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GIVUL LPT2

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V08/R3/S0126

GIVUL LPT2 is a medium modulus pre-vulcanised latex specially developed by GETAHINDUS (M) SDN BHD for glove dipping to overcome the increasing legislative pressure on residual extractable protein content and powder level of medical gloves. Both laboratory and plant trials have consistently produced gloves with EP at maximum 300 ppm for unleached gloves and less than 50 ppm for leached gloves. The low tack characteristic of LPT2 enables production of very low powder and powder-free gloves.

INTRODUCTION

GIVUL LPT2 is an excellent prevulcanized natural rubber latex produced by GETAHINDUS (M) SDN BHD specially for gloves dipping application.

LPT2 is particularly suited for production of low powder and powder-free gloves with very low extractable protein content. Extractable protein content of GIVUL LPT2 unleached film is about 300 ppm compared to that of 1000 – 3000 ppm for normal pre- and post- vulcanized latex.

Powder picked-up level of LPT2 can be as low as 70% compared to normal pre- and post- vulcanized latex.

AGED (22hrs at 100°C)–(ASTMD573:1988)

Tensile Strength (MPa)	19.0 min.
Elongation at Break (%)	800 min.
Modulus at 700% Elongation (MPa)	8.0 min.

EXTRACTABLE PROTEINS

The presence of high residual soluble protein in latex products can cause allergic reaction to sensitized persons and leaching is the simplest and most practical method to reduce the extractable protein (EP) levels in gloves and other latex products.

GIVUL LPT2 is designed in such a way to simplify the leaching process of gloves but effectively maintaining the low EP level of gloves. EP content of unleached LPT2 film is just 30% that of pre- and post- vulcanized latex. This has given an advantage of EP removing with only short leaching time.

TYPICAL TECHNICAL DATA

A. LATEX PROPERTIES

Total Solid Content (%)	60.50 ± 0.50
Ammonia content (%)	0.60 min.
pH	10.50 ± 0.50
Brookfield Viscosity.2/30 (cps.)	120 max.
Mechanical Stability Time (sec.)	900 min.

B. DIPPED FILM PROPERTIES

(TYPICAL EXAMINATION GLOVES FILM WITH THICKNESS 0.12 – 0.15mm TESTED IN ACCORDANCE WITH ASTM)

UNAGED (ASTMD412:1992)

Tensile Strength (MPa)	25.0 – 29.0
Elongation at Break (%)	800 - 950
Modulus at 700% Elongation (MPa)	11.0 – 14.0

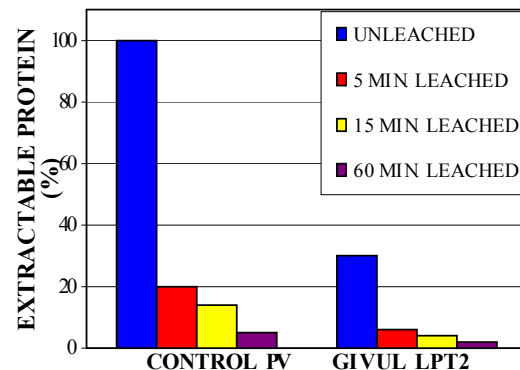


FIGURE 1 : GIVUL LPT2 EXTRACTABLE PROTEIN WITH WET-GEL LEACHED

Figure 1 shows only 5 min. of wet gel leaching should be able to reduce the EP to 50 – 100 ppm ; compared to normal latices which need 1 hour of leaching time for same EP result.

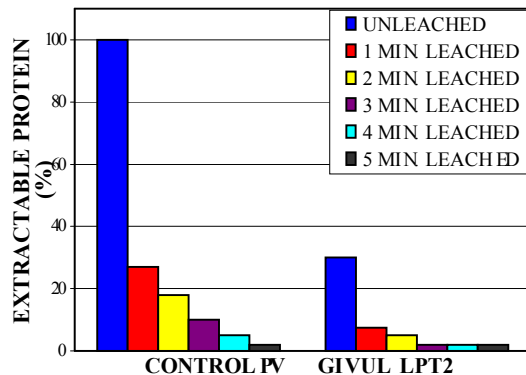


FIGURE 2 : GIVUL LPT2 EXTRACTABLE PROTEIN WITH POST-CURE LEACHED

It is understood that post cure leaching can reduce EP more effectively compared to wet-gel leaching. However, Figure 2 shows the leaching time required to reduce GIVUL LPT2 EP to below 50 ppm. is very much shorter compared to normal latices.

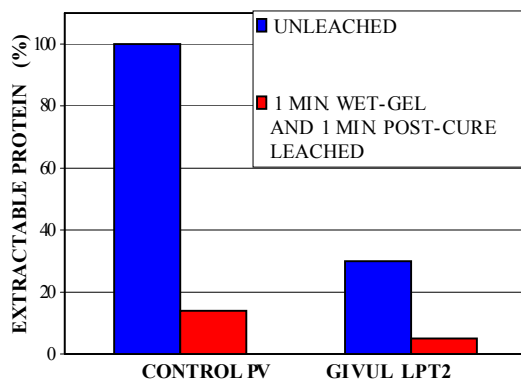


FIGURE 3 : GIVUL LPT2 EXTRACTABLE PROTEIN WITH 1 MIN. WET-GEL AND 1 MIN. POST-CURE LEACHED

From practical experience, optimum leaching is found to be combination of 1 min. wet-gel and 1 min. post-cure leach. Result of which is shown in Figure 3 (EP < 50ppm).

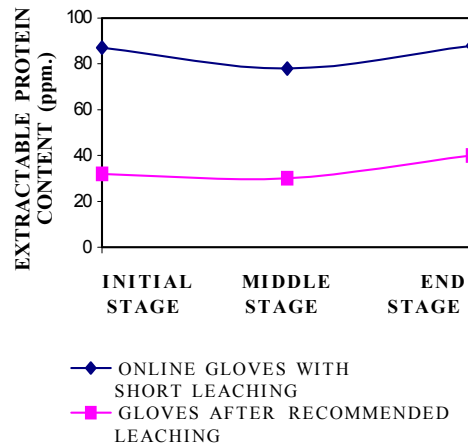


FIGURE 4 : GIVUL LPT2 EXTRACTABLE PROTEIN ON PLANT TRIAL

Figure 4 shows plant trial result of GIVUL LPT2 gloves produced at initial, middle and end stages of dipping process with minimal online leaching. The results showed EP at consistently below 100 ppm. With recommended 1 min wet-gel leach and 1 min post-cure leach, glove EP showed consistently below 50 ppm for the above three stages of dipping process. Online-chlorinated GIVUL LPT2 gloves will also provide consistently EP below 50 ppm for all the stages of dipping.

RESIDUAL ZINC LEVEL

GIVUL LPT2 gloves will have vary low residual Zn level in leaching water. Average Zn level in GIVUL LPT2 gloves production is within DOE’s requirement i.e. at about 1ppm.

RESIDUAL CHEMICALS

GIVUL LPT2 gloves also having very minimum residual chemicals. 8 types of accelerators and 3 types of antioxidants was found to be undetectable .

DIPPING PROCESS**A. LOW POWDER GLOVES****I. LATEX**

GIVUL LPT2 for dipping can be easily prepared by dilution until the required TSC. Extra stabilizer can be used to enhance the latex stability should the need arise. Usually recommended stabilizers are potassium hydroxide, potassium oleate, ammonium laurate, etc..

II. COAGULANT SOLUTION

GIVUL LPT2 has been found to work well with all coagulant systems commonly in use. Due to the low tack characteristic of LPT2, the powder level in the coagulant can be reduced by 30%.

III. SLURRY

GIVUL LPT2 latex is suitable for most slurry solution. Post tumbling of the gloves gives a low residual powder.

B. POWDER FREE GLOVES**I. LATEX**

GIVUL LPT2 for dipping can be easily prepared by dilution until the required TSC. Extra stabilizer can be used to enhance the latex stability should the need arise. Usually recommended stabilizers are potassium hydroxide, potassium oleate, ammonium laurate etc..

II. COAGULANT SOLUTION

GIVUL LPT2 has been found to work very well with PFA-3, a coagulant additive supplied by GETAHINDUS (M) SDN. BHD. This additive is added in the preparation of the calcium nitrate solution. Typical formulation is as follows :

PFA-3	30%
Calcium nitrate	8%
Water	<u>62%</u>
	<u>100%</u>

III. POLYMER / LIGHT ON LINE CHLORINATION

GIVUL LPT2 is found to be suitable for polymer dipping or light on line chlorination to give an easy don powder free surface.

III. POST TUMBLING

Upon stripping of the gloves it is recommended to undergo tumbling to remove traces of loose particles that may be present in the glove to achieve a powder free level conforming to the ASTM test method.

* Precaution : GIVUL LPT2 is a carefully process latex. Using of this latex should be avoided from any source of contamination of protein.

TECHNICAL SERVICE AND INFORMATION

GETAHINDUS TECHNICAL TEAM comprises qualified and experienced personnel. All R & D works are carefully thought of and meticulously planned when developing new products and materials to suit customers' requirements. All technical information and samples for evaluation are readily available. For any enquiry, please contact our Sales & Marketing Department.

APPLICATION

GIVUL LPT2 is suitable for all categories of dipping application especially glove dipping.

PACKING

GIVUL LPT2 is packed in non-returnable metal drums of net weight 205kg or delivered in bulk tank.

STORAGE

It is recommended to store this product under shade without exposure to direct sunlight at temperature below 35°C but not in freezing condition. This will prevent the product from creaming and if this happen, stirring is required to re-disperse the cream.

Properly stored product should have a shelf life of 6 –12 months. Longer storage than this period is not recommended.

GIVUL LPT2, the EP will increase gradually during storage. It is recommended that usage should be within 3 months from the production date. Thereafter, longer than 1 min. post leaching is necessary to achieve EP below 50ppm in the finished products.

HEALTH HAZARD AND SAFETY

GIVUL LPT2 is an ammoniated latex compound containing vulcanizing ingredients. It is not to be taken. No adverse physiological reactions have been observed when handling the product correctly and using it in the way suggested.

Avoid direct contact with the skin and eyes. If latex is accidentally splashed onto the eyes, wash with plenty of running water and consult medical doctor immediately.

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