

**THE NETHERLANDS  
(N E D E R L A N D)**

**COMMUNICATION**

 Concerning <sup>(1)</sup>:

- approval granted
- ~~approval extended~~
- ~~approval refused~~
- ~~approval withdrawn~~
- ~~production definitely discontinued~~

of a type of tyre with regard to 'rolling sound emission level' and/or 'adhesion performance on wet surfaces' and/or 'rolling resistance' pursuant to Regulation number 117.

**Approval number: E4\*117R02/10\*11337\*00**
**Suffix(es) <sup>(3)</sup>: 02S2WR2**

- |      |   |   |
|------|---|---|
| 1.   | Manufacturer's name and address                                     | : ZODO TIRE CO., LIMITED<br>The South of Yalujiang Road, Wenzhuang<br>Village Qinghe Agency of Cao County Heze<br>City, Shandong Province 274400 China(PROC). |
| 2.   | If applicable, name and address of<br>manufacturer's representative | : N/A   |
| 3.   | 'Tyre class' and 'category of use' of<br>the type of tyre           | : Class C1 / <del>Class C2</del> / <del>Class C3</del> <sup>(1)</sup><br><del>normal</del> / snow / <del>special</del> <sup>(1)</sup>                         |
| 3.1. | Snow tyre for use in severe snow<br>conditions                      | : yes/no <sup>(1)</sup>   |
| 3.2. | Traction tyre   | : yes/no <sup>(1)</sup>   |
| 4.   | Tyre type designation   | :   |
| 4.1. | Brand name(s)/trademark(s) of the<br>type of tyre                   | : GRENLANDER; ARIVO; T TYRE;<br>CONSTANCY; ILINK; LUXXAN; RHINO;<br>CRYSTAL; ROCKBLADE; FRONWAY;<br>SAILWIN; XBRI; ROADMARCH; KANGS;<br>ZMAX; XCENTWAY        |



- 4.2. Trade description(s)/Commercial name(s) of the type of tyre : COLO H02; L-GRIP55; ECOGREEN 55; VENUSATR 55; PREMIO ARZERO; INSPIRER ECO; ROCK 555; PRIMESTAR 55; LANDGEMA; Transcender 701
5. Technical service and, where applicable, test laboratory approved for purposes of approval or of verification of conformity tests : IDIADA Automotive Technology, S.A.  
L'Albornar, P.O. Box 20  
43710 Santa Oliva (Tarragona), SPAIN
6. Performance(s) approved : sound level at (~~stage 1~~/stage 2)<sup>(1)</sup>, wet adhesion level, rolling resistance level (~~stage 1~~/stage 2)<sup>(1)</sup>
- 6.1. Sound level of the representative tyre size, see Paragraph 2.5. of Regulation number 117, as per item 7. of the test report in the appendix 1 to Annex 3: 67 dB(A) at reference speed of 70/80 km/h<sup>(1)</sup>.
- 6.2. Wet adhesion level of the representative tyre size, see Paragraph 2.5. of Regulation number 117, as per item 7. of the test report in the appendix to Annex 5: 1.31 (G) using the vehicle ~~or trailer~~ method<sup>(1)</sup>.
- 6.3. Rolling resistance level of the representative tyre size, see paragraph 2.5. of Regulation number 117, as per item 7. of the test report in the appendix 3 to Annex 6: 9.00 N/kN.
- 6.4. Snow grip level of the representative tyre size, see paragraph 2.5. of Regulation No. 117, as per item 7. of the test report in the appendix<sup>(4)</sup> to Annex 7: N/A (Snow grip index) using the ~~brake on snow method~~<sup>(1)</sup>, ~~spin traction method~~<sup>(1)</sup> or ~~acceleration method~~<sup>(1)</sup>.
7. Number of report issued by that service : CN20040106
8. Date of report issued by that service : 02/04/2020
9. Reason(s) of extension (if applicable) : N/A
10. Any remarks : N/A



**Approval number: E4\*117R02/10\*11337\*00**

11. Place : Zoetermeer  
12. Date : 21 April 2020  
13. Signature :



**R.F.R. Clement**

14. Annexed to this communication are:
- 14.1. A list of documents in the approval file deposited at the Type Approval Authorities having delivered the approval and which can be obtained upon request<sup>(5)</sup>.
- 14.2. A list of tyre size designations: Specify for each brand name/trademark and/or each trade description/Commercial name the list of tyre size designations, adding in case of Class C1 tyres the mark 'reinforced' (or 'extra load') or the speed symbol of snow tyres or in the case of tyres of Classes C2 and C3, the mark 'traction', if so required by paragraph 3.1. of this Regulation.

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<sup>(1)</sup> Strike out what does not apply.

<sup>(2)</sup> According to Schedule 4 to Revision 3 of the 1958 Agreement.

<sup>(3)</sup> According to paragraphs 5.2.2. and 5.3.1.2. of this Regulation.

<sup>(4)</sup> Appendix 2 for C1 and C2 tyres.

Appendix 3 for C3 tyres.

<sup>(5)</sup> In the case of 'snow tyre for use in severe snow conditions' a test report according to Appendix 2 of Annex 7 shall be submitted.

# İİDİÄDÄ

TECHNICAL DOCUMENTATION



İİDİÄDÄ CN20040106

**RELATING TO ECE TYPE-APPROVAL FOR A TYPE OF TYRE WITH REGARD TO ROLLING SOUND EMISSIONS AND TO ADHESION PERFORMANCE ON WET SURFACES AND/OR TO ROLLING RESISTANCE (ECE Regulation No. 117. 02, Supplement 10)**

1. GENERAL

- 1.1. The performance characteristics to be assessed for the tyre type : Rolling sound emission level and adhesion performance level on wet surfaces and rolling resistance
- 1.2. Manufacturer's name : ZODO TIRE Co., LIMITED
- 1.3. Name and address of applicant : The South of Yalujiang Road, Wenzhuang Village Qinghe Agency of Cao County Heze City, Shandong Province 274400 China(PROC)
- 1.4. Address(es) of manufacturing plant(s) : same with the applicant
- 1.5. Brand name(s), Trade description(s) or Trade mark(s) to be used for particular tyre type-approval requested : Brand name: GRENLANDER; ARIVO; T TYRE; CONSTANCY; ILINK; LUXXAN; RHINO; CRYSTAL; ROCKBLADE; FRONWAY; SAILWIN; XBRI; ROADMARCH; KANGS; ZMAX; XCENTWAY  
Tread pattern: COLO H02; L-GRIP55; ECOGREEN 55; VENUSATR 55; PREMIO ARZERO; INSPIRER ECO; ROCK 555; PRIMESTAR 55; LANDGEMA; Transcender 701

2. Tyre

- 2.1. Tyre classification (class C1, C2, C3) : Class C1 / ~~Class C2~~ / ~~Class C3~~
- 2.2. Section width range for class C1 tyres : see attached "list of tyre size"
- 2.3. Tyre structure : ~~diagonal / bias belted~~ / radial
- 2.4. For Class C1 tyres, state weather :
- 2.4.1. Reinforced (or extra load) in case of approval with regarding to rolling sound emission level : see attached "list of tyre size"
- 2.4.2. Speed category symbol "Q" or below (not including "H") or "R" and above (including "H") in case of snow tyres for approval with regarding to adhesion on wet surfaces : not applicable
- 2.5. For Class C2 or C3 tyres, state weather "Traction tyre" : N.A.
- 2.6. Category of use (normal, snow, special) : ~~normal~~ / snow (snow tyre for use in severe snow conditions) / ~~special~~
- 2.7. A list of tyre designations covered by this application : see attached "list of tyre size"
- 2.8. Details of major features, with respect to the effects on tyre performance (i.e. rolling emission level or adhesion on wet surfaces, respectively) of the tread pattern(s) to be used on the designated range of tyre sizes. : see attached "drawing of tread pattern"
- 2.9. In the case of "special use tyre", drawing of the tread pattern supplied in order to verify the void-to-fill ratio. : not applicable
- 2.10. Submitted for approval on (date) : March 13, 2020

MANUFACTURER'S STAMP



Signature :

*Ren Hailang*

Name:



THIS APPLICATION IS ACCOMPANIED BY:

- List of tyre size
- Drawing of tread pattern

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- The test report

List of tyre size

Brand name(s) or Trade mark(s) : GRENLANDER;ARIVO;T TYRE;CONSTANCY; ILINK;  
LUXXAN;RHINO;CRYSTAL;ROCKBLADE;FRONWAY;  
SAILWIN;XBRI;ROADMARCH;KANGS;ZMAX; XCENTWAY

Tread pattern : COLO H02; L-GRIP55; ECOGREEN 55; VENUSATR 55;  
PREMIO ARZERO; INSPIRER ECO; ROCK 555;  
PRIMESTAR 55; LANDGEMA; Transcender 701

Tyre size	Approval No.	Limit for rolling sound dB(A) of Stage II	Limit for wet grip index	Limit for rolling resistance coefficient N/KN of Stage II
155/70R12 73T	E4-02122446	70dB(A)	1.1	10.5
165/70R13 79T	E4-02114169	70dB(A)	1.1	10.5
155/65R13 73T	E4-02114167	70dB(A)	1.1	10.5
155/70R13 75T	E4-02114330	70dB(A)	1.1	10.5
155/80R13 79T	E4-02114168	70dB(A)	1.1	10.5
165/65R13 77T	E4-02114018	70dB(A)	1.1	10.5
175/70R13 82T	E4-02114170	70dB(A)	1.1	10.5
155/65R14 75T	E4-02114333	70dB(A)	1.1	10.5
165/60R14 75H	E4-02114021	70dB(A)	1.1	10.5
165/65R14 79T	E4-02114022	70dB(A)	1.1	10.5
165/70R14 85TXL	E4-02115893	71dB(A)	1.1	10.5
165/70R14 81T	E4-02114334	70dB(A)	1.1	10.5
175/60R14 79H	E4-02121688	70dB(A)	1.1	10.5
175/65R14 86TXL	E4-02119302	71dB(A)	1.1	10.5
175/65R14 82H	E4-0298342	70dB(A)	1.1	10.5
175/70R14 88TXL	E4-02115914	71dB(A)	1.1	10.5
175/70R14 84T	E4-02114171	70dB(A)	1.1	10.5
185/50R14 77V	E4-02121689	70dB(A)	1.1	10.5
155/60R15 74T	E4-02121691	70dB(A)	1.1	10.5
165/60R15 81H XL	E4-02114287	71dB(A)	1.1	10.5
165/65R15 81H	E4-02121692	70dB(A)	1.1	10.5
175/55R15 77H	E4-02121693	70dB(A)	1.1	10.5
175/50R16 77V	E4-02114281	70dB(A)	1.1	10.5
185/55R14 80H	E4-02114284	70dB(A)	1.1	10.5
185/60R14 82H	E4-0299159	70dB(A)	1.1	10.5
185/65R14 86H	E4-0297201	70dB(A)	1.1	10.5
185/70R14 88T	E4-02121690	70dB(A)	1.1	10.5
195/65R14 89H	E4-0298331	71dB(A)	1.1	10.5
175/60R15 81H	E4-02114288	70dB(A)	1.1	10.5
175/65R15 84H	E4-0298344	70dB(A)	1.1	10.5
185/55R15 82V	E4-0297217	70dB(A)	1.1	10.5
185/60R15 88HXL	E4-0297218	71dB(A)	1.1	10.5
185/60R15 84H	E4-02115915	70dB(A)	1.1	10.5
185/65R15 92TXL	E4-02115916	71dB(A)	1.1	10.5
185/65R15 88H	E4-0297202	70dB(A)	1.1	10.5
195/50R15 82V	E4-0297205	71dB(A)	1.1	10.5
195/55R15 85V	E4-0297206	71dB(A)	1.1	10.5
195/60R15 88V	E4-0298327	71dB(A)	1.1	10.5



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195/60R15 88H	E4-0297207	71dB(A)	1.1	10.5
195/65R15 95TXL	E4-02115890	72dB(A)	1.1	10.5
195/65R15 91V	E4-0298328	71dB(A)	1.1	10.5
205/60R15 91V	E4-0298346	71dB(A)	1.1	10.5
205/65R15 94V	E4-0298330	71dB(A)	1.1	10.5
215/65R15 96H	E4-0298352	71dB(A)	1.1	10.5
185/50R16 81V	E4-02114282	70dB(A)	1.1	10.5
185/55R16 87VXL	E4-02121694	71dB(A)	1.1	10.5
185/55R16 83H	E4-02121695	70dB(A)	1.1	10.5
195/50R16 88VXL	E4-02121696	72dB(A)	1.1	10.5
195/55R16 91VXL	E4-02115917	72dB(A)	1.1	10.5
205/50ZR16 91WXL	E4-0284573	72dB(A)	1.1	10.5
205/50ZR16 87W	E4-0295085	71dB(A)	1.1	10.5
205/55ZR16 94WXL	E4-0295086	72dB(A)	1.1	10.5
205/55R16 91V	E4-0297209	71dB(A)	1.1	10.5
205/60R16 96VXL	E4-02115920	72dB(A)	1.1	10.5
205/60R16 92V	E4-0297213	71dB(A)	1.1	10.5
215/55ZR16 97WXL	E4-0285993	72dB(A)	1.1	10.5
215/60R16 99HXL	E4-0297212	72dB(A)	1.1	10.5
215/60R16 95V	E4-0297215	71dB(A)	1.1	10.5
215/65R16 102HXL	E4-02109483	72dB(A)	1.1	10.5
215/65R16 98H	E4-0298353	71dB(A)	1.1	10.5
225/55ZR16 99WXL	E4-0288764	72dB(A)	1.1	10.5
225/60R16 102VXL	E4-02121697	72dB(A)	1.1	10.5
225/60R16 98H	E4-0297216	71dB(A)	1.1	10.5

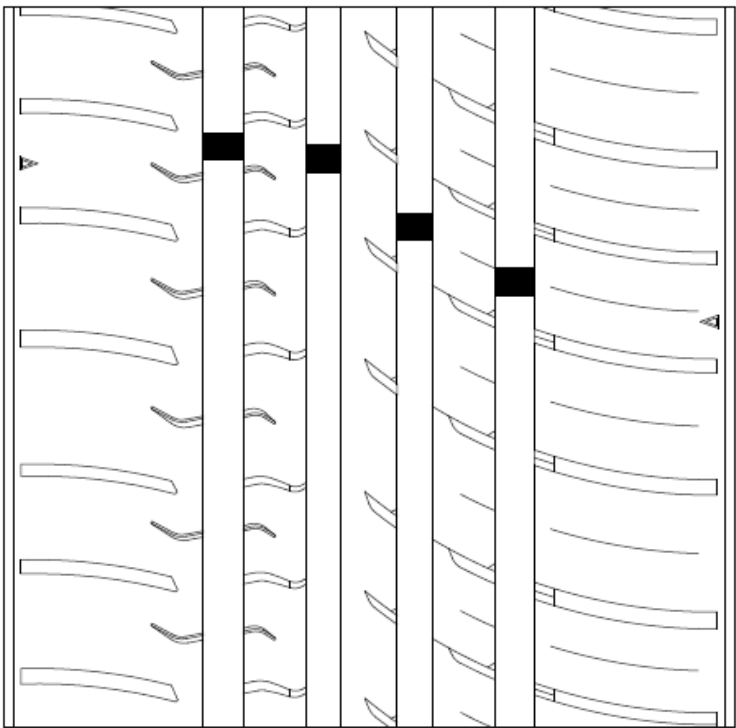


### Worst Case Selection

- Test size for rolling sound : 225/55ZR16 99W XL  
Because of : Largest section width, Lowest aspect ratio
- Test size for wet grip : 225/55ZR16 99W XL  
Because of : The wet grip test result of 225/55ZR16 99WXL is  $G=1.31$ , witch is 110% above the limit value of ECE-R117(for snow tyre for us,the 110% limit value is  $G=1.21$ )
- Test size for rolling resistance : 155/65R13 73T  
Because of : Lowest load capacity index

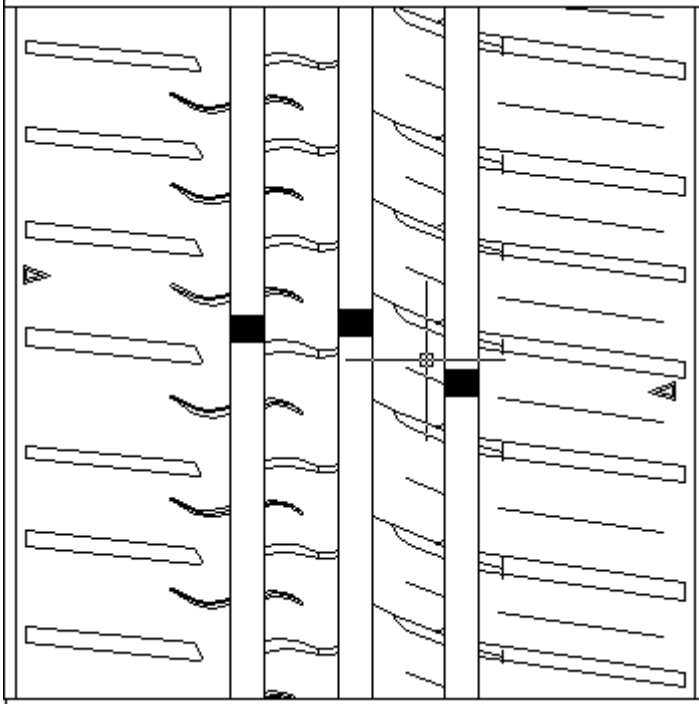




Drawing of the tread pattern (for measured tyre using for tyre noise and wet grip)	
Manufacturer name	: ZODO TIRE Co., LIMITED
Pattern name	: COLO H02; L-GRIP55; ECOGREEN 55; VENUSATR 55; PREMIO ARZERO; INSPIRER ECO; ROCK 555; PRIMESTAR 55; LANDGEMA; Transcender 701
Tyre Size	: 225/55ZR16 99WXL
Market	: EU/US
Pitch number	: 65
Pitch ratio	: 0.9/1.1/1.2
Void volume [ % ]	: 65
Width: main grooves [mm]	: 14.5/10.8/10.8/14.5
Depth: center groove [mm]	: 7.5
Depth: shoulder groove [mm]	: 4.5
Tyre tread pattern	: 

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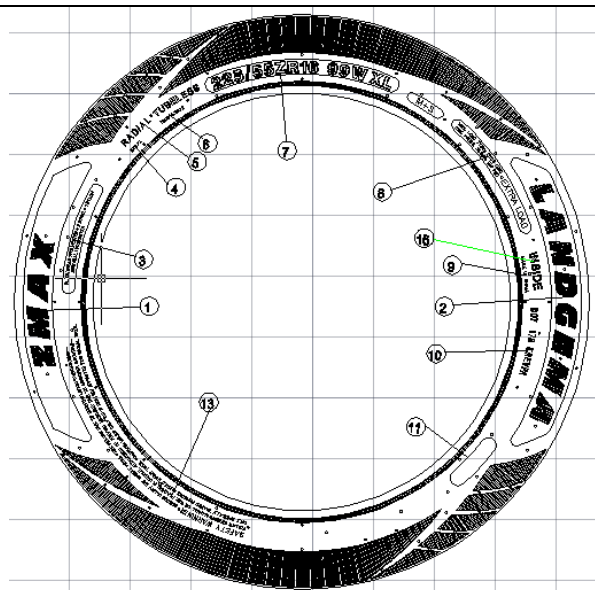
Drawing of the tread pattern (for measured tyre using for tyre rolling resistance test)	
Manufacturer name	: ZODO TIRE Co., LIMITED
Pattern name	: COLO H02; L-GRIP55; ECOGREEN 55; VENUSATR55; PREMIO ARZERO;INSPIRER ECO; ROCK 555; PRIMESTAR 55; LANDGEMA; Transcender 701;
Tyre Size	: 155/65R13 73T
Market	: EU/US
Pitch number	: 70
Pitch ratio	: 0.9/1.1/1.2
Void volume [ % ]	: 71
Width: main grooves [mm]	: 8.2/8/8.2
Depth: center groove [mm]	: 6.6
Depth: shoulder groove [mm]	: 3.8
Tyre mass [kg]	: 5.192
Tread depth [mm]	: 6.6
Tread width [mm]	: 110
Curvature radius of tread crown [mm]	: 255
Tyre outer diameter [mm]	: 532
Tread plies	: 1 POLYESTER 2 STEEL 1 NYLON
Tyre tread pattern	: 



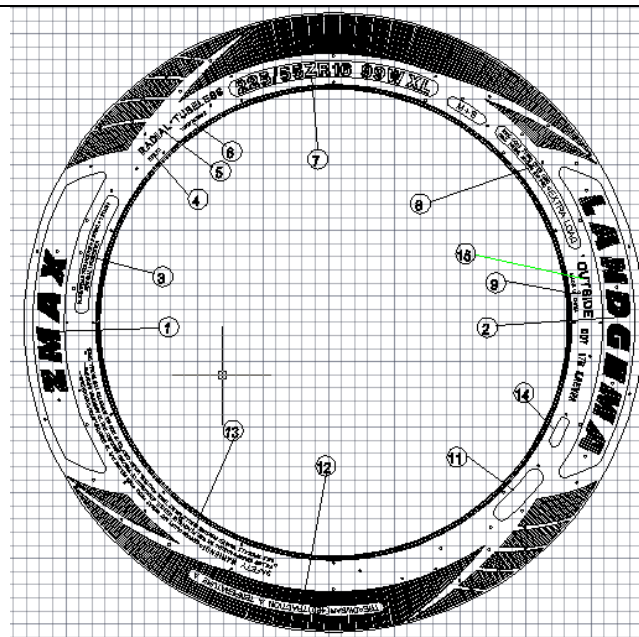
Drawing of the tyre sidewall

Tyre Size

: 225/55ZR16 99WXL



Upper mold



Lower mold

1.ZMAX	1.ZMAX
2. LANDGEMA	2. LANDGEMA
3. PLYS:TREAD 2POLYESTER+2STEEL+1NYLON SIDEWALL 2POLYESTER	3. PLYS:TREAD 2POLYESTER+2STEEL+1NYLON SIDEWALL 2POLYESTER
4. RIM:7J	4. RIM:7J
5. RADIAL TUBELESS	5. RADIAL TUBELESS
6. MOLD No.	6. MOLD No.
7. 225/55ZR16 99WXL M+S	7. 225/55ZR16 99WXL M+S
8. MAX. LOAD 775 kg(1709 LBS) MAX. PRESS. 340 kPa(50 PSI) EXTRA LOAD	8. MAX. LOAD 775 kg(1709 LBS) MAX. PRESS. 340 kPa(50 PSI) EXTRA LOAD
9. MADE IN CHINA	9. MADE IN CHINA
10. DOT 17B KREVPA	11. ECE APPROVAL MARK
11. ECE APPROVAL MARK	12. TREADWERA 400 TRACTION A TEMPERATURE A
13. SAFETY WARNING	13. SAFETY WARNING
15. INSIDE	14. DOT 17B KREVPA x x x x (DATE CODE)
	15. OUTSIDE



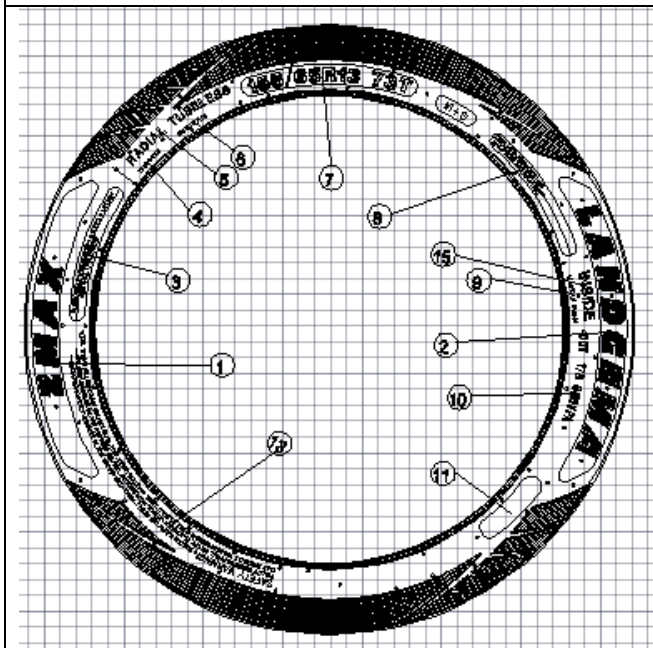
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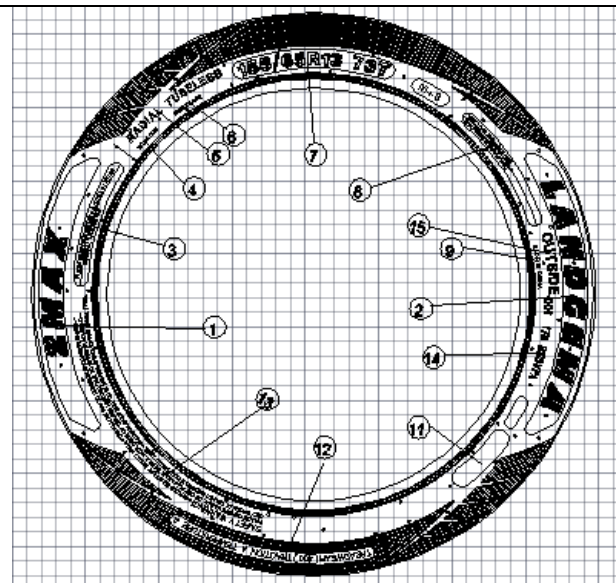
Drawing of the tyre sidewall

Tyre Size

: 155/65R13 73T

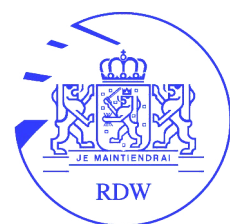


Upper mold



Lower mold

1.ZMAX	1.ZMAX
2. LANDGEMA	2. LANDGEMA
3. PLYES:TREAD 1POLYESTER+2STEEL+1NYLON SIDEWALL 1POLYESTER	3. PLYES:TREAD 1POLYESTER+2STEEL+1NYLON SIDEWALL 1POLYESTER
4. RIM:4.50B	4. RIM:4.50B
5. RADIAL TUBELESS	5. RADIAL TUBELESS
6. MOLD No.	6. MOLD No.
7. 155/65R13 73T M+S	7. 155/65R13 73T M+S
8. MAX. LOAD 365 kg(805LBS) MAX. PRESS. 300 kPa(44 PSI)	8. MAX. LOAD 365kg(805 LBS) MAX. PRESS. 300 kPa(44PSI)
9. MADE IN CHINA	9. MADE IN CHINA
10. DOT 17B BNBVPA	11. ECE APPROVAL MARK
11. ECE APPROVAL MARK	12. TREADWERA 400 TRACTION A TEMPERATURE A
13. SAFETY WARNING	13. SAFETY WARNING
15. INSIDE	14. DOT 17B BNBVPA x x x x (DATE CODE)
	15. OUTSIDE



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**REPORT N° CN20040106****UN/ECE REGULATION 117R02 RELATED TO ROLLING SOUND EMISSIONS, ADHESION ON WET SURFACES AND ROLLING RESISTANCE**

Approval number : E4\*117R02/10\*11337\*00  
Approved performances : S2WR2

Applicant : ZODO TIRE CO., LIMITED  
The South of Yalujiang Road, Wenzhuang Village Qinghe  
Agency of Cao County Heze City, Shandong Province  
274400 China(PROC).

Manufacturer : ZODO TIRE CO., LIMITED  
The South of Yalujiang Road, Wenzhuang Village Qinghe  
Agency of Cao County Heze City, Shandong Province  
274400 China(PROC).

Tyre class : C1

Category of use : Snow

Traction tyre : N/A

Brand name / Trade mark : GRENLANDER; ARIVO; T TYRE; CONSTANCY;  
ILINK; LUXXAN; RHINO; CRYSTAL; ROCKBLADE;  
FRONWAY; SAILWIN; XBRI; ROADMARCH;  
KANGS; ZMAX; XCENTWAY

Trade description/ Commercial name : COLO H02; L-GRIP55; ECOGREEN 55; VENUSATR  
55; PREMIO ARZERO; INSPIRER ECO; ROCK 555;  
PRIMESTAR 55; LANDGEMA; Transcender 701

Place and date of issue : L'Albornar, Santa Oliva (Tarragona), 02/04/2020

CONCLUSIONS: The tested samples of the family FULFIL the technical prescriptions with regard to “rolling sound emissions level” and/or “adhesion performance on wet surfaces” and/or “rolling resistance” pursuant to UN/ECE REGULATION No. 117 supplement 10 to the 02 series of amendments.  
The characteristics of the tested samples are detailed in the annexes to the test report.

Performed by:

Zhaocai (Frank) Yu  
TEST ENGINEER

Revised by:

Lluís Sans Gomis  
DEPARTMENT MANAGER

**REPORT N° CN20040106****SUMMARY**

1. Dimensions included in the type of tyre : See Manufacturer's technical documentation attached
2. Tyre sizes selected for testing
  - 2.1. Tyre size tested for rolling sound emissions : 225/55ZR16 99W XL (largest section width)  
See Annex 1, Test report CN20030127, IDIADA, 10/03/2020
  - 2.2. Tyre size tested for adhesion on wet surfaces: 225/55ZR16 99W XL (meets extra 10%)  
See Annex 2, Test report CN20030129, IDIADA, 10/03/2020
  - 2.3. Tyre tested for rolling resistance : 155/65R13 73T (lowest load index)  
See Annex 3, Test report CN20030608, IDIADA, 03/03/2020
3. Reason(s) of extension (if applicable) : N/A
4. New limit value according to Announcement for the technical service 2018-01

In case a test tyre is selected which does not have the worst case properties the following applies:

A test tyre, not having the worst case properties, performing at least ten percent ( $\geq 10\%$ ) above the minimum required wet grip performance level can represent the whole tyre size range of tyre types

New limit value is  $1.21 < 1.31$  (Wet grip test result)

5. List of Annexes to this report
  - 5.1. Annex 1: Test report according to rolling sound emission level.
  - 5.2. Annex 2: Test report according to adhesion on wet surfaces.
  - 5.3. Annex 3: Test report according to rolling resistance.
  - 5.4. Annex: Manufacturer's technical documentation.

Place and date of issue: L'Albornar, Santa Oliva (Tarragona), 02/04/2020



Zhaocai(frank) Yu  
TEST ENGINEER

**ANNEX TO THE TEST REPORT**  
**ROLLING SOUND EMISSIONS, REPORT N° CN20030127**

**1. TEST DATA**

**1.1. Test tyre details**

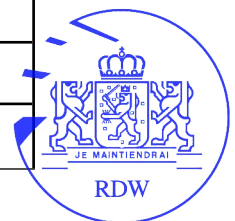
- 1.1.1 Applicant : HANGZHOU SHACE AUTOMOTIVE TECHNOLOGY SERVICES CO., LTD.  
Building 228, Jianding Road, Jianggan District  
310030 HANGZHOU, Zhejiang (CHINA)
- 1.1.2 Manufacturer : ZODO TIRE CO., LIMITED.  
The South of Yalujiang Road, Wenzhuang Village,  
Qinghe Agency of Cao County, Heze City, Shandong  
Province, P.R. China
- 1.1.3 Tyre class : C1
- 1.1.4 Category of use : Snow
- 1.1.5 Traction tyre : N/A
- 1.1.6 Brand name / Trade mark : ZMAX
- 1.1.7 Trade description / Commercial name : LANDGEMA
- 1.1.8 Tyre size : 225/55ZR16 99W XL
- 1.1.9 Load index / Corresponding mass  $Q_r$  [kg] : 99 / 775
- 1.1.10 Tyre structure : Radial
- 1.1.11 Date code, other manufacturer markings : 0120, 17BKREVPA
- 1.1.12 Reference inflation pressure  $P_r$  [kPa] : 290
- 1.1.13 Test inflation pressure  $P_t$  [kPa] :

	<b><math>P_t</math> [kPa] admissible values</b>
Front axle left wheel	$189.76 \leq 190.00 \leq 208.73$
Front axle right wheel	$185.47 \leq 190.00 \leq 204.02$
Rear axle left wheel	$190.62 \leq 200.00 \leq 209.68$
Rear axle right wheel	$194.06 \leq 200.00 \leq 213.47$

$P_t \geq 150$  kPa

FULFILS / NOT FULFILS

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1.1.14 Test tyre internal reference :

Front left	Front right
CN-1912/02719-1	CN-1912/02719-2
Rear left	Rear right
CN-1912/02719-3	CN-1912/02719-4

1.1.15 Test rim : 6.5X16

1.1.16 Test rim internal reference :

Front left	Front right
RIM6.5-16-01	RIM6.5-16-02
Rear left	Rear right
RIM6.5-16-03	RIM6.5-16-04

1.1.17 Test tyre load [kg] :

	kg	$Q_t [N] / \% \frac{Q_t}{Q_r}$
Front axle left wheel	552	50 < 71.23 < 90
Front axle right wheel	542	50 < 69.94 < 90
Rear axle left wheel	554	50 < 71.48 < 90
Rear axle right wheel	562	50 < 72.52 < 90

FULFILS / NOT FULFILS

$Q_{t,avr} [N] / \% \frac{Q_{t,avr}}{Q_r}$
$70 \leq 71.29 \leq 80$

FULFILS / NOT FULFILS



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**1.2. Test vehicle**

1.2.1	Trade name	: Volkswagen
1.2.2	Model	: PASSAT
1.2.3	Year	: 2016
1.2.4	Transmission	: Automatic
1.2.5	Wheelbase [mm]	: 2,803

For Class C1 less than 3,500 mm.

FULFILS / NOT FULFILS

1.2.6	Vehicle internal reference	: ICPG-001
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**1.3. Test equipment**

1.3.1	Sound level meter 1	: 3024593
1.3.2	Sound level meter 2	: 3024412
1.3.3	Manometer	: ICPG-A2
1.3.4	Weight scale	: ICPG-001
1.3.5	Track temperature measurement device	: 182329
1.3.6	Wind speed measurement device	: MM-0316
1.3.7	Speed measurement device	: VBOX sport 07013178
1.3.8	Ambient temperature measurement device	: 182330



## 2. TEST TRACK

### 2.1. Environment

2.1.1 Air temperature  $T_a$  [°C] : 9.4

$5.0 < T_a < 40.0$

FULFILS / NOT FULFILS

2.1.2. Test surface temperature  $T_s$  [°C] : 12.6

$5.0 \leq T_s \leq 50.0$

FULFILS / NOT FULFILS

2.1.3 Wind speed [m/s] : 3.3

Less than 5 m/s

FULFILS / NOT FULFILS

2.1.4 Ambient noise [dB(A)] : 44.0

Test result – Ambient noise  $\geq 10$  dB(A)

FULFILS / NOT FULFILS

2.1.5 Wind direction [°] : 285.0

### 2.2. Date and method of check on compliance of the test surface with ISO 10844:2014:

- March 8<sup>th</sup> 2019
- Mean profile depth
- Issued by : IDIADA.



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**3. TEST RESULTS**

Reference Speed:  $v_{ref}$  [km/h] : 80  
 Range Speed [km/h] : 70.0 - 90.0

Run No.	Test speed [km/h]	Direction of run	Sound level left measured [dB(A)]	Sound level right measured [dB(A)]	Air temp. [°C]	Surface temp. [°C]	Sound level left temp. corrected [dB(A)]	Sound level right temp. corrected [dB(A)]
1	72.1	S→N	68.0	68.3	9.7	12.7	67.6	67.9
2	74.4	S→N	68.0	68.8	9.6	13.3	67.6	68.4
3	76.7	N→S	68.5	68.9	9.8	11.5	68.0	68.4
4	78.0	N→S	68.4	68.7	9.6	13.0	68.0	68.3
5	82.6	S→N	69.9	70.8	9.3	12.9	69.5	70.4
6	84.8	N→S	68.9	69.7	8.6	12.0	68.4	69.2
7	86.0	N→S	69.8	69.8	9.6	12.3	69.3	69.3
8	88.1	N→S	70.2	70.2	9.0	12.9	69.8	69.8

3.1. Regression line slope : 23.85

3.2. Sound level after temperature correction according to paragraph 4.3 of Annex 3 [dB(A)] : 68.7

3.3. Sound level according to paragraph 4.4. and 4.5. of Annex 3 [dB(A)] : 67

3.4. Limit value [dB(A)] :

C1	
Stage 2	
Nominal Section width	Limit dB (A)
185 and lower	70
Over 185 up to 245	71
Over 245 up to 275	72
Over 275	74

The above limits shall be increased by 1 dB(A) for "snow tyre for use in severe snow conditions" , extra load tyres or reinforced tyres, or any combination of these classifications.



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## 4. TEST TYRE PICTURES



Picture 1. Sidewall



Picture 2. Tread pattern

Place of test: ICPG, China

Date of test: 10/03/2020



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Zhaocai(frak) Yu  
TEST ENGINEER

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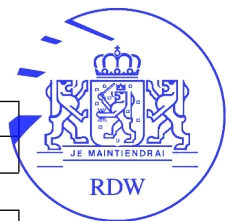
**ANNEX TO THE TEST REPORT**  
ADHESION ON WET SURFACES, REPORT N° CN20030129

**1. TEST DATA**

**1.1. Test tyre details**

- 1.1.1 Applicant : HANGZHOU SHACE AUTOMOTIVE TECHNOLOGY SERVICE CO., LTD.  
Building 228, Jianding Road, Jianggan District  
310030 HANGZHOU, Zhejiang (CHINA)
- 1.1.2 Manufacturer : ZODO TIRE CO., LIMITED  
The South of Yalujiang Road, Wenzhuang Village,  
Qinghe Agency of Cao County, Heze City, Shandong  
Province, P.R. China
- 1.1.3 Tyre class : C1
- 1.1.4 Category of use : Snow
- 1.1.5 Traction tyre : N/A
- 1.1.6 Brand name / Trade mark : ZMAX
- 1.1.7 Trade description / Commercial name : LANDGEMA
- 1.1.8 Tyre size : 225/55ZR16 99W XL
- 1.1.9 Load index / Corresponding mass  $Q_r$  [kg] : 99 / 775
- 1.1.10 Tyre structure : Radial
- 1.1.11 Date code, other manufacturer markings : 0120, 17BKREVPA
- 1.1.12 Inflation pressure [kPa] : 220
- 1.1.13 Test tyre internal reference :

Front left	Front right
CN-1912/02719-01	CN-1912/02719-02
Rear left	Rear right
CN-1912/02719-03	CN-1912/02719-04



- 1.1.14 Test rim : 6.5 x 16
- 1.1.15 Test rim internal reference :

Front left	Front right
RIM6.5X16-01	RIM6.5X16-02

Rear left	Rear right
RIM6.5X16-03	RIM6.5X16-04

1.1.16 Test SRTT identification : UNIROYAL P225/60R16 - ASTM F 2493-08

1.1.17 Test SRTT internal reference :

Front left	Front right
CN-1912/02720-01	CN-1912/02720-02

Rear left	Rear right
CN-1912/02720-03	CN-1912/02720-04

1.1.18 Test SRTT rim : 6.5 x 16

1.1.19 Test SRTT rim internal reference :

Front left	Front right
CN-1912/02725-01	CN-1912/02725-02

Rear left	Rear right
CN-1912/02725-03	CN-1912/02725-04

1.1.20 Test tyre load [kg] :

SRTT 1		Candidate			SRTT 2	
FL	548	FL	552	71.2% Q <sub>r</sub>	FL	516
FR	546	FR	542	69.9% Q <sub>r</sub>	FR	526
RL	558	RL	554	71.5% Q <sub>r</sub>	RL	566
RR	562	RR	562	72.5% Q <sub>r</sub>	RR	594

Between 60 per cent and 90 per cent of the load value corresponding to the load index of the tyre.

FULFILS / NOT FULFILS

## 1.2. Test vehicle

1.2.1 Trade name : Volkswagen

1.2.2 Model : Passat

1.2.3 Year : 2016

1.2.4 Transmission : Automatic

1.2.5 Wheelbase [mm] : 2,803



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1.2.6 Vehicle internal reference : ICPG-Passat

### 1.3. Test equipment

1.3.1 Manometer : ICPG-I3

1.3.2 Weight scale : ICPG-001

1.3.3 Thermometer : 182330

1.3.4 Track temperature measurement device : 182329

1.3.5 Speed measurement device : VBSport 07013178

## 2. TEST TRACK

2.1. Location : ABS Surface, ICPG

2.2. Date of check on compliance of the test surface : April 1<sup>st</sup> 2019

2.3. Test track characteristics:

2.3.1 Texture depth [mm] : 0.98

2.3.2 BPN : 58

2.3.3 Water depth [mm] : Average of 1.31

2.4. Test method : Vehicle

2.5. Air temperature  $T_a$  [°C] : 17.2

2.6. Wet surface temperature  $T_w$  [°C] :

$$2.0 \leq T_w \leq 20.0$$

SRTT 1	Candidate tyre	SRTT 2
6.4	8.8	11.0

FULFILS / NOT FULFILS

Variation during the test less than 10°C



FULFILS / NOT FULFILS

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**3. TEST RESULTS**

Test run	SRTT 1		Candidate Tyre		SRTT 2	
	Braking distance [m]	Average deceleration [m/s <sup>2</sup> ]	Braking distance [m]	Average deceleration [m/s <sup>2</sup> ]	Braking distance [m]	Average deceleration [m/s <sup>2</sup> ]
1	30.80	7.52	29.73	7.79	29.47	7.85
2	29.63	7.81	29.68	7.80	30.63	7.56
3	29.79	7.77	29.65	7.81	29.71	7.79
4	-	-	29.31	7.90	-	-
5	-	-	29.62	7.82	-	-
6	-	-	29.43	7.87	-	-

**Coefficient of variation**

SRTT 1	Candidate Tyre	SRTT 2
2.09	0.56	2.03
< 3 per cent	< 3 per cent	< 3 per cent

**FULFILS / NOT FULFILS**

Run No	Test Speed [km/h]	Direction of run	SRTT	Candidate Tyre	Mean fully developed deceleration (mfdd)	BFC(R)	BFC(T)	Pedal force [N]
1	80 - 20	S - N	P225/60R16	---	7.70 m/s <sup>2</sup>	---	---	> 600
2	80 - 20	S - N	---	225/55ZR16	7.83 m/s <sup>2</sup>	0.79	0.80	> 600
4	80 - 20	S - N	P225/60R16	---	7.73 m/s <sup>2</sup>	---	---	> 600



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**Calculation of the wet grip index of the candidate tyre:**

$$G(T) = \left[ \frac{BFC(T)}{BFC(R)} \times 125 + a \times (t - t_0) + b \times \left( \frac{BFC(R)}{BFC(R_0)} - 1, 0 \right) \right] \times 10^{-2}$$

where:

- a = 0.7721
- b = 31.18
- t<sub>0</sub> = 10°C
- BFC(R<sub>0</sub>) = 0.68

**Wet grip index of the candidate tyre  
(GT) = 1.31**

3.1. Limit value

C1		
Category of use	Wet grip index (G)	+10% Wet Grip index (G)
Normal	≥ 1.1	≥ 1.21
Snow	≥ 1.0	≥ 1.1
Snow in severe conditions and speed symbol R and above (including H)	≥ 0.9	≥ 0.99
Snow in severe conditions and speed symbol Q or below (excluding H)	-	-
Special	-	-

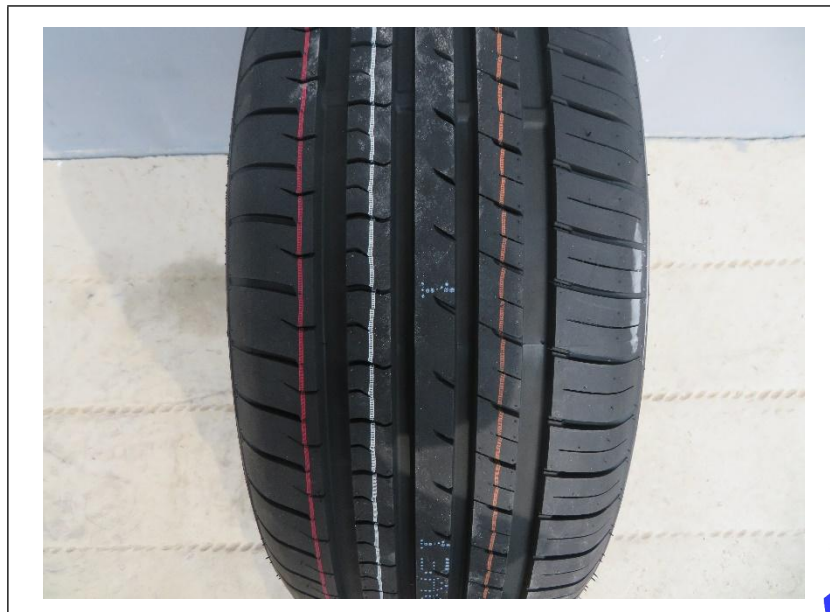


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## 4. TEST TYRE PICTURES



Picture 1. Sidewall



Picture 2. Tread pattern



Place of test: ICPG, China

Date of test: 10/03/2019

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Zhaocai(frak) Yu  
TEST ENGINEER

**ANNEX TO THE TEST REPORT**  
**ROLLING RESISTANCE, REPORT N° CN20030608**

**1. TEST DATA**

**1.1. Test tyre details**

- 1.1.1 Applicant : HANGZHOU SHACE AUTOMOTIVE TECHNOLOGY SERVICES CO.,LTD.  
Building 228, Jianding Road, Jianggan District  
310030 HANGZHOU, Zhejiang (CHINA)
- 1.1.2 Manufacturer : ZODO TIRE CO., LIMITED  
The South of Yalujiang Road, Wenzhuang Village  
Qinghe Agency of Cao County Heze City, Shandong  
Province 274400 China(PRC)
- 1.1.3 Tyre class : C1
- 1.1.4 Category of use : Snow
- 1.1.5 Traction tyre : N/A
- 1.1.6 Brand name / Trade mark : ZMAX
- 1.1.7 Trade description / Commercial name : LANDGEMA
- 1.1.8 Tyre size : 155/65R13 73T
- 1.1.9 Load index / Corresponding mass  $Q_r$  [kg] : 73 / 365
- 1.1.10 Tyre structure : Radial
- 1.1.11 Date code, other manufacturer markings : 0120, 17B BNBVPA
- 1.1.12 Inflation pressure [kPa] : 210
- 1.1.13 Test tyre internal reference : CN20030608
- 1.1.14 Test rim : 4.5 x 13
- 1.1.15 Test rim internal reference : RIM-4.5x13
- 1.1.16 Test rim material : Steel

**1.2. Test machine data**

- 1.2.1 Identification : MTS
- 1.2.2 Drum diameter [mm] : 2.0 m



1.2.3	Surface	: Smooth steel	FULFILS/NOT FULFILS
1.2.4	Roughness [ $\mu\text{m}$ ]	: $\leq 6.3$	FULFILS/NOT FULFILS
<b>1.3. Test data</b>			
1.3.1	Measurement method	: Force	
1.3.2	Test speed [km/h]	: 80	
	C1: 80 km/h (all speed and load symbols);		FULFILS/NOT FULFILS
1.3.3	Load Index (LI) / Load [kg]	: 73 / 365	
1.3.4	Test load [kg / N]	: 292 / 2863.54	
	C1 (% of maximum load capacity): 80		FULFILS/NOT FULFILS
1.3.5	Test inflation pressure, initial [kPa]	: 210	
	C1: 210 kPa if standard/ 250 kPa if reinforced		FULFILS/NOT FULFILS
1.3.6	Distance from the tyre axis to the drum outer surface under steady state conditions during test ( $r_L$ )[m]	: 0.2433	
1.3.7	Distance from the tyre axis to the drum outer surface under steady state conditions during skim test ( $r_L$ )[m]	: 0.3	
1.3.8	Ambient temperature $T_{am}$ [°C]	: 24.57	
	$20.0 \leq T_{am} \leq 30.0$		FULFILS/NOT FULFILS
1.3.9	Skim test load [N]	: 98.7	
	C1 $\leq 200$ N		FULFILS/NOT FULFILS
1.3.10	Spindle force (Ft) [N]	: 22.85	
1.3.11	Spindle force during skim test (Ft) [N]	: 1.973	



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- 1.3.12 Parasitic loss (Fpl) [N] : 2.57
- 1.3.13 Rolling resistance (Fr) [N] : 25.85

## 2. TEST RESULTS

- 2.1. Rolling resistance coefficient
  - 2.1.1 Initial value (or average in the case of more than 1) [N/kN] : 9.03
  - 2.1.2 Temperature corrected value [N/kN] : 9.00
  - 2.1.3 Temperature and drum diameter corrected value [N/kN] : 9.00

**Rolling resistance coefficient Cr [N/kN] = 9.00**

### 2.2. Limit value [N/kN]

	Stage 1	Stage 2
C1	12.0	10.5
C2	10.5	9.0
C3	8.0	6.5

For "snow tyre for use in severe snow conditions", the limits shall be increased by 1 N/kN.



### 3. TEST TYRE PICTURES



Picture 1. Sidewall



Picture 2. Tread pattern

Place of test: Yan cheng, China

Date of test: 03/03/2020

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CN20040106

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