

Method No.	TEST PARAMETER
<b>HA</b>	<b>SPECIAL TEST FOR ANALYTICAL</b>
HA - 1	- TGA at 40 Deg. C/MIN
HA - 2 A	- DSC at 10 Deg. C/MIN
HA - 2 B	- DSC at 10 Deg. C/MIN, Low Temp.
HA - 3 A	- FTIR (Fourier Transformed Infrared Spectrophotometer)
HA - 3 B	- FTIR (Fourier Transformed Infrared Spectrophotometer), Pyrolysis
HA - 4 A	- Optical Microscopy
HA - 4 B	- Optical Microscopy, Hot Stage Analysis
HA - 6	- Molecular Weight of Polymer by GPC
HA - 8	- Extraction
HA - 9	- TLC
HA - 10	- Volume Fraction of rubber
<b>HA</b>	<b>ANALYSIS OF RUBBER PRODUCT</b>
HA - 11	- Polymer Identification
HA - 12	- % Rubber Hydrocarbon
HA - 13	- % Carbon Black
HA - 14	- % Volatiles
HA - 15	- % Ash
HA - 16	- Semi Quantitative Ash Analysis
HA - 17	- Plasticiser Identification
HA - 18	- Qualitative Antioxidant Analysis
HA - 19	- Carbon Chain Distribution of Wax by GC
HA - 20	- Purity of Rubber Chemicals by GC
HA - 21	- Benzene & Aromatic Content of Solvent Naphtha by GC
HA - 22	- Quantitative Estimation of 6PPD in Rubber Vulcanizate by HPLC
HA - 23	- Assay of Rubber Chemicals by HPLC
HA - 24	- Characterisation by UV-Vis
HA - 25	- Toluene Discoloration of C-Black
HA - 26	- Surface Area of Materials (powder)
HA - 27	- Determination of S & N by NCS Analyser
HA - 28	- Material Identification by GC-MS
HA - 30	- SEM
HA - 31	- SEM - EDS
HA - 32	- ICP-OES
<b>HU</b>	<b>TESTING OF UNVULCANISED RAW RUBBER</b>
HU - 1 A	- Mooney Viscosity by MV 2000 E
HU - 1 B	- Delta Mooney by MV 2000 E
HU - 1 C	- Mooney Scorch by MV 2000 E
HU - 2	- Rheometry study by MDR 2000 E
HU - 4	- Dispersion by Disperse Grader
HU - 5	- Extrusion/Die swell property by Brabender Plasticorder
HU - 6	- Banbury Mixing
HU - 7	- Mill Mixing
HU - 8	- Moulding
HU - 9	- Mixing in Brabender
HU - 10 A	- Analysis by RPA : Strain Sweep
HU - 10 B	- Analysis by RPA : Frequency Sweep
HU - 10 C	- Analysis by RPA : Temperature Sweep

Method No.	TEST PARAMETER
HU - 10 D	- Analysis by RPA : Matrix Sweep
HU - 10 E	- Analysis by RPA : Cure Study
HU - 10 F	- Analysis by RPA : Cure Simulation
HU - 11	- Tack Study
HU - 12	- P.R.I.
<b>HV</b>	<b>VULCANISED RUBBER</b>
HV - 1 A	- Tensile Properties at RT
HV - 1 B	- Tensile Properties at HT
HV - 1 C	- Tear Properties at RT
HV - 1 D	- Tear Properties at HT
HV - 2	- Hardness
HV - 3	- DIN Abrasion
HV - 4 A	- Goodrich Heat Build-up
HV - 4 B	- Goodrich DMA
HV - 4 C	- Goodrich Blow Out Test
HV - 5	- Monsanto FTFT at RT
HV - 6 A	- De-Mattia Flex-Cut Initiation
HV - 6 B	- De-Mattia Flex-Cut Growth
HV - 7 A	- Tension/Permanent Set at RT Using Zwick UTS
HV - 7 B	- Tension/Permanent Set at HT
HV - 8	- Swell Index
HV - 9 A	- Carrying out Ageing at one Temp.(1 Day)
HV - 9 B	- Carrying out Ageing at one Temp.(3 Days)
HV - 9 C	- Carrying out Ageing at one Temp.(7 Days)
HV - 10	- Ozone Resistance test at Specified Temp. for 24 hours
HV - 11 A	- Analysis of Tube (Dimension & Physicals) - V
HV - 11 B	- Analysis of Tube (Dimension & Physicals) - C
HV - 11 C	- Tube Valve Adhesion
HV - 11 D	- Tube splice strength by De-Mattia Flexometer
HV - 11 E	- Details analysis of Tube valves
HV - 12 A	- Analysis of Flap (Dimension & Phy)-V
HV - 12 B	- Analysis of Flap (Dimension & Phy)-C
HV - 13 A	- Sample Preparation by Splitting. M/C
HV - 13 B	- Sample Preparation by Crushing
HV - 13 C	- Sample Preparation by Drilling/Grinding
HV - 13 D	- Sample Preparation from Finished Products
HV-14A	- Rebound Resilience -RT
HV-14B	- Rebound Resilience -HT
HV - 15A	- Dynamic Properties - RT
HV - 15B	- Dynamic Properties - HT
HV - 15C	- Dynamic Properties - LT
HV - 15D	- Glass Transition by DMA
HV - 15E	- Frequency Temp. Superposition
HV - 16	- Gas Permeability - HT
HV - 16A	- Gas Permeability - RT
HV - 17	- Determination of Chipping & Chunking
HV - 18	- Determination of Tyre Aging Characteristics
HV - 19A	- Crack Growth - RT by Flexing Machine

Method No.	TEST PARAMETER
HV - 19B	- Crack Growth - HT by Flexing Machine
HV - 19C	- De-Mattia - HT
HV - 20	- Hyper Elastic Properties
HV - 21	- Quasi-Static Properties
HV - 22	- Determination of Bulk Tear
HV - 23	- Compression Mode stress - Strain
HV - 24	- Compression Mode stress - Strain - HT
HV - 25	- Pure Shear Hyper Elastic Properties
HV - 26	- Quadruple Shear
HV - 27A	- Compression Set - RT
HV - 27B	- Compression Set - HT
HV - 28	- Step Loading Unloading
<b>HRL</b>	<b>LATEX TESTING</b>
HRL - 1	- % Total Solid Content
HRL - 2	- % Dry rubber Content
HRL - 3	- pH
HRL - 4	- Brookfield Viscosity
HRL - 5	- Mooney Viscosity of Contained Polymer
HRL - 6	- Total Alkalinity
HRL - 7	- Metal Content ( Cu, Mn, Mg, Fe, Ni, Co, Cr)
HRL - 8	- Surface Tension
HRL - 9	- Coagulum Content
HRL - 10	- Chemical Stability
HRL - 11	- Specific Gravity
HRL - 12	- Bound Styrene of SBR Latex
HRL - 13	- KOH Number of NR Latex
HRL - 14	- Volatile Fatty Acid Number of NR Latex
<b>HRF</b>	<b>FABRIC TESTING</b>
HRF - 1	- Strength Properties
HRF - 2	- Linear Density & Moisture
HRF - 3	- Shrinkage
HRF - 4	- Twist
HRF - 5	- Gauge
HRF - 6	- H-Adhesion or Peel Adhesion
HRF - 7	- Heat durability (only ageing)
HRF - 8 A	- Dip pick up of Nylon cord
HRF - 8 B	- Dip pick up of Polyester cord
HRF - 8 C	- Dip pick up of Rayon Cord
HRF - 8 D	- Dip pick up of Glass Fiber
HRF - 9	- Relative dip pickup for aramid
HRF - 10	- Spin finish content
HRF - 11	- Crystallinity of Fabric
HRF - 12	- Melting Point of Fabric
HRF - 13	- Identification of Fabric
HRF - 14	- Lay Length & Lay Direction
HRF - 15	- Torsion Test
HRF - 16	- Reverse Bend Test
HRF - 17	- Coating Thickness

Method No.	TEST PARAMETER
HRF - 18	- Humidity Ageing (24 Hrs)
HRF - 19	- Straightness
HRF - 20	- Residual Torsion
HRF - 21	- Stiffness
HRF - 22	- CT Cord Fatigue Test
HC	<b>CHEMICAL TESTING</b>
HC - 1	- Brookfield Viscosity
HC - 2	- Identification of S-Bloom
HC - 3	- A/O by TLC
HC - 4	- Doctor Test of Solvent
HC - 5	- Acid insoluble
HC - 6	- Total Solid
HC - 7	- Solubility
HC - 8	- pH
HC - 9	- Solvent Extraction
HC - 10	- Ash
HC - 11	- Det. of Zn (Chem)
HC - 12	- Sulphur content by CS <sub>2</sub>
HC - 13	- Plating weight Wire cords
HC - 14	- Ignition loss
HC - 15	- Chemical Digestion
HC - 16	- Moisture Content by IR Moisture Analyser
HC - 17	- VP Content of VP latex
HC - 18	- Silica Content of Silicon Dioxide
HC - 19	- Dirt in NR
HC - 20	- Nitrogen content of NR
HC - 21	- Cobalt content (Chemical)
HC - 22	- Cyclohexane Insoluble
HC - 23	- Moisture by Karl Fisher
HC - 24	- High Temperature Stability of Insoluble Sulphur
HC - 25	- Moisture by Azeotropic Distillation
HC - 26	- Saponification No.
HC - 27	- Aniline Point
HC - 28	- Assay of MBT
HC - 29	- Assay of DPG
HC - 30	- Assay of TBBS/CBS/NOBS/DCBS
HC - 31	- Free MBT
HC - 32	- Assay of MBTS
HC - 33	- Saybolt Viscosity
HC - 34	- Sieve Residue of powdery material
HC - 35	- Heat loss
HC - 36	- Softening pt.
HC - 37	- Melting pt.
HC - 38	- Distillation range
HC - 39	- Congealling pt. of Wax
HC - 40	- Bulk attrition of C-black
HC - 41	- Sieve residue of C-black
HC - 42	- Pour density of C-black

Method No.	TEST PARAMETER
HC - 43	- Defects in Bead wire coating
HC - 44	- Freezing point
HC - 45	- UV Analysis of Rubber Chemicals
HC - 46	- Sp.gravity by sp.gr.bottle
HC - 47	- Sp.gravity by Hydrometer
HC - 48	- Sp.gravity by liquid displacement
HC - 49	- DBP absorption of C-black
HC - 50	- Water settling Characteristics of Clay
HC - 51	- Flash & Fire pt.
HC - 52	- CA,CP,CN of Processing Oil
HC - 53	- Iodine no.
HC - 54	- Acid No.
HC - 55	- Oil content of oiled sulphur
HC - 56	- Organic acid & soap
HC - 57	- Methylol content
HC - 58	- Acidity as % Free acid
HC - 59	- Oil content of oil extended polymer
HC - 60	- Bound styrene by GC Analysis
HC - 61	- Iodine Adsorption No. of C-black
HC - 62	- Clay/gel Analysis of Processing Oil
HC - 63	- Drop melting pt. of wax
HC - 64	- RI of Liq. Sample
HC - 65	- Bound Styrene
HC - 66	- Micro Structure of Polybutadiene Rubber
HC - 67	- Pour point of oil
HC - 68	- Volatile matter in NR
HC - 69	- Pellet Hardness of C-black
HC - 70	- Titer Value of Stearic Acid
HC - 71	- Proximate Analysis of Coal
HC - 72	- Refractive Index
HC - 73	- Micro Structure of Solution SBR
HC - 74	- Calorific Value Determination
HC - 75	- PCA Contant in Oils
<b>HDB</b>	<b>FEA Analysis Truck Bias</b>
HDB - 1.1	- 2 D inflation analysis
HDB - 1.2	- 3 D Load deflection
HDB - 1.3	- 3 D Steady State Rolling
HDB - 1.4	- 3 D SSR with Slip Angle
HDB - 1.5	- 3D Lateral/ Tangential /Camber Stiffness
	<b>FEA Analysis Pass / Light Truck</b>
HDB - 2.1	- 2 D inflation analysis
HDB - 2.2	- 3 D Load deflection
HDB - 2.3	- 3 D Steady State Rolling
HDB - 2.4	- 3 D SSR with Slip Angle
HDB - 2.5	- 3D Lateral/ Tangential /Camber Stiffness
	<b>FEA Analysis Tractor Bias</b>
HDB - 3.1	- 2 D inflation analysis
HDB - 3.2	- 3 D Load deflection

Method No.	TEST PARAMETER
HDB - 3.3	- 3 D Steady State Rolling
HDB - 3.4	- 3 D SSR with Slip Angle
HDB - 3.5	- 3D Lateral/ Tangential /Camber Stiffness
	<b>FEA Analysis Truck Radial</b>
HDB - 4.1	- 2 D inflation analysis
HDB - 4.2	- 3 D Load deflection
HDB - 4.3	- 3 D Steady State Rolling
HDB - 4.4	- 3 D SSR with Slip Angle
HDB - 4.5	- 3D Lateral/ Tangential /Camber Stiffness
	<b>FEA Analysis Pass / Light Truck Radial</b>
HDB - 5.1	- 2 D inflation analysis
HDB - 5.2	- 3 D Load deflection
HDB - 5.3	- 3 D Steady State Rolling
HDB - 5.4	- 3 D SSR with Slip Angle
HDB - 5.5	- 3D Lateral/ Tangential /Camber Stiffness
	<b>FEA Analysis OTR</b>
HDB - 6.1	- 2 D inflation analysis
HDB - 6.2	- 3 D Load deflection
HDB - 6.3	- 3 D Steady State Rolling
HDB - 6.4	- 3 D SSR with Slip Angle
HDB - 6.5	- 3D Lateral/ Tangential /Camber Stiffness
<b>HD</b>	<b>VEHICLE DYNAMICS PACKAGE TESTING - Field</b>
HD - 7.1	- Acceleration/Braking/Slalom
HD - 7.2	- Fuel Efficiency Test
HD - 7.3	- Steering angle / Torque Test
HD - 7.4	- Slip Angle / Wheel Slip / DLR
	<b>Individual Tests - Field</b>
HD - 8.1	- Acceleration/Braking/Slalom
HD - 8.2	- Fuel Efficiency Test
HD - 8.3	- Steering angle / Torque Test
HD - 8.4	- Slip Angle / Wheel Slip / DLR
HD - 9	- Noise & Vibration
	<b>VEHICLE DYNAMICS PACKAGE TESTING - In house</b>
HD - 10.1	- Acceleration/Braking/Slalom
HD - 10.2	- Fuel Efficiency Test
HD - 10.3	- Steering angle / Torque Test
HD - 10.4	- Slip Angle / Wheel Slip / DLR
	<b>Individual Tests - In house</b>
HD - 11.1	- Acceleration/Braking/Slalom
HD - 11.2	- Fuel Efficiency Test
HD - 11.3	- Steering angle / Torque Test
HD - 11.4	- Slip Angle / Wheel Slip / DLR
HD - 12	- Noise & Vibration
HD - 13	- g' values
HD - 14	- Tyre Noise Prediction
HD - 15	- Footprint pressure distrib.
HD - 16	- 3 D mechanical Digitizer

Method No.	TEST PARAMETER
<b>HDP</b>	<b>FEA Analysis Truck Bias</b>
HDP - 1.1	- Inflation analysis
HDP - 1.2	- 3 D Load deflection
HDP - 1.3	- 3 D Steady State Rolling
HDP - 1.4	- 3 D SSR with Slip Angle
HDP - 1.5	- 3D Lateral/ Tangential /Camber Stiffness
	<b>FEA Analysis Pass / Light Truck</b>
HDP - 2.1	- Inflation analysis
HDP - 2.2	- 3 D Load deflection
HDP - 2.3	- 3 D Steady State Rolling
HDP - 2.4	- 3 D SSR with Slip Angle
HDP - 2.5	- 3D Lateral/ Tangential /Camber Stiffness
	<b>FEA Analysis Tractor Bias</b>
HDP - 3.1	- Inflation analysis
HDP - 3.2	- 3 D Load deflection
HDP - 3.3	- 3 D Steady State Rolling
HDP - 3.4	- 3 D SSR with Slip Angle
HDP - 3.5	- 3D Lateral/ Tangential /Camber Stiffness
	<b>FEA Analysis Truck Radial</b>
HDP - 4.1	- Inflation analysis
HDP - 4.2	- 3 D Load deflection
HDP - 4.3	- 3 D Steady State Rolling
HDP - 4.4	- 3 D SSR with Slip Angle
HDP - 4.5	- 3D Lateral/ Tangential /Camber Stiffness
	<b>FEA Analysis Pass / Light Truck Radial</b>
HDP - 5.1	- Inflation analysis
HDP - 5.2	- 3 D Load deflection
HDP - 5.3	- 3 D Steady State Rolling
HDP - 5.4	- 3 D SSR with Slip Angle
HDP - 5.5	- 3D Lateral/ Tangential /Camber Stiffness
	<b>FEA Analysis OTR</b>
HDP - 6.1	- Inflation analysis
HDP - 6.2	- 3 D Load deflection
HDP - 6.3	- 3 D Steady State Rolling
HDP - 6.4	- 3 D SSR with Slip Angle
HDP - 6.5	- 3D Lateral/ Tangential /Camber Stiffness
HTU-01	- Stiffness (Tengential/ Radial/ Lateral/ Torsional) - per condition
HTU-02	- Bead Unseating - per tyre
HTU-03	- Plunger test (PC & LT) - per tyre
HTR-01	- RR for PC - per condition
HTR-02	- RR for Truck - per condition
HTR-03	- BI for PC - per tyre
HTR-04	- BI for Truck - per tyre
HTE-01	- Endurance for PC - per day
HTE-002	- Endurance for Truck - per day
HTE-003	- High Speed for PC - per tyre
HTE-004	- Hot Spot (Speed+Thermography) - per tyre

List of Testing Charges

Method No.	TEST PARAMETER
HTE-05	- Belt Test
HTE-06	- Burst test (Max 10bar Air Pressure) - per tyre
HTC - 01	- Tyre changing PC
HTC - 02	- Tyre changing Truck
HTC - 03	- Truck Plunger - per tyre
HTC - 04	- Truck Load Deflection - per tyre
HTC - 05	- Dimension (Overall Width, OD) - per tyre
HTC - 05A	- Dimension (Section Width, Circumference/OD), Tread arc width, NSD at center and Engraving Snaps - per tyre
HTC - 05B	- Dimension (Overall Width, OD), Tread arc width, Tread drop, Tread chord width, tread arc radius, NSD at center & shoulder, Total No. of blocks (Lugs) - per tyre
HTC - 06	- Angle book & Crosssection Analysis - per tyre
HTC - 06A	- Angle book & Crosssection Analysis(Truck) - per tyre
HTC - 07	- Marking - per tyre
HTT - 01	- Footprint-PC (Length, width, L/S ratio, Area) - per condition
HTT - 01A	- Footprint -TRUCK (Length, width, L/S ratio, Area) - per condition
HTT - 01B	- Footprint -TRUCK (Impression) - per condition
HTT - 02	- Angle Book Preparation(Truck) - per condition
HTT - 02B	- Angle Book Preparation(Pass) - per condition
HTT - 03	- Rolling Resistance SAE 31269
HTT - 03A	- Rolling Resistance SAE 32452
HTT - 03B	- Rolling Resistance ISO 18164
HTT - 04	- Force & Moment Sweep Test
HTT - 04A	- Force & Moment Test (GM 15204)
HTT - 04B	- Force & Moment Test (PRAT)
HTT - 05	- Dynamic Load Deflection Test
HTT - 06	- Force & Moment Test (Hysteresis)
HTT - 07	- High Speed Uniformity