Global Technical Regulation for TYRES

- status -

The European Tyre and Rim Technical Organisation

GTR – GRRF20050921

Informal document No. GRRF–58-18
(58th GRRF, 20-23 September 2005, agenda item 5.1.)
ETRTO analysis – updating

Current situation in Global market:
• A detailed worldwide analysis leads to a proliferation of test methods, approximately:
  o 27 different test methods
  o 6 different legal side-wall markings
  o 2 factory code lists

• Various administrative prescriptions (complicated, costly, time-consuming)
• Small markets are adding to the list and are usually the most demanding
• New regulations 2004 – Colombia, India, Indonesia, Perù; 2005 – Ghana, Kenya, Nigeria.
# Proliferation of Tests & Legal Marking

<table>
<thead>
<tr>
<th>Tests (Pass. Car tyres)</th>
<th>ECE (1958)</th>
<th>UE D.92/23</th>
<th>DOT 109/139</th>
<th>ADR</th>
<th>SASO</th>
<th>CCC</th>
<th>NIS</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Speed test</td>
<td>X1</td>
<td>X1</td>
<td>X2</td>
<td>X3</td>
<td>X4</td>
<td>X5</td>
<td>X6</td>
<td>6</td>
</tr>
<tr>
<td>Endurance</td>
<td>Y1</td>
<td>Y2</td>
<td>Y3</td>
<td>Y4</td>
<td>Y5</td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Breaking Energy</td>
<td>Z1</td>
<td>Z1</td>
<td>Z2</td>
<td>Z3</td>
<td>Z4</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Low pressure Perf.</td>
<td>L1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Bead Unseating</td>
<td>U1</td>
<td>U2</td>
<td>U3</td>
<td>U4</td>
<td>U5</td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>5 different « safety » tests</td>
<td></td>
<td></td>
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<tr>
<td>21 different test methods for a worldwide approval for the same tyre design</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Physical dimensions</td>
<td>M1</td>
<td>M1</td>
<td>M2</td>
<td>M3</td>
<td>M4</td>
<td>M5</td>
<td>M6</td>
<td></td>
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</tr>
<tr>
<td>6 different methods to measure the same tyre design</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific sidewall legal marking</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>COST?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
ETRTO proposals in the framework of 1958 and 1998 agreements
Proposal to build the Test Menu

- Invite WP 29 C.P. to submit additional tests they consider not covered in the framework the 1958 agreement and that they want to include in the Test menu
- C.P. to select the most appropriate tests.
- Establish the GTR Test Menu for tyres approved by WP29.
- Define the procedure for the possible evolutions in the framework of WP29

(C.P. : Contracting Parties)
Proposal to build the Test Menu

The test menu for GTR will include:

– all the type of tests already used in the main regulations

– for each type of performance, only one harmonized test to be selected

– the best regulatory practice to be defined as reference benchmark

With the objective of:

– avoid the actual proliferation of regulations
**The Approved List of Components (Tests)**

(ETRTO Tyres – working group meeting – Apr.28 ‘05)

1. Tyre Sidewall Markings
2. Dimensions Test
3. High Speed Test (speed rating related)
4. Low Speed Test
5. Endurance Test
6. Low Pressure Endurance Test
7. Plunger Energy Test (Braking Eng.)
8. Bead Unseating Test
9. Tyre/Road Sound Emission Test
10. Tyre Wet Grip Adhesion Test

1. Various Regulations
2. Various Regulations
3. Various Regulations
4. Various Regulations
5. Various Regulations
6. USA FMVSS139 (*)
7. Various Regulations
8. Various Regulations
9. UNECE Reg.117
10. ISO standard

Various Regulations

Harmonised Test NOT Available

(*) pending review as per Tyre Industry petition for reconsideration

The European Tyre and Rim Technical Organisation

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No7
TEST METHOD HARMONISATION PROCESS

Technical prescriptions assessment
Similarities (harmonised)
Differences (non-harmonised)
Rational (for harmonisation)

Proposal for harmonisation

Unique Harmonised test methods

DOE
(Design of Experiment)
Tests & Scientific assessment
Validation of the proposal

INDIA AIS
CHINA GB
AUSTRALIA ADR
USA FMVSS
UNECE REG.
EU Dir.
# TEST METHODS HARMONISATION STATUS

## REFERENCE TEST METHODS

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Tyre Sidewall Markings</td>
</tr>
<tr>
<td>2.</td>
<td>Dimensions Test</td>
</tr>
<tr>
<td>3.</td>
<td>Harmonised High Speed Test</td>
</tr>
<tr>
<td>4.</td>
<td>a) Endurance, followed by b) Low Pressure Test</td>
</tr>
<tr>
<td>5.</td>
<td>Plunger Energy Test (Braking Eng.)</td>
</tr>
<tr>
<td>6.</td>
<td>Bead Unseating Test</td>
</tr>
<tr>
<td>7.</td>
<td>Tyre/Road Sound Emission Test</td>
</tr>
<tr>
<td>8.</td>
<td>Tyre Wet Grip Adhesion Test</td>
</tr>
</tbody>
</table>

## HARMONISATION STATUS

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Not harmonised</td>
</tr>
<tr>
<td>2.</td>
<td>Not harmonised</td>
</tr>
<tr>
<td>3.</td>
<td>Not harmonised and with significant differences</td>
</tr>
<tr>
<td>4.</td>
<td>a) Not harmonised b) USA FMVSS139 (*)</td>
</tr>
<tr>
<td>5.</td>
<td>Not harmonised</td>
</tr>
<tr>
<td>6.</td>
<td>Not harmonised</td>
</tr>
<tr>
<td>7.</td>
<td>UNECE Reg.117</td>
</tr>
<tr>
<td>8.</td>
<td>ISO standard</td>
</tr>
</tbody>
</table>

## ACTIONS

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>AD-HOC evaluation</td>
</tr>
<tr>
<td>2.</td>
<td>Proposal</td>
</tr>
<tr>
<td>3.</td>
<td>DOE to develop a new test method</td>
</tr>
<tr>
<td>4.</td>
<td>a) On-going eval. b) Consolidation</td>
</tr>
<tr>
<td>5.</td>
<td>On-going eval.</td>
</tr>
<tr>
<td>6.</td>
<td>On-going eval.</td>
</tr>
<tr>
<td>7.</td>
<td>ISO as reference</td>
</tr>
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<td>8.</td>
<td>ISO as reference</td>
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(*) pending review as per Tyre Industry petition for reconsideration

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2. DIMENSIONS TEST METHOD

Technical prescriptions assessment
Similarities (harmonised)
Differences (non-harmonised)
Rational (for harmonisation)

Proposal for harmonisation

Unique Harmonised test methods

DOE
(Design of Experiment)
Tests & Scientific assessment
Validation of the proposal
The Modular Approach

(GTR Tyres – working group meeting – Apr.28 ‘05)

Mandatory Minimum Requirement

1.1 Marking
1.2 Dimensions
1.3 Safety test: Harmonised test or 139 High Speed Test
   plus ECE R30 speed rating test

Module 1 – Permissive Requirement

2.1 Plunger Energy Test
2.2 Endurance/Low Pressure Test
2.3 Bead Unseating test

Module 2 – Permissive Requirement

3.1 Tyre rolling sound
3.2 Tyre wet grip adhesion
The Modular Approach
(WP29 AC3 – proposal to Tyre Industry – Jun. ‘05)

Mandatory Minimum Requirement
1.1 Marking
1.2 Dimensions
1.3 Safety Test: Harmonised Test or
   139 High Speed Test plus
   ECE30 Speed Rating Test

Module 1 – Permissive Requirement
2.1 Plunger Energy Test
2.2 Endurance/Low Pressure Test
2.3 Bead Unseating test

Module 2 – Permissive Requirement
3.1 Tyre Rolling Sound
3.2 Tyre Wet Grip Adhesion

Mandatory Minimum Requirement
1.1 Marking
1.2 Dimensions
1.3 Harmonised High Speed Safety Test
1.4 Endurance/Low Pressure Test
1.5 Tyre Wet Grip Adhesion

Module 1 – Permissive Requirement
2.1 Plunger Energy Test

Module 2 – Permissive Requirement
3.1 Tyre Rolling Sound

Tyre Ind. On-going Actions: evaluation of implications for next AC3

The European Tyre and Rim Technical Organisation

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# TEST METHODS HARMONISATION STATUS

<table>
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<tr>
<th>REFERENCE TEST METHODS</th>
<th>HARMONISATION STATUS</th>
<th>ACTIONS</th>
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<tr>
<td>1. Tyre Sidewall Markings</td>
<td>1. Not harmonised</td>
<td>1. AD-HOC evaluation</td>
</tr>
<tr>
<td>2. Dimensions Test</td>
<td>2. Not harmonised</td>
<td>2. <strong>Proposal</strong></td>
</tr>
<tr>
<td>3. Harmonised High Speed Test</td>
<td>3. Not harmonised and with significant differences</td>
<td>3. DOE to develop a new test method</td>
</tr>
<tr>
<td>a) High Speed Test (Reg.30-like)</td>
<td>a) Not harmonised</td>
<td>a) <strong>On-going eval.</strong></td>
</tr>
<tr>
<td>b) Low Speed Test (139-like)(*)</td>
<td>b) Not harmonised</td>
<td>b) <strong>On-going eval.</strong></td>
</tr>
<tr>
<td>4. a) Endurance, followed by</td>
<td>4. a) Not harmonised</td>
<td>4. a) <strong>On-going eval.</strong></td>
</tr>
<tr>
<td>b) Low Pressure Test</td>
<td>b) USA FMVSS139 (*)</td>
<td>b) <strong>Consolidation</strong></td>
</tr>
<tr>
<td>5. Plunger Energy Test (Braking Eng.)</td>
<td>5. Not harmonised</td>
<td>5. <strong>On-going eval.</strong></td>
</tr>
<tr>
<td>7. Tyre/Road Sound Emission Test</td>
<td>7. UNECE Reg.117</td>
<td>7. ISO as reference</td>
</tr>
<tr>
<td>8. Tyre Wet Grip Adhesion Test</td>
<td>8. ISO standard</td>
<td>8. ISO as reference</td>
</tr>
</tbody>
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*Tyre Ind. On-going Actions: evaluation of 3.a, 3.b, 4.a, 5, 6

(*) pending review as per Tyre Industry petition for reconsideration

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Thank you for your attention