

India Group Harmonized High Speed and Low Pressure Endurance Test Sept'09

Introduction

- The maximum speed which the tyre can sustain is specified in many of the standards, such as ECE, Inmetro, GCC, JASO, BIS etc.
- In these standards, the speeds at which various tests are to be conducted are also related to the maximum speed that the tyre can sustain.
- FMVSS, however does not contain such a high speed test requirements and test speeds are standardized irrespective of the speed capability.
- GTR draft (TRANS/WP.29/GRRF/2008/ DRAFT 3 SEPTEMBER 2008) prescribes tyres with speed capability ranging from 80 to 300 km/h (Symbol "F" to "Y")
- Hence, when the test procedure from FMVSS is included in GTR, due cognizance need to be given the applicability of these "standardized test speeds to the speed capability of the tyre.

Scenario With GTR

Relationship between test speeds and speed capability of tyre

Test Name	GTR	ECE 30	ECE 54	DOT (FMVSS)	BIS	Others (In-Metro, GCC, JASO)
High Speed Test for speed	x For $\leq S$ ✓ For $\geq T$	✓	✓	x	✓	✓
Endurance test	x	x	✓	x	✓	✓
Low pressure Endurance Test	x	Test not covered	Test not covered	x	Test not covered	Test not covered

High speed test

- Test methods included in draft GTR for tyres for speed symbols T and above are from ECE, due to severity of ECE tests to be more than FMVSS
- Draft GTR prescribes FMVSS procedure for tyres for speed symbols S and below, which are:
 - 120 min @80km/h
 - 30 min @ 140km/h
 - 30 min @ 150 km/h
 - 30 min @ 160 km/h
- In cases of tyres with speed symbol upto "P" (150km/h) the Standardized test speeds of FMVSS are higher than the speed capability of the tyre, for a considerable period of time.

High speed test

Examples of exceptions of sizes under usage on vehicles qualifying under GTR classification, which have speed symbols of P & N

Size	Vehicle Under Usage	Max. Load capability
185R14 LT 102 P	Fiat Road star	850 kgs
195R15 LT 104 P	M&M Maxxi pick up	900 kgs
185/85R16 LT 105 P	M&M Maxx	925 kgs
7.00R15 LT 110 M	M&M CBC pick up	1060 kgs
7.00R16 LT 112 M	Tata 207 Di	1120 kgs

These tyres would be subjected to a far more stringency test condition than the design capability of the tyre.

It is understood that tyres of such speed symbols are not in common use in USA.

High speed test

- Hence India suggests that the test procedure may be amended as:
 - For tyres with Speed symbol Q, and above- Same as GTR

- For tyres with speed symbol P and below :
(90% of rated load; Std. 180, Reinf. 220, Rated IP)

Time (min)	Speed (kph)
• 0-10	0-Max Speed -20
• 10	Max Speed -20
• 20	Max Speed -10
• 20	Max Speed

Endurance Test

- The GTR prescribes a test speed of 120km/h irrespective of speed symbol.
- India feels that this test speed is logical for tyres with speed symbol "Q" and above
- Hence India suggests that the endurance test prescribed, as given below: (Std. 180, Reinf. 220, Rated IP)

Time	4 Hrs	6 Hrs	24 Hrs
Load	75% RL	97% RL	114% RL
Test Speed	F to K – Not specified. L: 64km/h, M:80 km/h, N:88km/h and P: 96km/h		
Continue with low pressure test			
RL = Rated Load			

Low Pressure Endurance Test

- The GTR prescribes a test speed of 120km/h irrespective of speed symbol.
- India feels that this test speed is logical for tyres with speed symbol "Q" & above
- Hence India suggests the following test speeds:

Inflation pressure for standard load = 140 kPa; Reinforced 160kPa; LT version = 58% of rated IP; Time duration – 90 mnts @ 100% load

Speed symbol	Test Speed (km/h)	Speed symbol	Test Speed (km/h)
F to K	Not Specified	N	88
L	64	P	96
M	80		