Mooney viscosity around 60 are generally known to have easy processability in dry rubber mixing processes involving large amounts of difficult fillers like carbon black.

Incorporation of small and controlled amounts of DPL into raw NR can improve its processability through plasticization and simultaneously provide good tack or adhesion properties. Hard compounds containing highly reinforcing carbon blacks, such as those encountered in tyre treads used on high performance, low profile sport car tyres can be easily processed by adding some DPL in them. The advantage of using DPL here is that there is no impairment of the physical properties in the final product, unlike the use of conventional processing oils ⁽³⁾, since the DPL readily co-vulcanises together with the bulk of the rubber ⁽⁴⁾.

DPL can also act as a processing aid, tackifier or viscosity modifier in the manufacturing process for aqueous-based latex adhesives. Such blended DPL/NR latices ⁽⁵⁾ have enhanced peel strengths when used in pressure-sensitive adhesive formulations as shown in *Figure 2*. Whilst the high molecular weight backbone of the NR portion provides the basic shear strength, the DPL part contributes to the increased peel adhesion. Such materials have been found to possess a unique combination of “quick grab” and high pressure-sensitive properties without any need for additional tackifying resins ⁽⁶⁾.

Since depolymerisation basically only cleaves the molecular chain without changing the chemical structure of the polyisoprene units, a large number of double bonds is still retained in DPL. However, these chains are much shorter, depending on the extent of depolymerisation, that can be inversely correlated to the molecular weight of the DPL. Further chemical modification of DPL can therefore in theory be made via the double bonds present, like the use of chemical-grafting reactions to obtain other special products with various interesting properties.

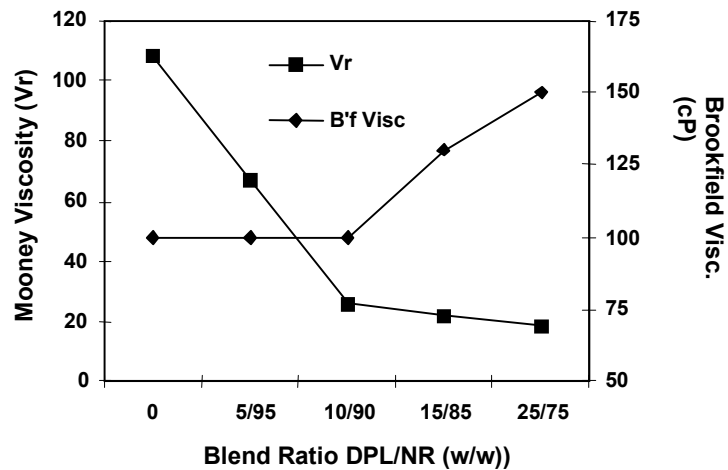


Figure 1. Mooney & Brookfield Viscosities of NR latex/DPL Blends

3. PACKING

G-TEX LALN is packed in non-returnable, internal-lined metal drums of net weight 205kg or delivered in larger bulk quantities using appropriate tanks.

4. STORAGE

It is recommended that this product be stored in a sheltered premise, away from direct exposure to sunlight or subjected to temperatures above 35°C, but also not in extremely cold or freezing conditions. Some creaming of the product may occur over a long storage period, and if this has happened, stirring or gentle agitation is required to re-disperse the cream into the bulk of the latex before use.

When properly stored, the product should have a shelf life of up to 12 months. Longer storage than this period is however not recommended.

5. TECHNICAL SERVICE AND INFORMATION

The GETAHINDUS TECHNICAL TEAM comprises of qualified and experienced personnel who have been in the business of latex concentrate production for a long time. It is supported by R&D efforts which are carefully thought out and meticulously planned to ensure that all new products and materials developed will satisfy customers' requirements. Various kinds of technical information and samples for evaluation are readily available upon request. For enquiries, please contact our Sales & Marketing Department.

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6. HEALTH HAZARD AND SAFETY

G-TEX DPL is a lightly ammoniated latex concentrate and hence the normal precautions taken in the handling of ammonia solutions must be strictly followed. It should not be ingested or consumed. Avoid direct contact with the skin and eyes in particular. If latex is accidentally splashed onto any part of the body or eyes, wash the affected area immediately with plenty of running water, and seek medical advice if there is pain or sign of redness.

No adverse physiological reaction has been observed in the use of this product when it was handled correctly and used in the manner suggested above.

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