


**A STUDY OF THE VARIATION OF THE QUALITY OF STANDARD  
LANKA RUBBER —20(SLR— 20) GRADE MADE OUT OF BLENDS  
OF SUB STANDARD RAW RUBBER REJECTED FROM  
CENTRIFUGED LATEX FACTORIES**

**M**

**JEVENDRA GALLADDALAGE NIROSHAN KISHANTHA**

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on 2009.**

“The work described in this thesis was carried out by me under the supervision of Dr. L.M.K.Tillekeratne and report on this has not been submitted in whole or part to any university or any other institution for another Degree/Diploma”

..... (Signed)

26/10/09.....(Date)

I certify that the above statement made by the candidate is true and that this thesis is suitable for submission to university for the purpose of evaluation.



.....

Dr.L.M.K.Tillekeratne

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## ABBREVIATION

MAP	Magnesium Ammonium Phosphate
TMTD / ZnO	Tetra Methyl Thiuram Di sulfide / Zinc Oxide
PC	Pre – Coagulated
FAB	Fare Average Brown
DRC	Dry Rubber Content
VFA	Volatile Fatty Acid number
DAHP	Di Ammonium Hydrogen Phosphate
KOH	Potassium Hydroxide
BOD	Biological Oxigen Demand
COD	Chemical Oxigen Demand
TSR	Technically Specified Rubber
EV	Efficient Vulcanization
SEV	Semi Efficient Vulcanization
CV	Conventional Vulcanization
ACS 1	American Chemical Society 1
MBT	Mercapto Benz Thiazole
SLR	Standard Lanka Rubber
SMR	Standard Malaysian Rubber
VM	Volatile Matter
P <sub>0</sub>	Initial plasticity
PRI	Plasticity Retention Index
ISO	International Standard Organization
N	Nitrogen
ASTM	American Society for Testing Materials
R / M	Raw Material
M <sub>L</sub>	Minimum Torque
M <sub>H</sub>	Maximum Torque
T <sub>S</sub> 2	Scorch time
T <sub>C</sub> 90	Time for 90 % curing
IRHD	International Rubber Hardness Degree

## ABSTRACT

### A STUDY OF THE VARIATION OF THE QUALITY OF STANDARD LANKA RUBBER – 20 (SLR – 20) GRADE MADE OUT OF BLENDS OF SUB STANDARD RAW RUBBER REJECTED FROM CENTRIFUGED LATEX FACTORIES

The quality of TSR is depending on the quality of raw materials used for the manufacture. This project is based on the properties of TSR – 20 (SLR – 20) grade which is the most popular TSR grade used in the tyre industry all over the world. Different raw material combinations can be used to produce TSR - 20 within the tolerance limit permitted by the scheme. TSR – 20 (SLR -20) is produced with various raw material combinations using the same processing conditions. Other than the technical properties of TSR, curing characteristics and mechanical properties of the vulcanizates of the compounds, which were prepared out of TSR – 20 rubber produced with different raw material combinations, were studied using vulcanizates made to same compound formula (ACS 1) under same vulcanization conditions.

Even when, substandard raw materials like TMTD / ZnO preserved latex coagulum and chemical free pre – coagulated latex coagulum were blended with 3X brown rubber more than 25 %, the results showed that neither % N nor % dirt has a significant effect on the technical properties and on curing characteristics. How ever blended percentages of TMTD / ZnO preserved latex coagulum and chemical free pre – coagulated latex coagulum with 3X brown rubber are being increased in the blend percentage dirt is being decreased gradually due to containing low percentage dirt in the substandard raw materials. When skim rubber is used up to 15% in the blend with 3X brown rubber, every parameter is within the limit of TSR – 20. But if skim rubber is used above 15% percentage N level exceeds the tolerance limit of 0.6 %.

However, use of Magnesium Ammonium Phosphate (Sludge rubber) even 5 % in the blend all properties vary and the specifications go completely out of TSR – 20 limits.