

Report No. BRK170715/1

Project Code 17DIN_MICHELIN_TYRE_TESTS

Dry & Wet surfaces tyre performance benchmarking on:

- **Michelin Agilis CrossClimate**
- **Michelin Agilis +**
- **Michelin Agilis Alpin**
- **GoodYear Cargo Vector 2**
- **Pirelli Carrier All Season**
- **Pirelli Carrier Winter**
- **Bridgestone Duravis 660**
- **Contiental Vanco FourSeason 2**
- **Contiental VanContact 100**
- **Contiental VanContact Winter**

Client's reference:

Manufacture Française des Pneumatiques Michelin

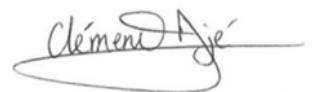
Represented by: Benjamin Coesnon

Performed by:



Amadeu Martorell
Project Engineer
Braking Systems

Approved by:



Jérémie Clément
Project Manager
Braking Systems

Period of the activity: 19 Oct. 2017 – 15 Dec. 2017

Issue date: 8 January 2018

This report contains 101 pages including covers

CONTENTS

1. OBJECT	3
2. MAIN RESULTS	4
2.1. Dry asphalt SET A	4
2.2. Dry asphalt SET B	5
2.3. Dry asphalt SET C	6
2.4. Wet low mu old asphalt 15 °C SET A	7
2.5. Wet low mu old asphalt 15 °C SET B	8
2.6. Wet low mu old asphalt 15 °C SET C	9
2.7. Wet high mu new asphalt 15 °C SET A	10
2.8. Wet high mu new asphalt 15 °C SET B	11
2.9. Wet high mu new asphalt 15 °C SET C	12
2.10. Wet low mu old asphalt 5 °C SET A	13
2.11. Wet low mu old asphalt 5 °C SET B	14
2.12. Wet low mu old asphalt 5 °C SET C	15
2.13. Wet high mu new asphalt 5 °C SET A	16
2.14. Wet high mu new asphalt 5 °C SET B	17
2.15. Wet high mu new asphalt 5 °C SET C	18
3. TEST, VEHICLE AND TYRES SUMMARY	19
3.1. Test Conditions	19
3.2. Vehicle Details	19
3.3. Tyre Details	19
3.4. Instrumentation	20
4. PROCEDURE	21
5. TYRE SPECIFICATIONS	23
6. TEST RESULTS	27
6.1. Dry asphalt SET A	27
6.2. Dry asphalt SET B	32
6.3. Dry asphalt SET C	37
6.4. Wet low mu old asphalt 15 °C SET A	42
6.5. Wet low mu old asphalt 15 °C SET B	47
6.6. Wet low mu old asphalt 15 °C SET C	52
6.7. Wet high mu new asphalt 15 °C SET A	57
6.8. Wet high mu new asphalt 15 °C SET B	62
6.9. Wet high mu new asphalt 15 °C SET C	67
6.10. Wet low mu old asphalt 5 °C SET A	72
6.11. Wet low mu old asphalt 5 °C SET B	77
6.12. Wet low mu old asphalt 5 °C SET C	82
6.13. Wet high mu new asphalt 5 °C SET A	87
6.14. Wet high mu new asphalt 5 °C SET B	92
6.15. Wet high mu new asphalt 5 °C SET C	97

1. OBJECT

The object of this project is the characterisation of the performance (stopping distance) of the following tyre models on size 235/65 R16 C 115/113R on dry & wet surfaces IDIADA's track, low & high mu wet braking (Track 1 & track 2):

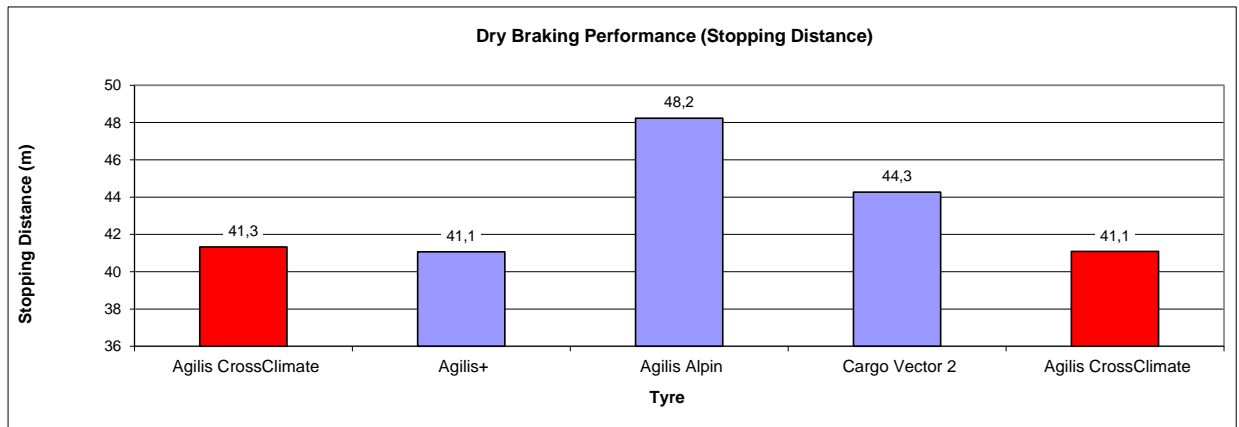
- MICHELIN CrossClimate (REF-1 / REF-2)
- MICHELIN Agilis + (Set A-1)
- MICHELIN Agilis Alpin (Set A-2)
- GOODYEAR Cargo vector 2 (Set A-3)
- PIRELLI Carrier all Season (Set B-4)
- PIRELLI Carrier Winter (Set B-5)
- BRIDGESTONE Duravis 660 (Set B-6)
- CONTINENTAL Vanco FourSeason 2 (Set C-7)
- CONTINENTAL VanContact 100 (Set C-8)
- CONTINENTAL VanContact Winter (Set C-9)

2. MAIN RESULTS

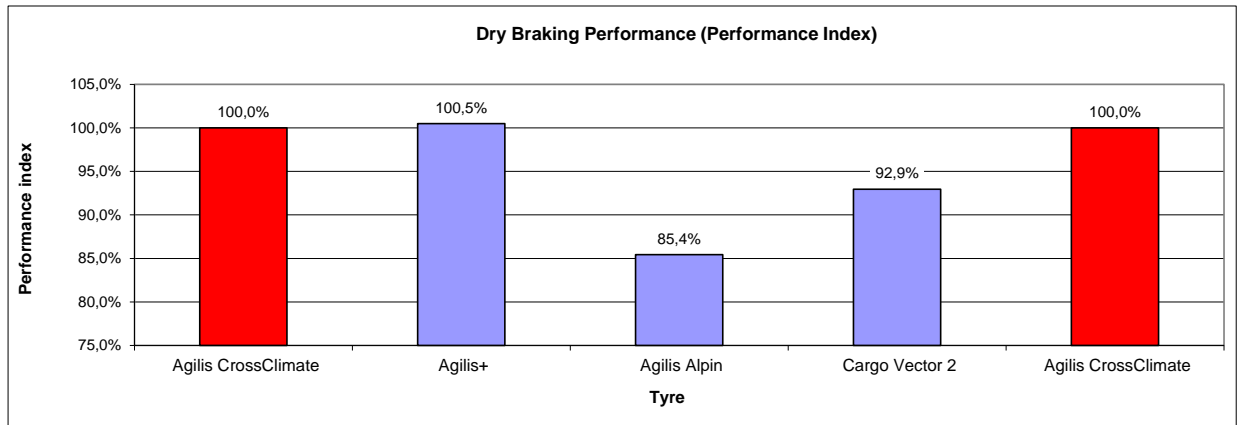
2.1. Dry asphalt SET A

Tyre description	SET R2	SET A1	SET A2	SET A3	SET R2
Model	Agilis CrossClimate	Agilis+	Agilis Alpin	Cargo Vector 2	Agilis CrossClimate
Brand	Michelin	Michelin	Michelin	GoodYear	Michelin
Commercial name	Agilis CrossClimate	Agilis+	Agilis Alpin	Cargo Vector 2	Agilis CrossClimate
Made-in	France	France	France	Turkey	France
Size designation	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R
Specific Markings	M+S	Cold	M + S	M + S	M+S
Symmetry	Yes	Yes	Yes	Yes	Yes
Directionality	Yes	Yes	No	No	Yes
Performance index [%]	100,0%	100,5%	85,4%	92,9%	100,0%

Table 1. Main Results



Graph 1. Stopping Distance

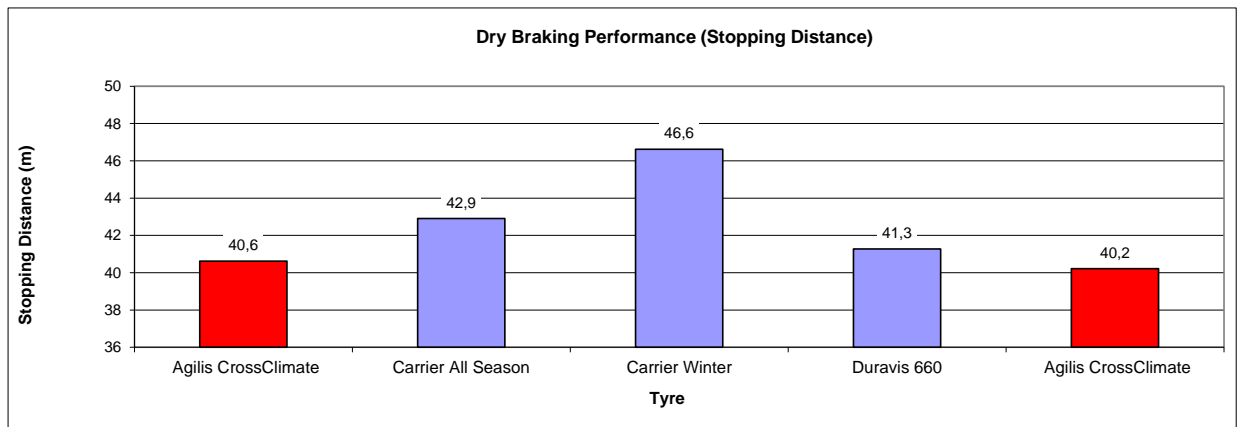


Graph 2. Performance Index

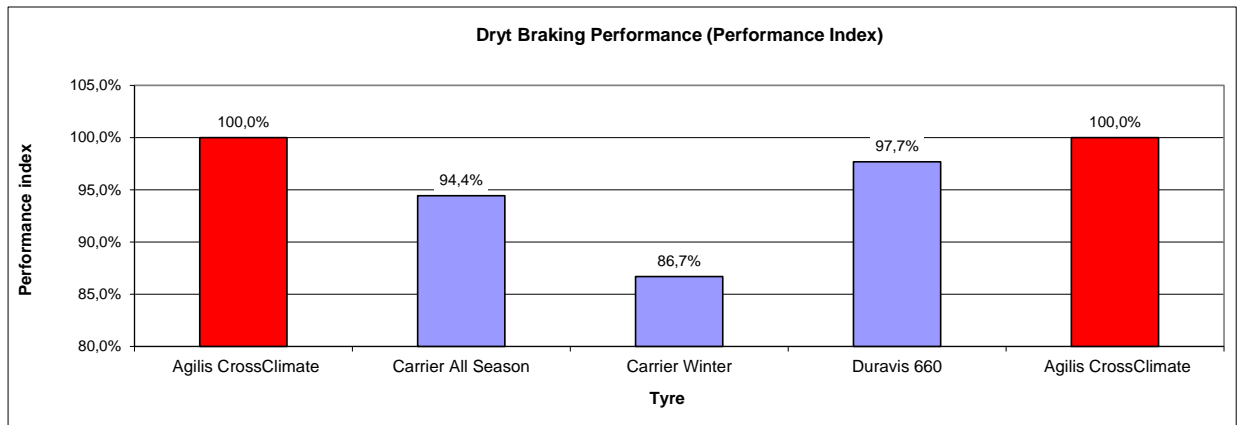
2.2. Dry asphalt SET B

Tyre description	SET R2	SET B4	SET B5	SET B6	SET R2
Model	Agilis CrossClimate	Carrier All Season	Carrier Winter	Duravis 660	Agilis CrossClimate
Brand	Michelin	Pirelli	Pirelli	Bridgestone	Michelin
Commercial name	Agilis CrossClimate	Carrier All Season	Carrier Winter	Duravis 660	Agilis CrossClimate
Made-in	France	Turkey	Turkey	Turkey	France
Size designation	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R
Specific Markings	M+S	M + S	M + S	M + S	M+S
Symmetry	Yes	Yes	Yes	Yes	Yes
Directionality	Yes	No	No	No	Yes
Performance index [%]	100,0%	94,4%	86,7%	97,7%	100,0%

Table 2. Main Results



Graph 3. Stopping Distance

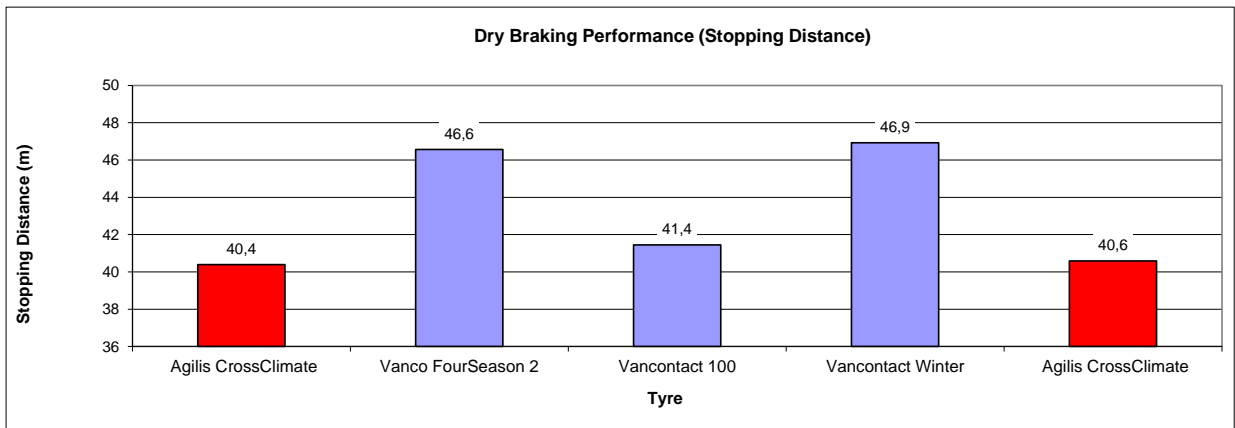


Graph 4. Performance Index

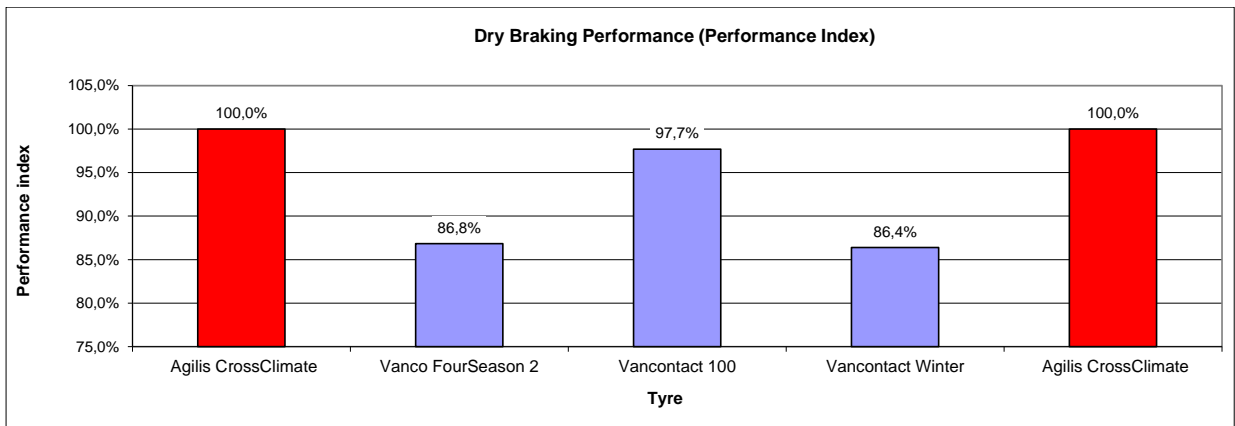
2.3. Dry asphalt SET C

Tyre description	SET R2	SET C7	SET C8	SET C9	SET R2
Model	Agilis CrossClimate	Vanco FourSeason 2	Vancontact 100	Vancontact Winter	Agilis CrossClimate
Brand	Michelin	Continental	Continental	Continental	Michelin
Commercial name	Agilis CrossClimate	Vanco FourSeason 2	Vancontact 100	Vancontact Winter	Agilis CrossClimate
Made-in	France	Slovakia	Slovakia	Slovakia	France
Size designation	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R
Specific Markings	M+S	M + S	-	M + S	M+S
Symmetry	Yes	Yes	Yes	No	Yes
Directionality	Yes	No	No	Yes	Yes
Performance index [%]	100,0%	86,8%	97,7%	86,4%	100,0%

Table 3. Main Results



Graph 5. Stopping Distance

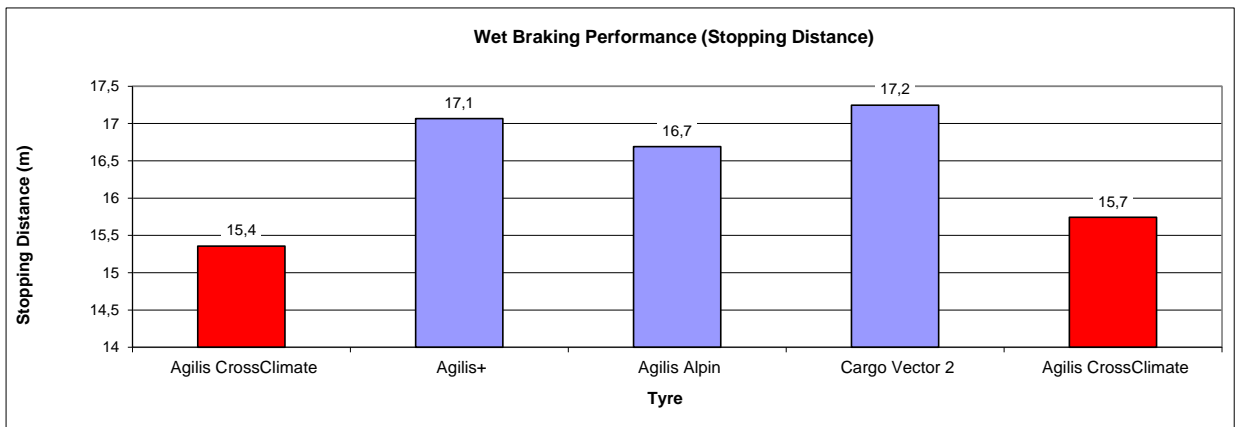


Graph 6. Performance Index

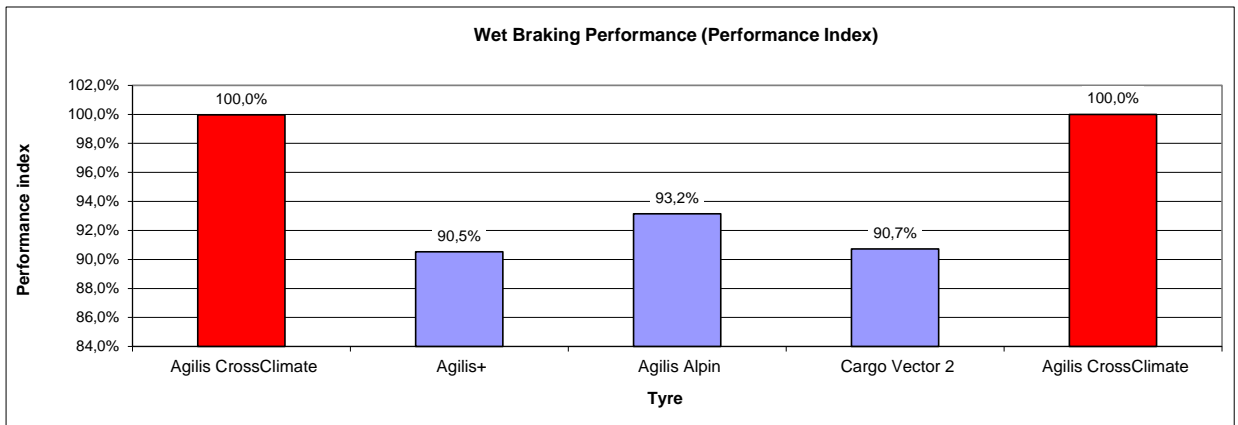
2.4. Wet low mu old asphalt 15 °C SET A

Tyre description	SET R1	SET A1	SET A2	SET A3	SET R1
Model	Agilis CrossClimate	Agilis+	Agilis Alpin	Cargo Vector 2	Agilis CrossClimate
Brand	Michelin	Michelin	Michelin	GoodYear	Michelin
Commercial name	Agilis CrossClimate	Agilis+	Agilis Alpin	Cargo Vector 2	Agilis CrossClimate
Made-in	France	France	France	Turkey	France
Size designation	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R
Specific Markings	M+S	Cold	M + S	M + S	M+S
Symmetry	Yes	Yes	Yes	Yes	Yes
Directionality	Yes	Yes	No	No	Yes
Performance index [%]	100,0%	90,5%	93,2%	90,7%	100,0%

Table 4. Main Results



Graph 7. Stopping Distance

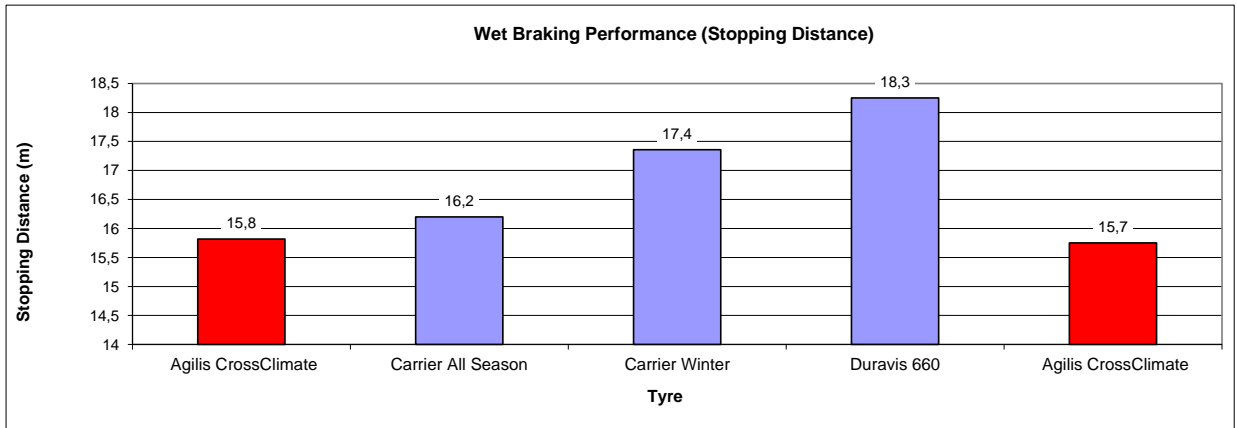


Graph 8. Performance Index

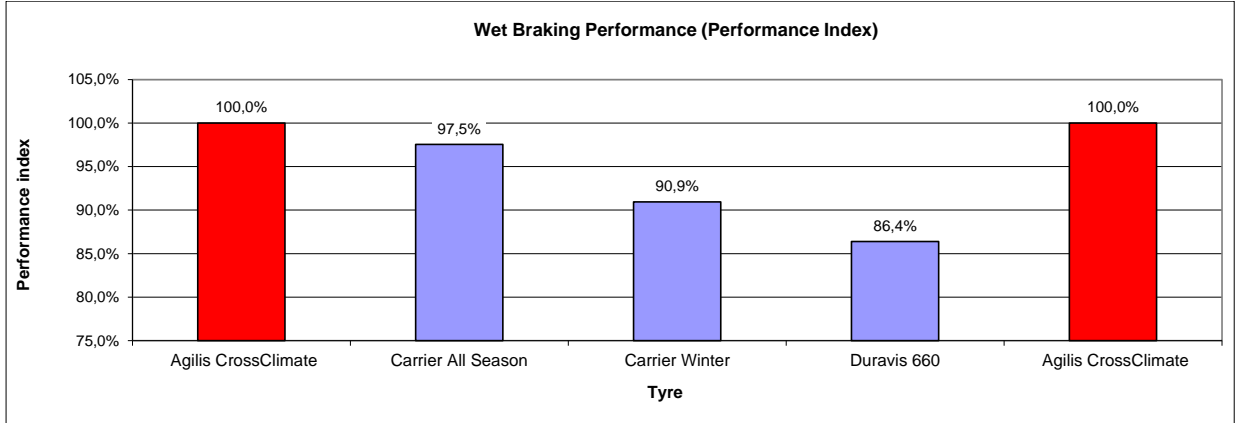
2.5. Wet low mu old asphalt 15 °C SET B

Tyre description	SET R1	SET B4	SET B5	SET B6	SET R1
Model	Agilis CrossClimate	Carrier All Season	Carrier Winter	Duravis 660	Agilis CrossClimate
Brand	Michelin	Pirelli	Pirelli	Bridgestone	Michelin
Commercial name	Agilis CrossClimate	Carrier All Season	Carrier Winter	Duravis 660	Agilis CrossClimate
Made-in	France	Turkey	Turkey	Turkey	France
Size designation	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R
Specific Markings	M+S	M + S	M + S	M + S	M+S
Symmetry	Yes	Yes	Yes	Yes	Yes
Directionality	Yes	No	No	No	Yes
Performance index [%]	100,0%	97,5%	90,9%	86,4%	100,0%

Table 5. Main Results



Graph 9. Stopping Distance

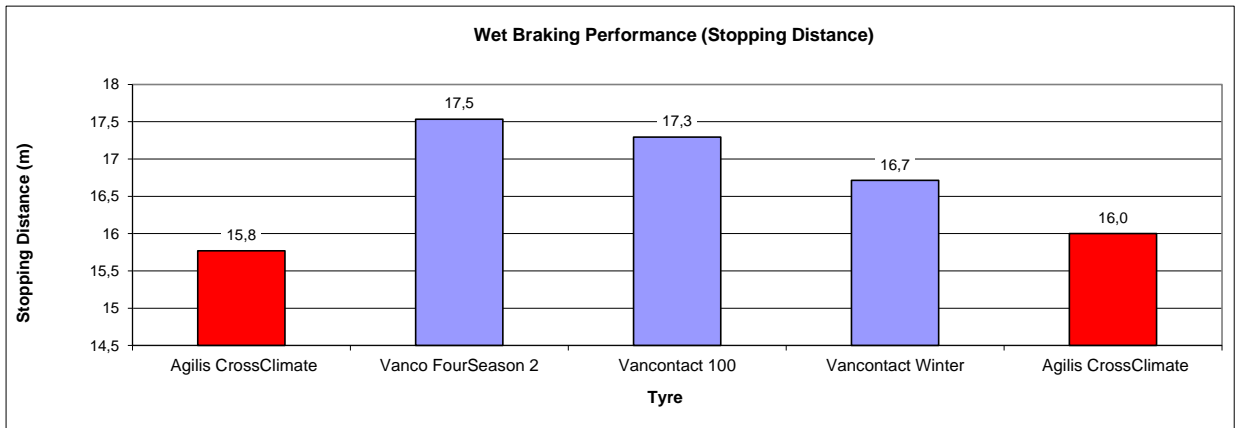


Graph 10. Performance Index

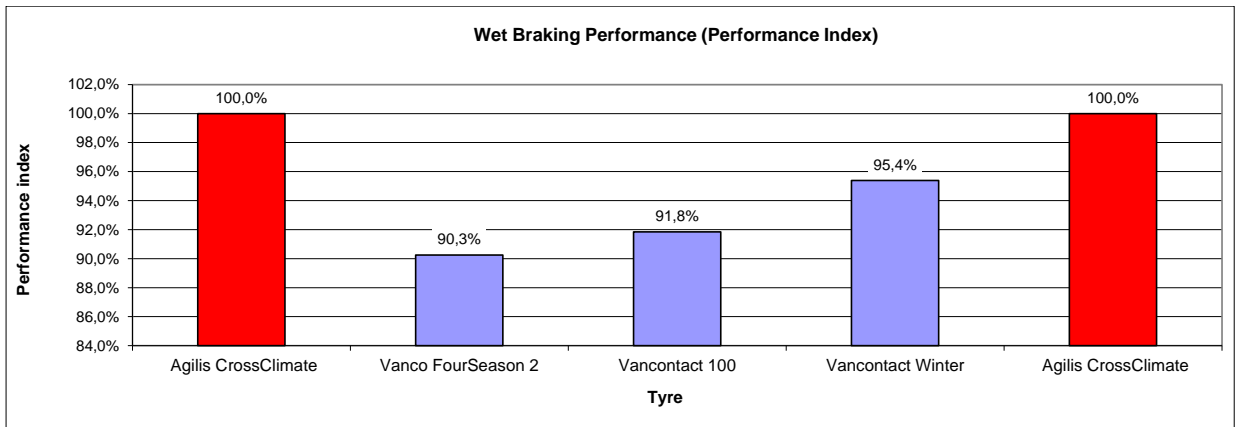
2.6. Wet low mu old asphalt 15 °C SET C

Tyre description	SET R2	SET C7	SET C8	SET C9	SET R2
Model	Agilis CrossClimate	Vanco FourSeason 2	Vancontact 100	Vancontact Winter	Agilis CrossClimate
Brand	Michelin	Continental	Continental	Continental	Michelin
Commercial name	Agilis CrossClimate	Vanco FourSeason 2	Vancontact 100	Vancontact Winter	Agilis CrossClimate
Made-in	France	Slovakia	Slovakia	Slovakia	France
Size designation	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R
Specific Markings	M+S	M + S	-	M + S	M+S
Symmetry	Yes	Yes	Yes	No	Yes
Directionality	Yes	No	No	Yes	Yes
Performance index [%]	100,0%	90,3%	91,8%	95,4%	100,0%

Table 6. Main Results



Graph 11. Stopping Distance

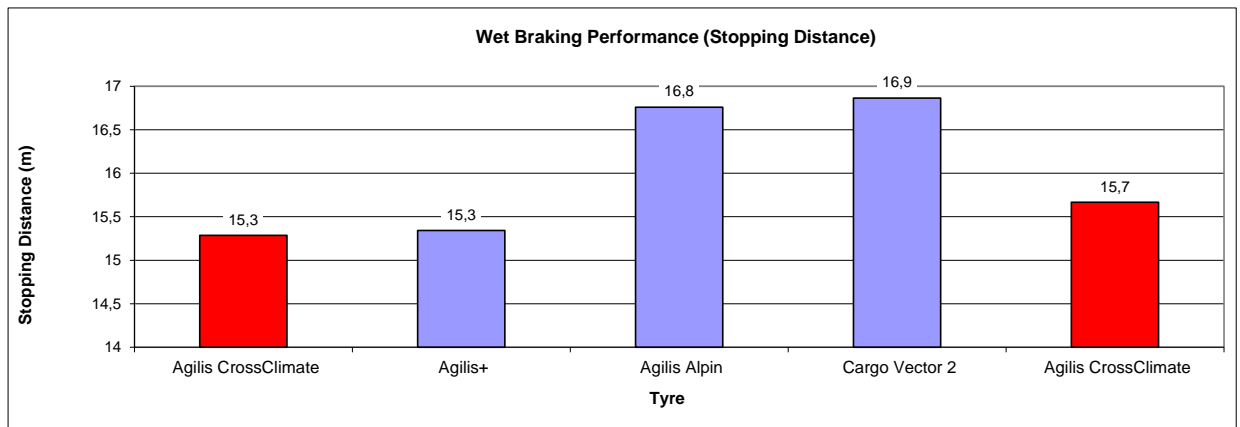


Graph 12. Performance Index

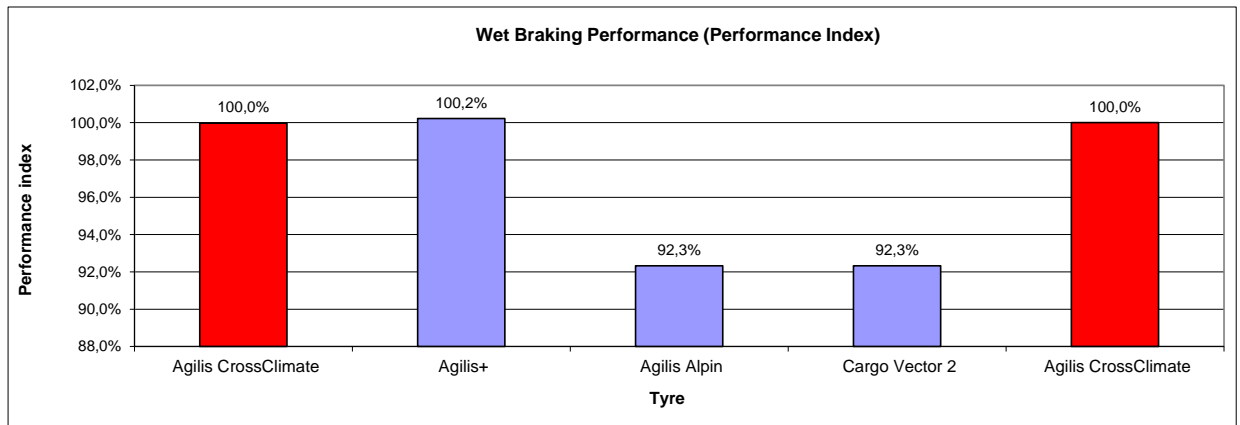
2.7. Wet high mu new asphalt 15 °C SET A

Tyre description	SET R1	SET A1	SET A2	SET A3	SET R1
Model	Agilis CrossClimate	Agilis+	Agilis Alpin	Cargo Vector 2	Agilis CrossClimate
Brand	Michelin	Michelin	Michelin	GoodYear	Michelin
Commercial name	Agilis CrossClimate	Agilis+	Agilis Alpin	Cargo Vector 2	Agilis CrossClimate
Made-in	France	France	France	Turkey	France
Size designation	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R
Specific Markings	M+S	Cold	M + S	M + S	M+S
Symmetry	Yes	Yes	Yes	Yes	Yes
Directionality	Yes	Yes	No	No	Yes
Performance index [%]	100,0%	100,2%	92,3%	92,3%	100,0%

Table 7. Main Results



Graph 13. Stopping Distance

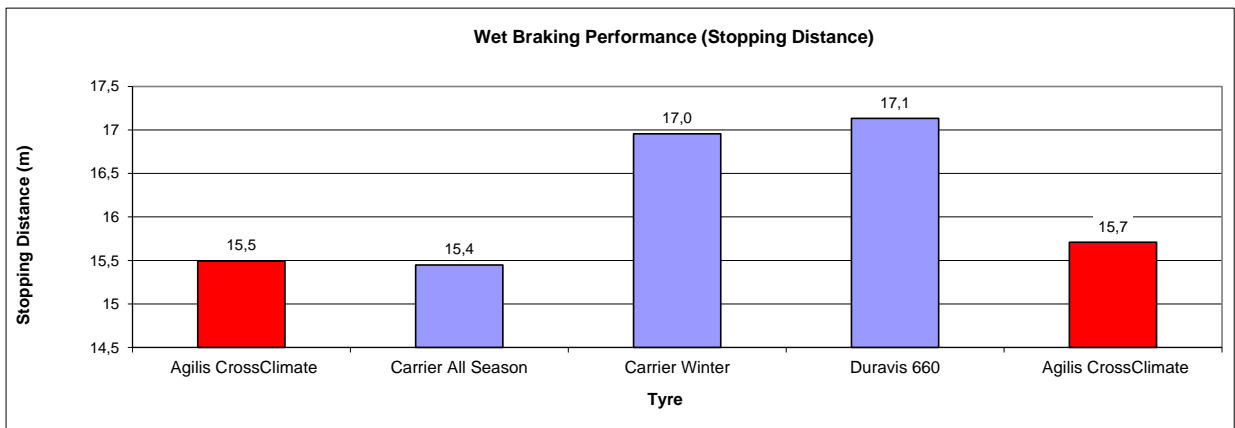


Graph 14. Performance Index

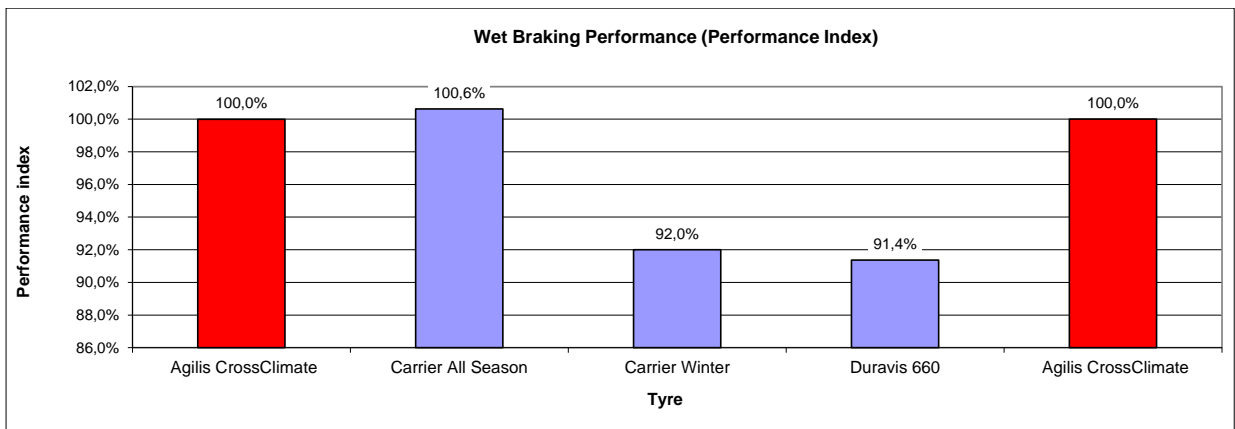
2.8. Wet high mu new asphalt 15 °C SET B

Tyre description	SET R1	SET B4	SET B5	SET B6	SET R1
Model	Agilis CrossClimate	Carrier All Season	Carrier Winter	Duravis 660	Agilis CrossClimate
Brand	Michelin	Pirelli	Pirelli	Bridgestone	Michelin
Commercial name	Agilis CrossClimate	Carrier All Season	Carrier Winter	Duravis 660	Agilis CrossClimate
Made-in	France	Turkey	Turkey	Turkey	France
Size designation	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R
Specific Markings	M+S	M + S	M + S	M + S	M+S
Symmetry	Yes	Yes	Yes	Yes	Yes
Directionality	Yes	No	No	No	Yes
Performance index [%]	100,0%	100,6%	92,0%	91,4%	100,0%

Table 8. Main Results



Graph 15. Stopping Distance

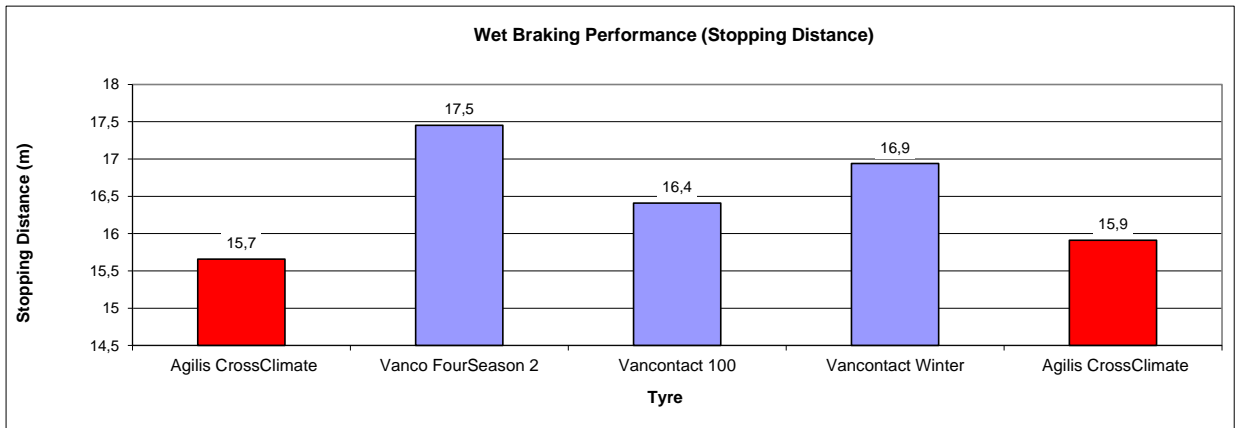


Graph 16. Performance Index

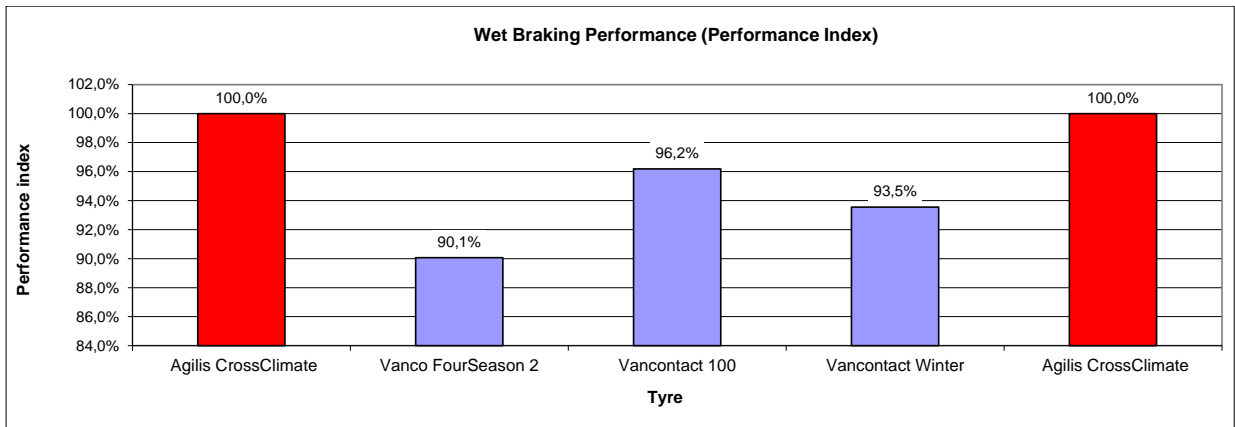
2.9. Wet high mu new asphalt 15 °C SET C

Tyre description	SET R2	SET C7	SET C8	SET C9	SET R2
Model	Agilis CrossClimate	Vanco FourSeason 2	Vancontact 100	Vancontact Winter	Agilis CrossClimate
Brand	Michelin	Continental	Continental	Continental	Michelin
Commercial name	Agilis CrossClimate	Vanco FourSeason 2	Vancontact 100	Vancontact Winter	Agilis CrossClimate
Made-in	France	Slovakia	Slovakia	Slovakia	France
Size designation	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R
Specific Markings	M+S	M + S	-	M + S	M+S
Symmetry	Yes	Yes	Yes	No	Yes
Directionality	Yes	No	No	Yes	Yes
Performance index [%]	100,0%	90,1%	96,2%	93,5%	100,0%

Table 9. Main Results



Graph 17. Stopping Distance

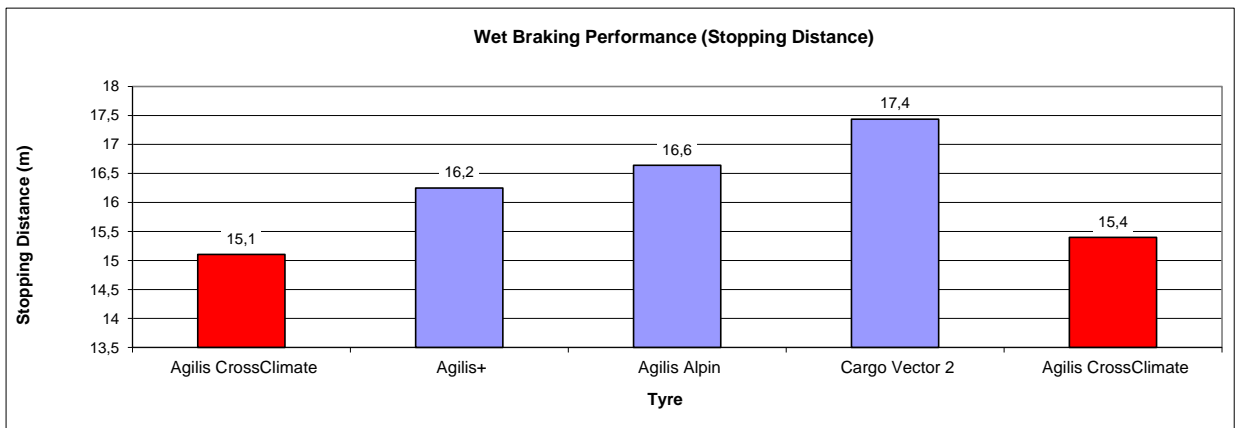


Graph 18. Performance Index

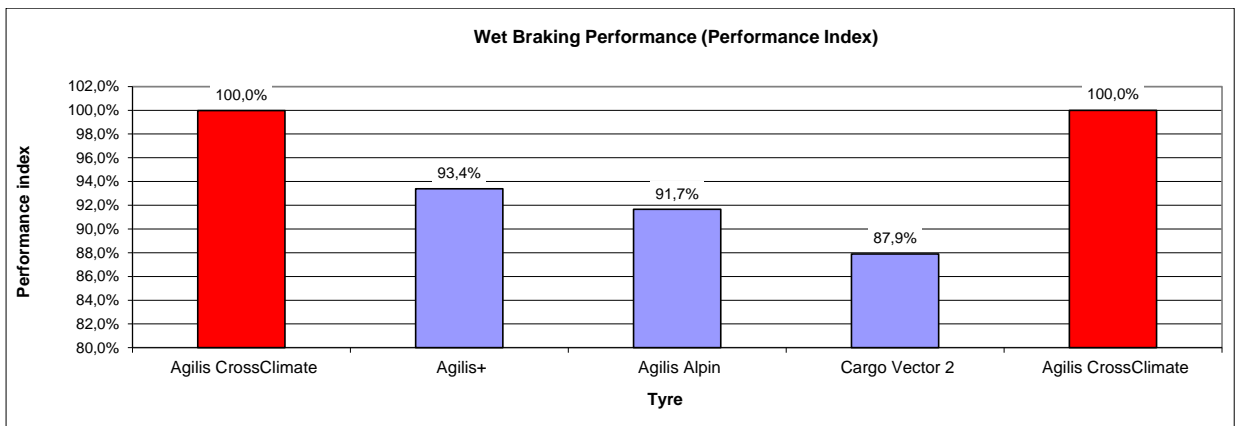
2.10. Wet low mu old asphalt 5 °C SET A

Tyre description	SET R1	SET A1	SET A2	SET A3	SET R1
Model	Agilis CrossClimate	Agilis+	Agilis Alpin	Cargo Vector 2	Agilis CrossClimate
Brand	Michelin	Michelin	Michelin	GoodYear	Michelin
Commercial name	Agilis CrossClimate	Agilis+	Agilis Alpin	Cargo Vector 2	Agilis CrossClimate
Made-in	France	France	France	Turkey	France
Size designation	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R
Specific Markings	M+S	Cold	M + S	M + S	M+S
Symmetry	Yes	Yes	Yes	Yes	Yes
Directionality	Yes	Yes	No	No	Yes
Performance index [%]	100,0%	93,4%	91,7%	87,9%	100,0%

Table 4. Main Results



Graph 7. Stopping Distance

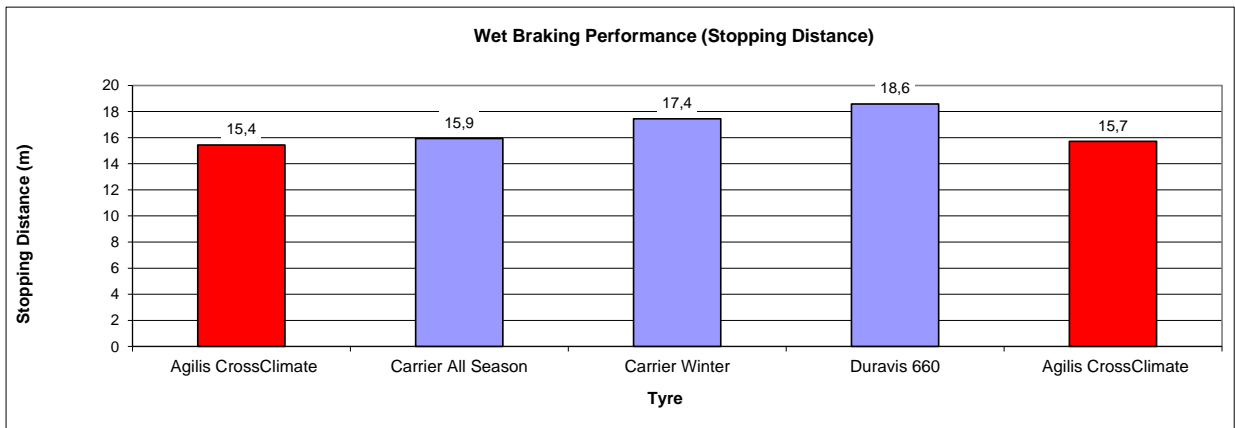


Graph 8. Performance Index

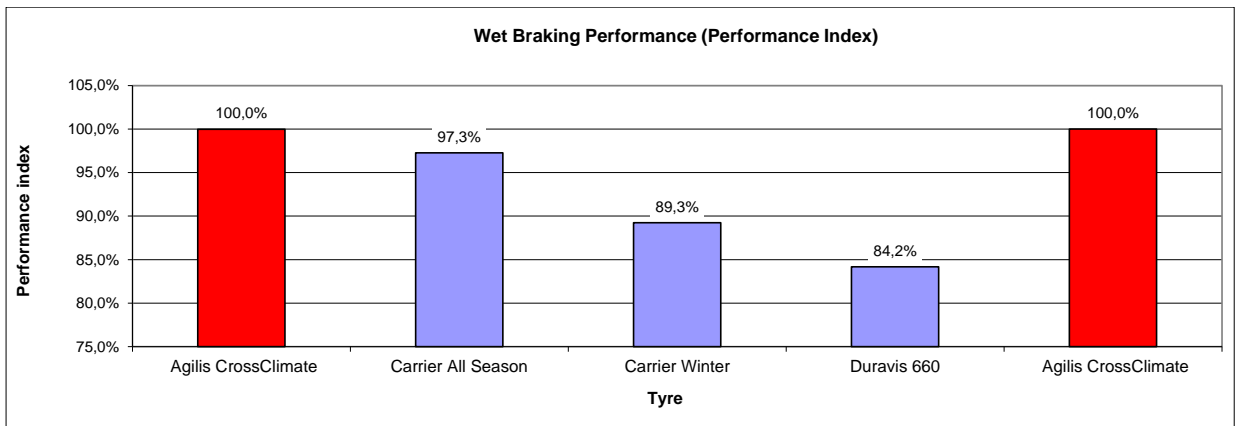
2.11. Wet low mu old asphalt 5 °C SET B

Tyre description	SET R1	SET B4	SET B5	SET B6	SET R1
Model	Agilis CrossClimate	Carrier All Season	Carrier Winter	Duravis 660	Agilis CrossClimate
Brand	Michelin	Pirelli	Pirelli	Bridgestone	Michelin
Commercial name	Agilis CrossClimate	Carrier All Season	Carrier Winter	Duravis 660	Agilis CrossClimate
Made-in	France	Turkey	Turkey	Turkey	France
Size designation	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R
Specific Markings	M+S	M + S	M + S	M + S	M+S
Symmetry	Yes	Yes	Yes	Yes	Yes
Directionality	Yes	No	No	No	Yes
Performance index [%]	100,0%	97,3%	89,3%	84,2%	100,0%

Table 5. Main Results



Graph 9. Stopping Distance

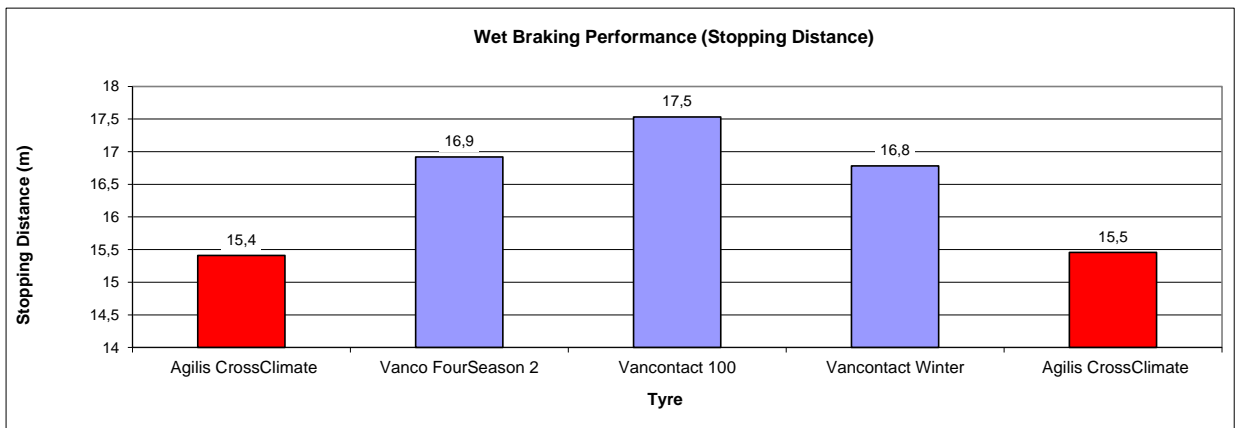


Graph 10. Performance Index

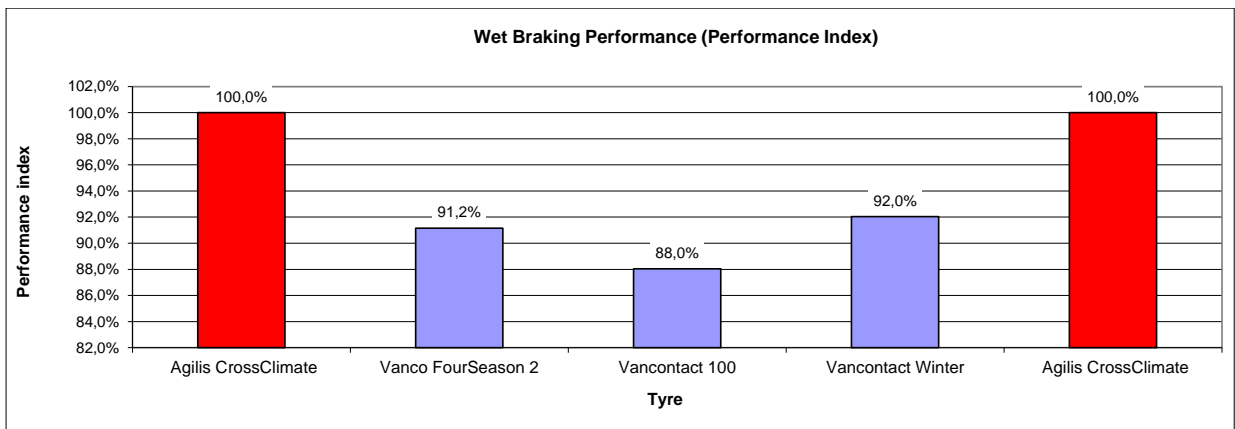
2.12. Wet low mu old asphalt 5 °C SET C

Tyre description	SET R2	SET C7	SET C8	SET C9	SET R2
Model	Agilis CrossClimate	Vanco FourSeason 2	Vancontact 100	Vancontact Winter	Agilis CrossClimate
Brand	Michelin	Continental	Continental	Continental	Michelin
Commercial name	Agilis CrossClimate	Vanco FourSeason 2	Vancontact 100	Vancontact Winter	Agilis CrossClimate
Made-in	France	Slovakia	Slovakia	Slovakia	France
Size designation	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R
Specific Markings	M+S	M + S	-	M + S	M+S
Symmetry	Yes	Yes	Yes	No	Yes
Directionality	Yes	No	No	Yes	Yes
Performance index [%]	100,0%	91,2%	88,0%	92,0%	100,0%

Table 6. Main Results



Graph 11. Stopping Distance

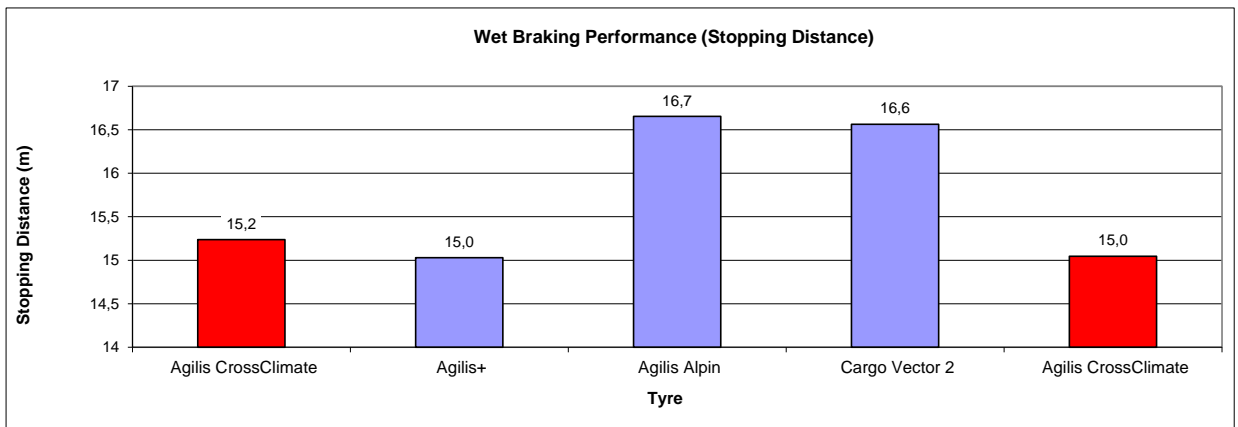


Graph 12. Performance Index

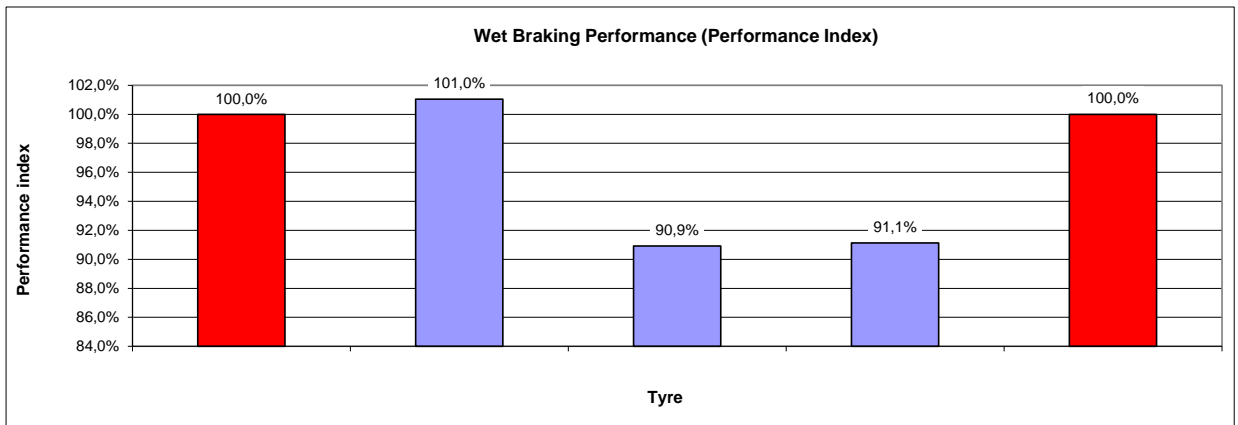
2.13. Wet high mu new asphalt 5 °C SET A

Tyre description	SET R1	SET A1	SET A2	SET A3	SET R1
Model	Agilis CrossClimate	Agilis+	Agilis Alpin	Cargo Vector 2	Agilis CrossClimate
Brand	Michelin	Michelin	Michelin	GoodYear	Michelin
Commercial name	Agilis CrossClimate	Agilis+	Agilis Alpin	Cargo Vector 2	Agilis CrossClimate
Made-in	France	France	France	Turkey	France
Size designation	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R
Specific Markings	M+S	Cold	M + S	M + S	M+S
Symmetry	Yes	Yes	Yes	Yes	Yes
Directionality	Yes	Yes	No	No	Yes
Performance index [%]	100,0%	101,0%	90,9%	91,1%	100,0%

Table 7. Main Results



Graph 13. Stopping Distance

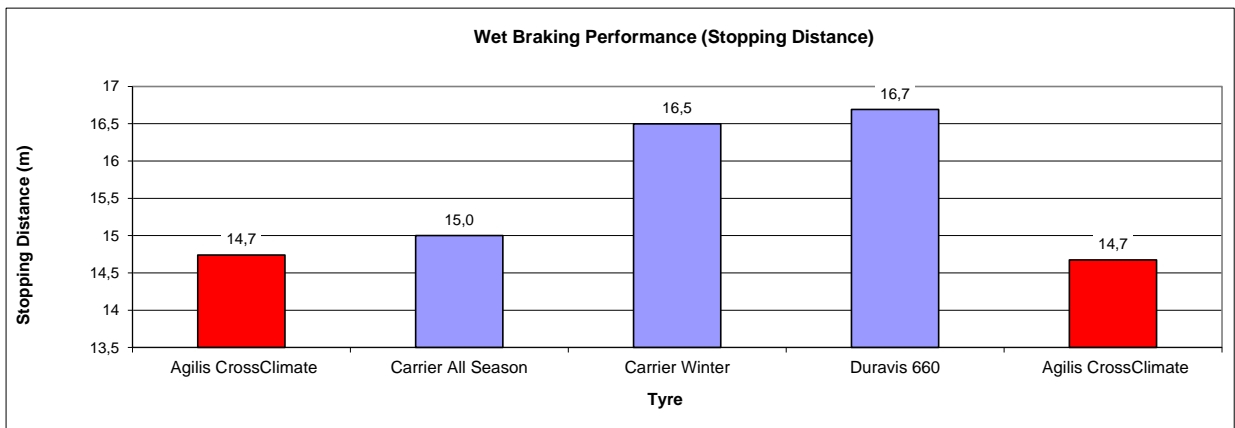


Graph 14. Performance Index

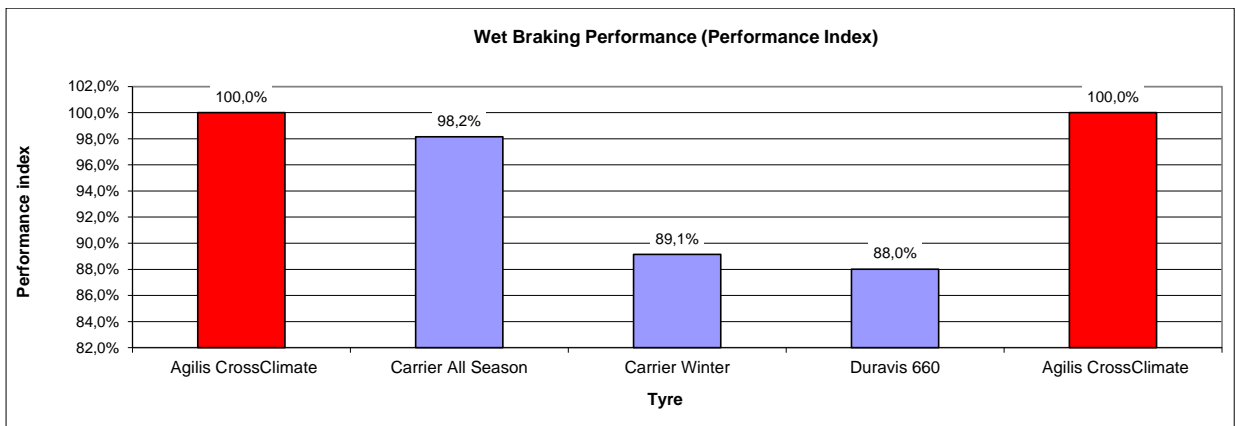
2.14. Wet high mu new asphalt 5 °C SET B

Tyre description	SET R1	SET B4	SET B5	SET B6	SET R1
Model	Agilis CrossClimate	Carrier All Season	Carrier Winter	Duravis 660	Agilis CrossClimate
Brand	Michelin	Pirelli	Pirelli	Bridgestone	Michelin
Commercial name	Agilis CrossClimate	Carrier All Season	Carrier Winter	Duravis 660	Agilis CrossClimate
Made-in	France	Turkey	Turkey	Turkey	France
Size designation	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R
Specific Markings	M+S	M + S	M + S	M + S	M+S
Symmetry	Yes	Yes	Yes	Yes	Yes
Directionality	Yes	No	No	No	Yes
Performance index [%]	100,0%	98,2%	89,1%	88,0%	100,0%

Table 8. Main Results



Graph 15. Stopping Distance

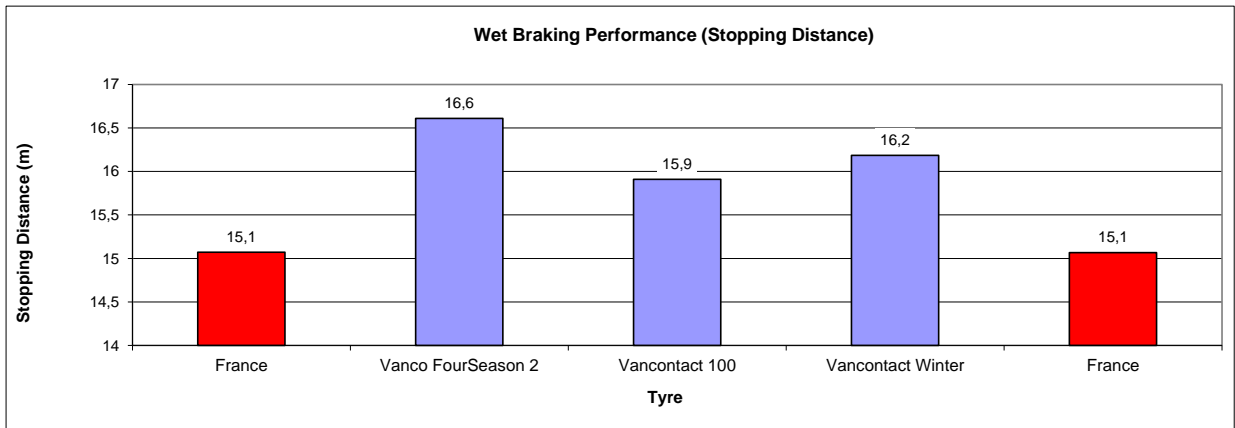


Graph 16. Performance Index

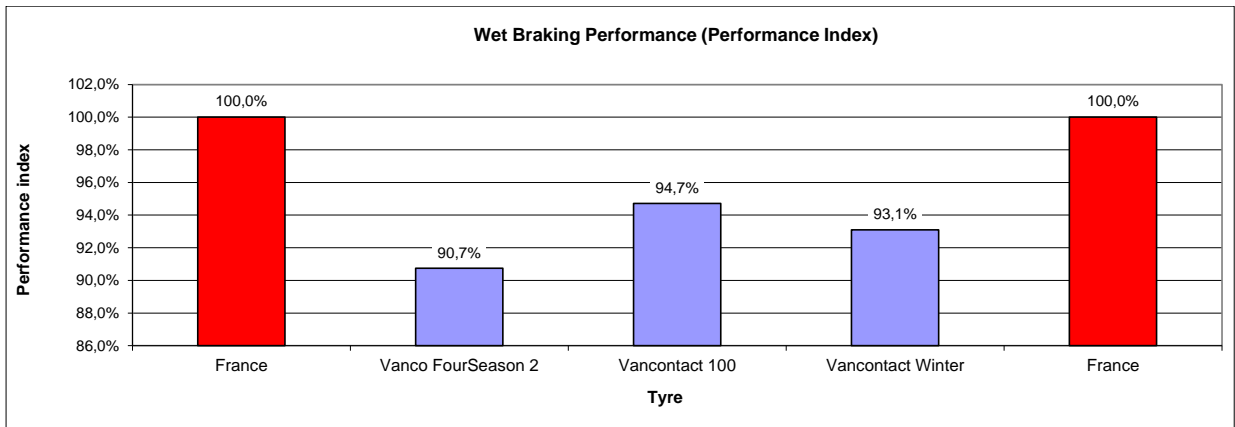
2.15. Wet high mu new asphalt 5 °C SET C

Tyre description	SET R2	SET C7	SET C8	SET C9	SET R2
Model	Agilis CrossClimate	Vanco FourSeason 2	Vancontact 100	Vancontact Winter	Agilis CrossClimate
Brand	Michelin	Continental	Continental	Continental	Michelin
Commercial name	Agilis CrossClimate	Vanco FourSeason 2	Vancontact 100	Vancontact Winter	Agilis CrossClimate
Made-in	France	Slovakia	Slovakia	Slovakia	France
Size designation	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R
Specific Markings	M+S	M + S	-	M + S	M+S
Symmetry	Yes	Yes	Yes	No	Yes
Directionality	Yes	No	No	Yes	Yes
Performance index [%]	100,0%	90,7%	94,7%	93,1%	100,0%

Table 9. Main Results



Graph 17. Stopping Distance



Graph 18. Performance Index

3. TEST, VEHICLE AND TYRES SUMMARY

3.1. Test Conditions

Test conditions	
Test Location	IDIADA Proving Ground (L'Albomar)
Track Denomination	Dry Asphalt Straight Line Braking (Track No. 2)
Track Specifications	Braking Area 5 x 250m
Track Conditions	PBFC: 0,99
Test conditions	
Test Location	IDIADA Proving Ground (L'Albomar)
Track Denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track Specifications	Braking Area 5 x 250m
Track Conditions	R117 (utilisation of adhesion)
Test conditions	
Test Location	IDIADA Proving Ground (L'Albomar)
Track Denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track Specifications	Braking Area 5 x 250m
Track Conditions	R117 (utilisation of adhesion)

Table 10: Test Conditions

3.2. Vehicle Details

Test Vehicle	
Brand	Mercedes
Model	Sprinter 313
Engine and horsepowers	2,2 CDI - 129 hp
VIN	WDB9066351P238081

Table 11: Vehicle Details

3.3. Tyre Details

Tyre description	SET R1	SET A1	SET A2	SET A3	SET R1
Model	Agilis CrossClimate	Agilis+	Agilis Alpin	Cargo Vector 2	Agilis CrossClimate
Brand	Michelin	Michelin	Michelin	Goodyear	Michelin
Commercial name	Agilis CrossClimate	Agilis+	Agilis Alpin	Cargo Vector 2	Agilis CrossClimate
Made-in	France	France	France	Turkey	France
Size designation	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R
Specific Markings	M+S	Cold	M + S	M + S	M+S
Symmetry	Yes	Yes	Yes	Yes	Yes
Directionality	Yes	Yes	No	No	Yes

Tyre description	SET R1	SET B4	SET B5	SET B6	SET R1
Model	Agilis CrossClimate	Carrier All Season	Carrier Winter	Duravis 660	Agilis CrossClimate
Brand	Michelin	Pirelli	Pirelli	Bridgestone	Michelin
Commercial name	Agilis CrossClimate	Carrier All Season	Carrier Winter	Duravis 660	Agilis CrossClimate
Made-in	France	Turkey	Turkey	Turkey	France
Size designation	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R
Specific Markings	M+S	M + S	M + S	M + S	M+S
Symmetry	Yes	Yes	Yes	Yes	Yes
Directionality	Yes	No	No	No	Yes

Tyre description	SET R2	SET C7	SET C8	SET C9	SET R2
Model	Agilis CrossClimate	Vanco FourSeason 2	Vancontact 100	Vancontact Winter	Agilis CrossClimate
Brand	Michelin	Continental	Continental	Continental	Michelin
Commercial name	Agilis CrossClimate	Vanco FourSeason 2	Vancontact 100	Vancontact Winter	Agilis CrossClimate
Made-in	France	Slovakia	Slovakia	Slovakia	France
Size designation	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R	235/65 R16 C 115/113R
Specific Markings	M+S	M + S	-	M + S	M+S
Symmetry	Yes	Yes	Yes	No	Yes
Directionality	Yes	No	No	Yes	Yes

Table 12: Tyres Details

3.4. Instrumentation

Sensor	Brand	Signal	Unit	Accuracy	Sampling rate
VBox III	Racelogic	Speed Distance	km/h m	0.1km/h < 0.05%	500 Hz
Accelerometer	Mc Laren	Acceleration	g	0.005 g	500 Hz

Table 13. Instrumentation

Data Acquisition System: IDIADA's own dBbrake

4. PROCEDURE

The test was conducted as per Manufacture Française des Pneumatiques Michelin procedure, i.e.

CRITERIA	SPECIFICATION	COMMENTS
Type of braking	4 ABS	
V1 – V2	100 km/h – 0 km/h	The braking will start at 105±2km/h
Surface	Asphalt	
Vehicle load	DOW : Axle 1: (700+679)= 1379 kg Axle 2: (538+522)= 1060 kg TOTAL: 2439 kg	
Tyre pressure	C2 : 3.6/3.6 bar	
Recording	Braking distance between V1 and V2	
Test sequence	R1(4)/A(8)/B(8)/C(8)/R2(4) maxi R = MICHELIN tyre	- T(n) means n runs for tyre T - 4 tyres (including reference) maxi per block - 8 validated runs mini per tyre - do not take in account the 2 first brakings of each tyre (Only the first one for R2)
Ground t°	5°C (in our case it could be different)	
Running in of the track	No particular running is required	
Running in of the tyres	No particular running is required	
Validation of the test	Coefficient of variation < 2% for each tyre	Ex: coefficient of variation of A(8) = Standard deviation A(8)/Average A(8)...
	Coefficient of variation < 2% for each tyre	Average R(4)
Advice	Cooling of brakes is necessary between 2 brakings. All the braking will be realised on the same part of the track (braking point +/- 5m)	
Performance index results	Linear correction of the reference tyre MICHELIN along the block (R -> RA, RB,...) Percentage calculation (example) : Index tyre A = [RA (8)/ A(8)]*100 Index tyre B = [RB (8)/ A(8)]*100	

Table 14. Dry Braking Procedure

CRITERIA	SPECIFICATION	COMMENTS
Type of braking	4 ABS	
V1 – V2	60 km/h – 20 km/h	The braking will start at 65±2km/h
Surface	Asphalt. 2 types of surface according R117 : BPN : Delta > 10	R 117 means 42 ≤ BPN ≤ 60 0.4 ≤ SD ≤ 1 mm
Water depth	0.5 to 1.5 mm	R117
Vehicle load	60 % LI <Load < 90 %LI WET: Axle 1: (840+800)= 1640 kg Axle 2: (654+614)= 1268 kg. TOTAL: 2908 kg.	R117
Tyre pressure	C2 : adapted to vehicle load (3.2 / 3.4 bar)	R117
Recording	Braking distance between V1 and V2	
Test sequence	R1(4)/A(8)/B(8)/C(8)/R2(4) maxi R = ASTM 16" A = MICHELIN tyre	- T(n) means n runs for tyre T - 4 tyres (including reference) maxi per block - 8 validated runs mini per tyre - do not take in account the 2 first brakings of each tyre (Only the first one for R2)
Ground t°	Summer tyres 15°C – 25°C Winter tyres 5°C – 15°C	
Maximum variation of ground T° during the test	10°C	R117
Running in of the track	Until stabilization of the braking distances at 90 km/h	Use tyres not involved in the test program ("slaves" tyres)
Running in of the tyres	No particular running is required	
Validation of the test	Coefficient of variation < 3% for each tyre	Ex: coefficient of variation of A(8) = Standard deviation A(8)/Average A(8)...
	Coefficient of variation < 3% for each tyre	Average R(4)
Advice	Cooling of brakes is necessary between 2 brakings. All the braking will be realised on the same part of the track (braking point +/- 5m)	
Performance index results	Linear correction of the reference tyre ASTM along the block (R -> RA, RB,...) Percentage calculation (example) : Index tyre B vs tyre A = [RB (8)/ B(8)] / [RA (8)/ A(8)]*100 Index tyre C vs tyre A = [RC (8)/ C(8)] / [RA (8)/ A(8)]*100 Wet grip index calculation : according to CE 1222 / 2009 regulation	R117

Table 15. Wet Braking Procedure


5. TYRE SPECIFICATIONS

Tyres are listed in the order of testing.


The abbreviations for the tread and sidewall information are as follows:

- TR = Tread
- SW = Sidewall
- P = Polyester
- S = Steel
- Pol = Polyamide


MICHELIN - Agilis CrossClimate SET R1 (Reference)

Tyres description		Tread pattern picture
Brand	Michelin	
Commercial name	Agilis CrossClimate	
Made-in	France	
Full tyre Size designation	235/65 R16 C 115/113R	
Specific Markings	M+S	
Symmetry	Yes	
Directionality	Yes	
e / E approval numbers	E2: 0016605 0216617 S2WR2	
Tread / Sidewall information	TR: 2P + 2S / SW: 1P + 2P	
XL markings	-	
EAN code	NA	
Pressure (Fr/Rr) [bar]	3,0 / 4,5	
Full DOT codes	FK41 0FVX4815 3717	
Depth average (mm)	9,05	


MICHELIN - Agilis+ - SET A-1

Tyres description		Tread pattern picture
Brand	Michelin	
Commercial name	Agilis+	
Made-in	France	
Full tyre Size designation	235/65 R16 C 115/113R	
Specific Markings	Cold	
Symmetry	Yes	
Directionality	Yes	
e / E approval numbers	E2: 0012611 / 0216600 S2WR2	
Tread / Sidewall information	TR: 2P + 2S / SW: 1P + 2P	
XL markings	-	
EAN code	NA	
Pressure (Fr/Rr) [bar]	3,0 / 4,5	
Full DOT codes	FK41 00CX2817	
Depth average (mm)	9,5	


MICHELIN - Agilis Alpin- SET A-2

Tyres description		Tread pattern picture
Brand	Michelin	
Commercial name	Agilis Alpin	
Made-in	France	
Full tyre Size designation	235/65 R16 C 115/113R	
Specific Markings	M + S	
Symmetry	Yes	
Directionality	No	
e / E approval numbers	E2: 0008608 / 0216602 S2WR2	
Tread / Sidewall information	TR: 2P + 2S / S: 2P	
XL markings	-	
EAN code	-	
Pressure (Fr/Rr) [bar]	3,0 / 4,5	
Full DOT codes	FK41 00YX2517	
Depth average (mm)	10,21	


GOOD YEAR - Cargo Vector 2 - SET A-3

Tyres description		Tread pattern picture
Brand	GoodYear	
Commercial name	Cargo Vector 2	
Made-in	Turkey	
Full tyre Size designation	235/65 R16 C 115/113R	
Specific Markings	M + S	
Symmetry	Yes	
Directionality	No	
e / E approval numbers	E3: 009375 / 0220218 S2WR2	
Tread / Sidewall information	TR: 1P + 2S / S: 2P + 2P	
XL markings	-	
EAN code	-	
Pressure (Fr/Rr) [bar]	3,0 / 4,5	
Full DOT codes	COBO ASA 0317	
Depth average (mm)	9,95	


Pirelli Carrier All Season - SET B-4

Tyres description		Tread pattern picture
Brand	Pirelli	
Commercial name	Carrier All Season	
Made-in	Turkey	
Full tyre Size designation	235/65 R16 C 115/113R	
Specific Markings	M + S	
Symmetry	Yes	
Directionality	No	
e / E approval numbers	E3: 0026753 / 002510 S2WR2	
Tread / Sidewall information	TR: 2P + 2S / SW: 2N + 2P	
XL markings	-	
EAN code	NA	
Pressure (Fr/Rr) [bar]	3,0 / 4,5	
Full DOT codes	XJTA W966 3117	
Depth average (mm)	9,9	


Pirelli Carrier Winter- SET B-5

Tyres description		Tread pattern picture
Brand	Pirelli	
Commercial name	Carrier Winter	
Made-in	Turkey	
Full tyre Size designation	235/65 R16 C 115/113R	
Specific Markings	M + S	
Symmetry	Yes	
Directionality	No	
e / E approval numbers	E3: 024218 / 002510 S2R2	
Tread / Sidewall information	TR: 2P + 2S / S: 1N + 2P	
XL markings	-	
EAN code	-	
Pressure (Fr/Rr) [bar]	3,0 / 4,5	
Full DOT codes	XJJH R316 2717	
Depth average (mm)	9,59	


Bridgestone Duravis 660- SET B-6

Tyres description		Tread pattern picture
Brand	Bridgestone	
Commercial name	Duravis 660	
Made-in	Turkey	
Full tyre Size designation	235/65 R16 C 115/113R	
Specific Markings	M + S	
Symmetry	Yes	
Directionality	No	
e / E approval numbers	E4: 024446 / 0023429 S2R2	
Tread / Sidewall information	-	
XL markings	-	
EAN code	-	
Pressure (Fr/Rr) [bar]	3,0 / 4,5	
Full DOT codes	LSA7 CBL 2417	
Depth average (mm)	9,46	


Continental Vanco FourSeason 2 - SET C-7

Tyres description		Tread pattern picture
Brand	Continental	
Commercial name	Vanco FourSeason 2	
Made-in	Slovakia	
Full tyre Size designation	235/65 R16 C 115/113R	
Specific Markings	M + S	
Symmetry	Yes	
Directionality	No	
e / E approval numbers	E4: 0013808 / 027512 S2WR2	
Tread / Sidewall information	TR: 2P + 2S+ 1P/ SW: 2P	
XL markings	-	
EAN code	NA	
Pressure (Fr/Rr) [bar]	3,0 / 4,5	
Full DOT codes	6YB0 ET4D 2117	
Depth average (mm)	9,58	

Continental Vancontact 100- SET C-8

Tyres description		Tread pattern picture
Brand	Continental	
Commercial name	Vancontact 100	
Made-in	Slovakia	
Full tyre Size designation	235/65 R16 C 115/113R	
Specific Markings	-	
Symmetry	Yes	
Directionality	No	
e / E approval numbers	E4: 0013804 / 023350 S2WR2	
Tread / Sidewall information	TR: 2P + 2S + 1P/ SW:2P	
XL markings	-	
EAN code	-	
Pressure (Fr/Rr) [bar]	3,0 / 4,5	
Full DOT codes	6YB0 ET4B 3117	
Depth average (mm)	9,16	

Continental Vancontact Winter - SET C-9

Tyres description		Tread pattern picture
Brand	Continental	
Commercial name	Vancontact Winter	
Made-in	Slovakia	
Full tyre Size designation	235/65 R16 C 115/113R	
Specific Markings	M + S	
Symmetry	No	
Directionality	Yes	
e / E approval numbers	E4: 0013804 / 023350 S2WR2	
Tread / Sidewall information	TR: 2P + 2S + 1P/ SW:2P	
XL markings	-	
EAN code	-	
Pressure (Fr/Rr) [bar]	3,0 / 4,5	
Full DOT codes	6YB0 HRE7 2117	
Depth average (mm)	10,67	

6. TEST RESULTS

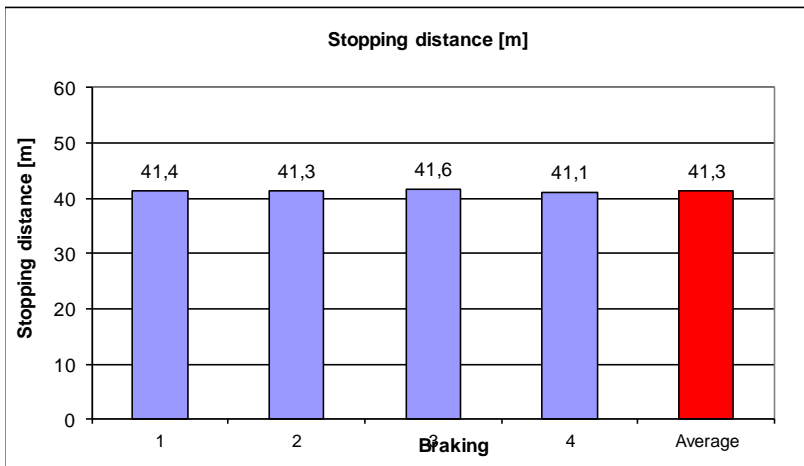
6.1. Dry asphalt SET A

MICHELIN - Agilis CrossClimate SET R2 (Reference)

Dry braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Dry Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	Dry
Test date (day/month/year)	13/12/2017 9:20
Air Temperature [°C]	7,8
Ground Temperature [°C]	8,8

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	100,0	4,7	118,2	159,9	41,7	9,22	41,86	-
B2	99,9	4,8	98,8	140,4	41,6	9,23	41,81	-
1	99,8	4,7	165,1	206,2	41,2	9,32	41,38	8,4
2	99,9	4,9	125,7	166,8	41,1	9,35	41,28	-
3	99,8	4,7	130,6	172,0	41,4	9,28	41,58	-
4	99,8	4,8	113,2	154,0	40,8	9,39	41,07	9,2



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	9,32	41,4
2	9,35	41,3
3	9,28	41,6
4	9,39	41,1
Average	9,34	41,3
Std. Dev.	0,05	0,2
Temp. [°C]	8,8	

Validation of the test (< 2%)		
Std. Dev. / AVG	0,51%	0,51%

Reference evolution (AVG)	0,59%
---------------------------	--------------

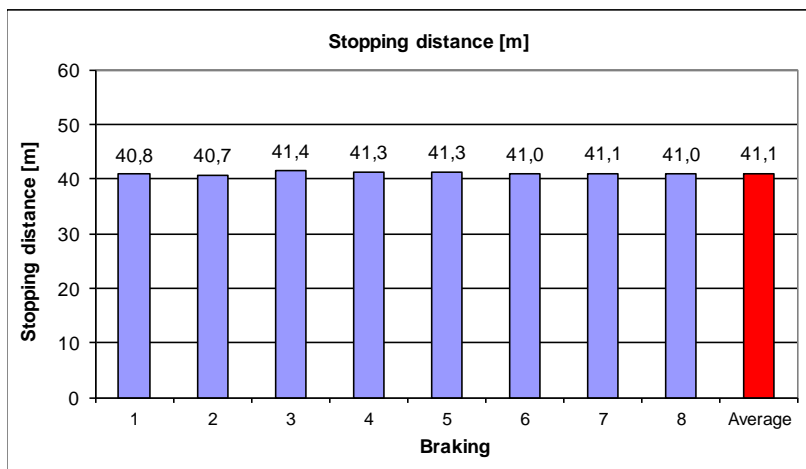
Condition for validation: <2%

MICHELIN - Agilis+ - SET A-1

Dry braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Dry Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	Dry
Test date (day/month/year)	13/12/2017 11:00
Air Temperature [°C]	10,8
Ground Temperature [°C]	13,4

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	99,9	4,9	104,3	145,8	41,5	9,26	41,64	-
B2	99,7	5,0	127,2	168,5	41,3	9,25	41,71	-
1	99,9	4,9	117,2	157,8	40,6	9,46	40,79	12,7
2	100,0	4,9	131,4	172,0	40,6	9,47	40,75	-
3	99,7	4,9	110,2	151,3	41,0	9,32	41,40	-
4	99,9	4,9	141,8	183,0	41,2	9,33	41,34	-
5	99,8	4,8	82,0	123,0	41,0	9,34	41,29	-
6	99,8	4,8	110,3	151,0	40,7	9,42	40,96	-
7	99,8	4,7	107,0	147,8	40,8	9,40	41,05	-
8	99,9	5,0	125,9	166,6	40,8	9,42	40,96	14,0



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	9,46	40,8
2	9,47	40,7
3	9,32	41,4
4	9,33	41,3
5	9,34	41,3
6	9,42	41,0
7	9,40	41,1
8	9,42	41,0
Average	9,39	41,1
Std. Dev.	0,06	0,3
Temp. [°C]	13,4	

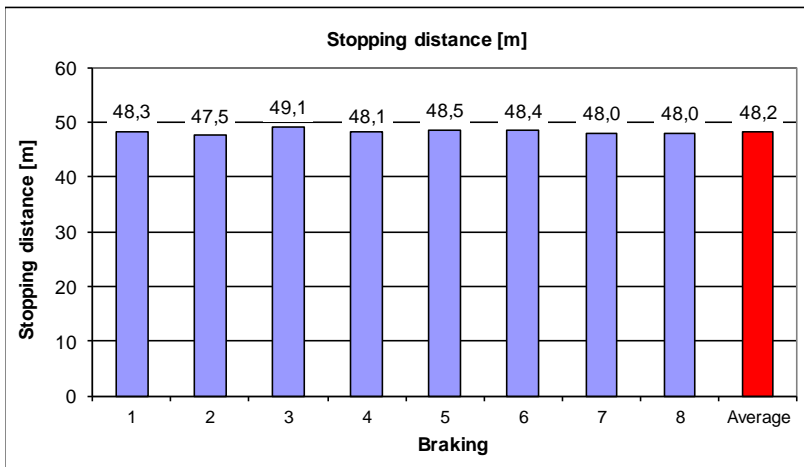
Validation of the test (< 2%)		
Std. Dev. / AVG	0,61%	0,61%

MICHELIN - Agilis Alpin- SET A-2

Dry braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Dry Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	Dry
Test date (day/month/year)	13/12/2017 13:00
Air Temperature [°C]	11,1
Ground Temperature [°C]	14,1

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	100,0	4,9	124,6	174,0	49,4	7,79	49,56	-
B2	99,8	4,8	79,3	130,2	50,9	7,54	51,19	-
1	99,9	4,8	92,4	140,5	48,1	7,99	48,30	13,4
2	100,0	4,7	64,4	111,8	47,4	8,12	47,49	-
3	99,9	4,9	69,8	118,7	48,9	7,86	49,06	-
4	99,8	4,9	69,5	117,2	47,8	8,03	48,06	-
5	100,0	4,8	88,8	137,1	48,3	7,96	48,48	-
6	99,9	4,8	144,5	192,7	48,2	7,97	48,43	-
7	99,7	4,8	118,0	165,6	47,6	8,03	48,03	-
8	99,8	4,6	65,3	113,0	47,7	8,04	47,99	14,7



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,99	48,3
2	8,12	47,5
3	7,86	49,1
4	8,03	48,1
5	7,96	48,5
6	7,97	48,4
7	8,03	48,0
8	8,04	48,0
Average	8,00	48,2
Std. Dev.	0,08	0,5
Temp. [°C]	14,1	

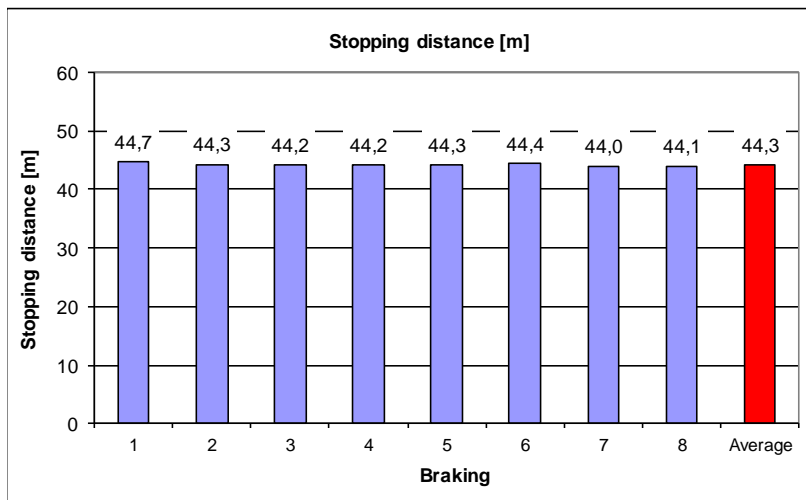
Validation of the test (< 2%)		
Std. Dev. / AVG	0,95%	0,95%

GOOD YEAR - Cargo Vector 2 - SET A-3

Dry braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Dry Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	Dry
Test date (day/month/year)	13/12/2017 14:15
Air Temperature [°C]	11
Ground Temperature [°C]	15,1

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	99,9	5,0	103,4	148,0	44,6	8,62	44,78	-
B2	99,7	4,7	63,6	108,2	44,5	8,59	44,92	-
1	99,9	4,9	73,4	117,9	44,5	8,64	44,68	14,7
2	99,9	4,7	95,8	140,0	44,1	8,71	44,31	-
3	99,9	4,8	88,0	132,1	44,0	8,73	44,18	-
4	100,0	4,9	93,7	137,8	44,1	8,72	44,24	-
5	99,9	4,7	80,9	125,0	44,1	8,72	44,26	-
6	99,9	5,0	121,3	165,5	44,2	8,69	44,39	-
7	99,9	5,0	86,8	130,7	43,9	8,76	44,04	-
8	99,9	4,9	97,8	141,7	43,9	8,76	44,05	15,4



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	8,64	44,7
2	8,71	44,3
3	8,73	44,2
4	8,72	44,2
5	8,72	44,3
6	8,69	44,4
7	8,76	44,0
8	8,76	44,1
Average	8,72	44,3
Std. Dev.	0,04	0,2
Temp. [°C]	15,1	

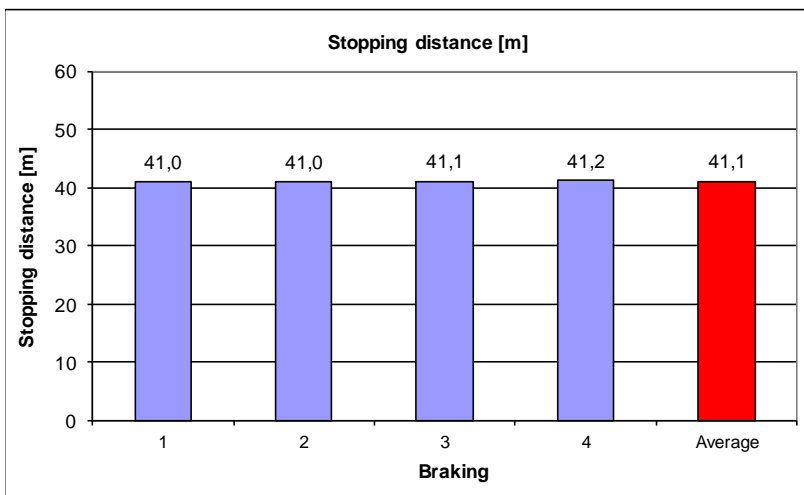
Validation of the test (< 2%)		
Std. Dev. / AVG	0,46%	0,46%

MICHELIN - Agilis CrossClimate SET R2 (Reference)

Dry braking test (stopping distances)

Test conditions	
Test Location	IDIADA Proving Ground (L'Albomar)
Track Denomination	Dry Asphalt Straight Line Braking (Track No. 2)
Track Specifications	Braking Area 5 x 250m
Track Conditions	PBFC: 0,99
Test Date (day/month/year)	13/12/2017 15:20
Air Temperature [°C]	11,2
Ground Temperature [°C]	13,1

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	99,9	5,0	70,1	110,9	40,8	9,43	40,92	-
B2	99,9	4,8	60,1	101,1	41,0	9,38	41,13	-
1	99,9	4,9	62,0	102,8	40,8	9,41	41,02	13,6
2	99,6	4,8	40,8	81,4	40,6	9,41	41,01	-
3	100,0	4,8	40,9	81,8	40,9	9,39	41,08	-
4	99,9	4,8	70,3	111,3	41,0	9,36	41,24	12,6



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	9,41	41,0
2	9,41	41,0
3	9,39	41,1
4	9,36	41,2
Average	9,39	41,1
Std. Dev.	0,02	0,1
Temp. [°C]	13,1	

Validation of the test (< 2%)		
Std. Dev. / AVG	0,26%	0,26%

Reference evolution (AVG)	0,59%
---------------------------	--------------

Condition for validation: <2%

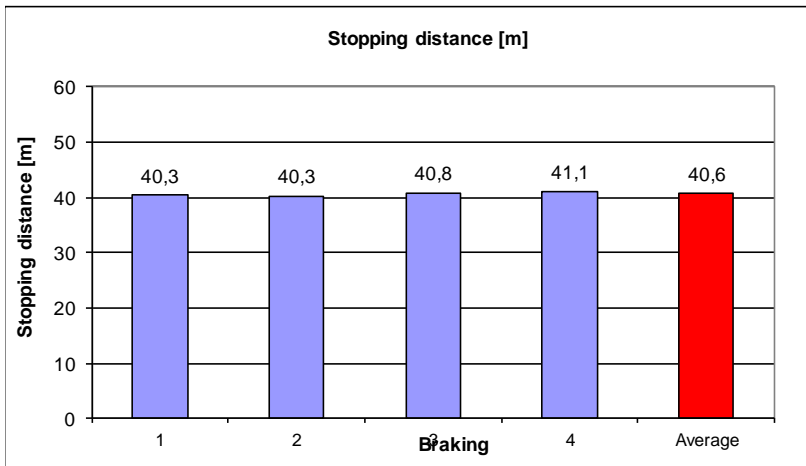
6.2. Dry asphalt SET B

MICHELIN - Agilis CrossClimate SET R2 (Reference)

Dry braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Dry Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	Dry
Test date (day/month/year)	14/12/2017 9:00
Air Temperature [°C]	12,2
Ground Temperature [°C]	10,3

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	99,9	5,0	95,2	135,6	40,3	9,52	40,51	-
B2	99,9	4,8	91,8	132,6	40,8	9,41	41,01	-
1	99,7	4,9	92,2	132,2	40,0	9,57	40,32	9,8
2	99,9	4,7	85,3	125,4	40,1	9,58	40,27	-
3	99,9	4,9	83,7	124,3	40,6	9,45	40,83	-
4	99,9	5,0	102,4	143,3	40,9	9,40	41,06	10,7



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	9,57	40,3
2	9,58	40,3
3	9,45	40,8
4	9,40	41,1
Average	9,50	40,6
Std. Dev.	0,09	0,4
Temp. [°C]	10,3	

Validation of the test (< 2%)		
Std. Dev. / AVG	0,95%	0,95%

Reference evolution (AVG)	0,99%
---------------------------	--------------

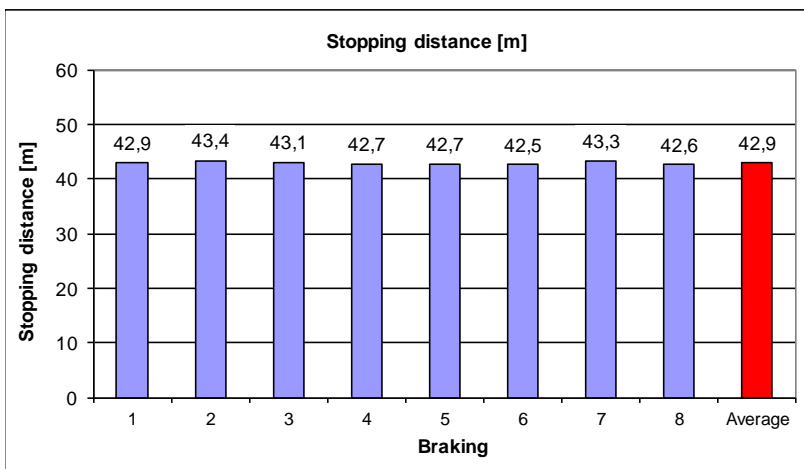
Condition for validation: <2%

Pirelli Carrier All Season - SET B-4

Dry braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Dry Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	Dry
Test date (day/month/year)	14/12/2017 10:40
Air Temperature [°C]	14,2
Ground Temperature [°C]	13,5

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	99,7	5,0	49,0	92,1	43,1	8,87	43,50	-
B2	99,9	4,7	75,2	118,9	43,7	8,78	43,92	-
1	99,9	4,9	60,2	102,8	42,7	9,00	42,88	13,0
2	100,0	4,8	50,5	93,8	43,3	8,89	43,39	-
3	99,7	4,8	87,1	129,8	42,7	8,96	43,07	-
4	99,8	4,6	75,7	118,1	42,4	9,04	42,67	-
5	100,0	5,0	51,6	94,1	42,6	9,03	42,72	-
6	100,0	4,8	79,2	121,7	42,4	9,07	42,55	-
7	100,0	4,7	85,0	128,2	43,2	8,90	43,33	-
8	99,8	4,8	73,4	115,8	42,4	9,05	42,64	14,0



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	9,00	42,9
2	8,89	43,4
3	8,96	43,1
4	9,04	42,7
5	9,03	42,7
6	9,07	42,5
7	8,90	43,3
8	9,05	42,6
Average	8,99	42,9
Std. Dev.	0,07	0,3
Temp. [°C]	13,5	

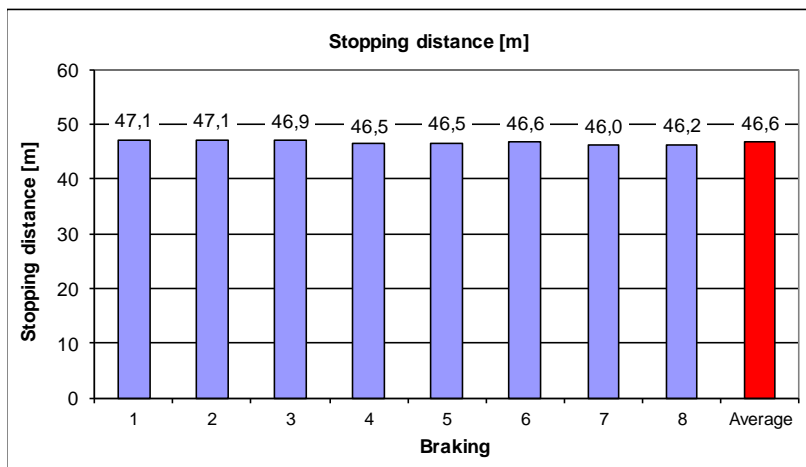
Validation of the test (< 2%)		
Std. Dev. / AVG	0,75%	0,76%

Pirelli Carrier Winter- SET B-5

Dry braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Dry Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	Dry
Test date (day/month/year)	14/12/2017 13:15
Air Temperature [°C]	15,6
Ground Temperature [°C]	17,1

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	100,0	4,8	80,3	128,1	47,8	8,05	47,92	-
B2	99,6	4,6	104,1	151,6	47,5	8,05	47,93	-
1	100,0	4,6	85,3	132,2	46,9	8,20	47,06	17,0
2	99,9	4,9	124,6	171,5	46,9	8,19	47,09	-
3	99,7	4,9	80,2	126,8	46,6	8,22	46,92	-
4	99,9	5,0	72,4	118,7	46,3	8,29	46,52	-
5	99,9	4,9	112,3	158,6	46,3	8,29	46,52	-
6	99,9	4,9	83,9	130,3	46,4	8,27	46,63	-
7	99,9	5,0	79,4	125,3	45,8	8,38	46,02	-
8	99,9	4,8	115,6	161,6	46,0	8,35	46,22	17,1



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	8,20	47,1
2	8,19	47,1
3	8,22	46,9
4	8,29	46,5
5	8,29	46,5
6	8,27	46,6
7	8,38	46,0
8	8,35	46,2
Average	8,28	46,6
Std. Dev.	0,07	0,4
Temp. [°C]	17,1	

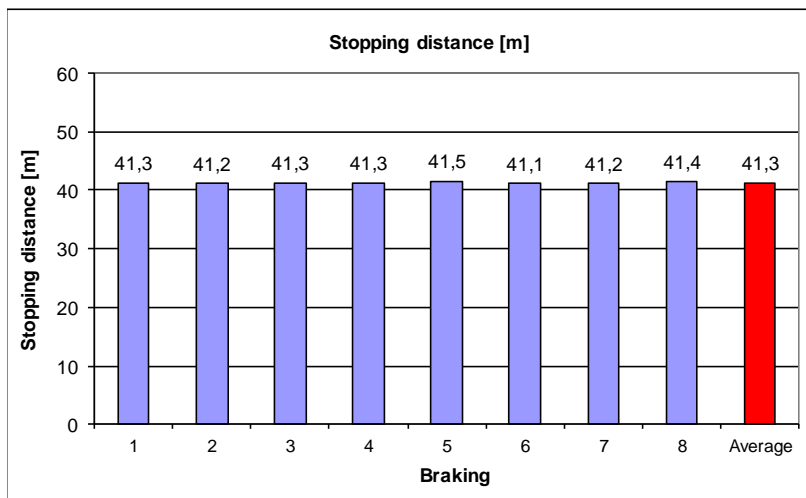
Validation of the test (< 2%)		
Std. Dev. / AVG	0,83%	0,83%

Bridgestone Duravis 660- SET B-6

Dry braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Dry Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	Dry
Test date (day/month/year)	14/12/2017 14:15
Air Temperature [°C]	15,3
Ground Temperature [°C]	16,4

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	99,5	5,0	83,7	125,0	41,3	9,23	41,82	-
B2	99,6	4,9	71,7	113,2	41,5	9,20	41,93	-
1	100,0	4,8	90,3	131,5	41,1	9,35	41,27	16,6
2	99,9	4,8	100,5	141,5	41,0	9,38	41,15	-
3	99,9	4,8	79,3	120,4	41,1	9,35	41,27	-
4	99,8	5,0	68,0	109,1	41,0	9,35	41,27	-
5	100,0	4,9	77,5	118,9	41,4	9,29	41,53	-
6	99,9	4,9	74,2	115,1	40,9	9,38	41,14	-
7	100,0	4,9	136,3	177,3	41,0	9,38	41,15	-
8	99,9	4,9	114,2	155,5	41,3	9,32	41,40	16,1



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	9,35	41,3
2	9,38	41,2
3	9,35	41,3
4	9,35	41,3
5	9,29	41,5
6	9,38	41,1
7	9,38	41,2
8	9,32	41,4
Average	9,35	41,3
Std. Dev.	0,03	0,1
Temp. [°C]	16,4	

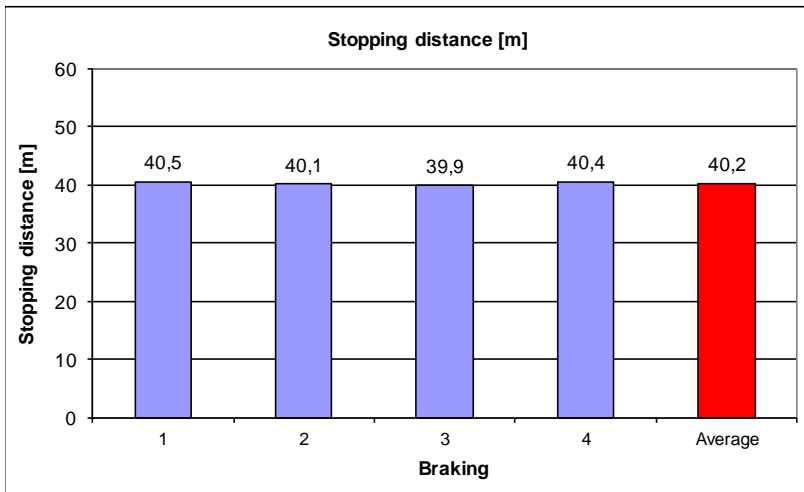
Validation of the test (< 2%)		
Std. Dev. / AVG	0,33%	0,33%

MICHELIN - Agilis CrossClimate SET R2 (Reference)

Dry braking test (stopping distances)

Test conditions	
Test Location	IDIADA Proving Ground (L'Albomar)
Track Denomination	Dry Asphalt Straight Line Braking (Track No. 2)
Track Specifications	Braking Area 5 x 250m
Track Conditions	Dry
Test Date (day/month/year)	14/12/2017 15:10
Air Temperature [°C]	15,8
Ground Temperature [°C]	17,3

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	99,6	5,0	61,5	101,5	39,9	9,56	40,35	-
B2	99,9	4,9	85,5	126,2	40,7	9,45	40,83	-
1	99,9	4,9	41,1	81,4	40,3	9,53	40,50	17,3
2	100,0	5,0	71,1	111,0	39,9	9,63	40,05	-
3	99,9	5,0	61,4	101,1	39,7	9,67	39,89	-
4	99,9	4,8	55,7	95,9	40,2	9,55	40,42	17,3



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	9,53	40,5
2	9,63	40,1
3	9,67	39,9
4	9,55	40,4
Average	9,59	40,2
Std. Dev.	0,07	0,3
Temp. [°C]	17,3	

Validation of the test (< 2%)		
Std. Dev. / AVG	0,73%	0,73%

Reference evolution (AVG)	0,99%
---------------------------	--------------

Condition for validation: <2%

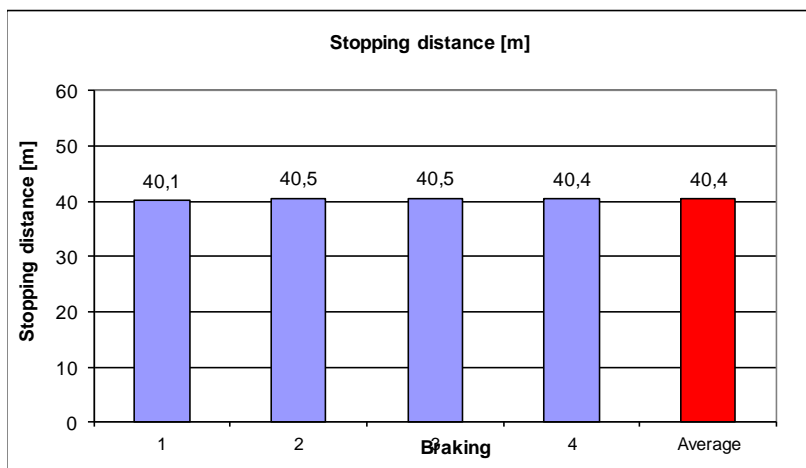
6.3. Dry asphalt SET C

MICHELIN - Agilis CrossClimate SET R2 (Reference)

Dry braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Dry Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	Dry
Test date (day/month/year)	15/12/2017 9:45
Air Temperature [°C]	12,9
Ground Temperature [°C]	10,9

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	99,7	5,0	77,5	117,6	40,1	9,53	40,48	-
B2	99,7	4,8	110,7	151,0	40,3	9,48	40,69	-
1	99,9	4,9	91,9	131,8	39,9	9,63	40,07	10,0
2	99,8	5,0	115,8	156,1	40,3	9,52	40,54	-
3	100,0	4,8	124,6	165,0	40,4	9,52	40,52	-
4	99,7	4,7	62,9	103,0	40,1	9,55	40,41	11,7



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	9,63	40,1
2	9,52	40,5
3	9,52	40,5
4	9,55	40,4
Average	9,55	40,4
Std. Dev.	0,05	0,2
Temp. [°C]	10,9	

Validation of the test (< 2%)		
Std. Dev. / AVG	0,54%	0,54%

Reference evolution (AVG)	0,51%
---------------------------	--------------

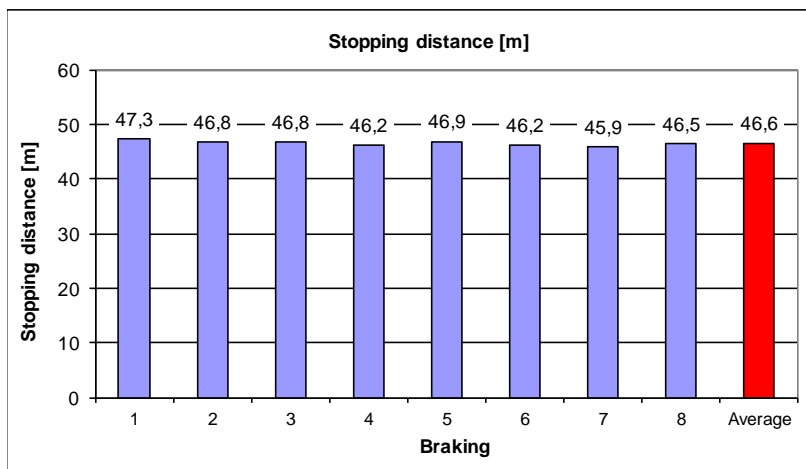
Condition for validation: <2%

Continental Vanco FourSeason 2 - SET C-7

Dry braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Dry Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	Dry
Test date (day/month/year)	15/12/2017 11:10
Air Temperature [°C]	14,1
Ground Temperature [°C]	15,2

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	99,9	4,8	129,3	177,2	47,8	8,04	47,99	-
B2	99,7	5,0	120,0	167,5	47,5	8,05	47,90	-
1	99,9	4,9	92,7	139,8	47,2	8,15	47,33	15,0
2	99,9	4,9	117,6	164,2	46,6	8,25	46,76	-
3	99,9	4,9	128,9	175,5	46,6	8,25	46,76	-
4	100,0	4,7	141,1	187,2	46,1	8,35	46,23	-
5	99,7	4,9	128,1	174,6	46,4	8,23	46,87	-
6	99,8	4,9	122,3	168,1	45,9	8,35	46,18	-
7	99,8	4,8	132,3	177,9	45,6	8,40	45,93	-
8	99,9	5,0	121,5	167,8	46,3	8,30	46,47	15,3



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	8,15	47,3
2	8,25	46,8
3	8,25	46,8
4	8,35	46,2
5	8,23	46,9
6	8,35	46,2
7	8,40	45,9
8	8,30	46,5
Average	8,29	46,6
Std. Dev.	0,08	0,4
Temp. [°C]	15,2	

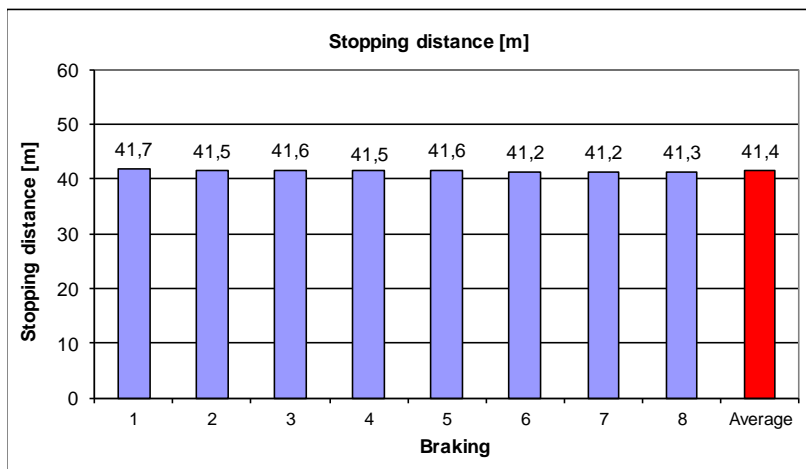
Validation of the test (< 2%)		
Std. Dev. / AVG	0,96%	0,97%

Continental Vancontact 100- SET C-8

Dry braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Dry Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	Dry
Test date (day/month/year)	15/12/2017 13:20
Air Temperature [°C]	14,6
Ground Temperature [°C]	18,5

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	99,8	4,8	100,8	142,7	41,9	9,15	42,15	-
B2	99,6	5,0	148,8	190,4	41,5	9,19	41,98	-
1	100,0	4,9	110,2	151,8	41,6	9,25	41,73	18,3
2	99,8	4,7	188,8	230,0	41,3	9,30	41,50	-
3	100,0	5,0	142,8	184,3	41,4	9,28	41,56	-
4	99,9	4,9	156,6	197,9	41,3	9,30	41,47	-
5	99,7	4,8	189,7	231,0	41,2	9,27	41,62	-
6	100,0	4,7	146,3	187,4	41,1	9,37	41,17	-
7	100,0	4,8	167,9	209,0	41,1	9,35	41,25	-
8	99,9	4,8	129,5	170,6	41,1	9,34	41,30	18,7



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	9,25	41,7
2	9,30	41,5
3	9,28	41,6
4	9,30	41,5
5	9,27	41,6
6	9,37	41,2
7	9,35	41,2
8	9,34	41,3
Average	9,31	41,4
Std. Dev.	0,04	0,2
Temp. [°C]	18,5	

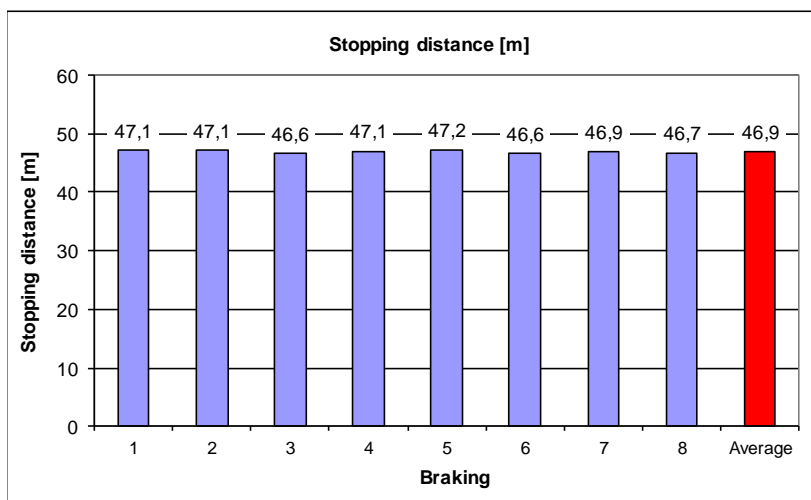
Validation of the test (< 2%)		
Std. Dev. / AVG	0,47%	0,47%

Continental Vancontact Winter - SET C-9

Dry braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Dry Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	Dry
Test date (day/month/year)	15/12/2017 14:00
Air Temperature [°C]	15
Ground Temperature [°C]	18,7

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	100,0	4,8	134,4	182,5	48,0	8,00	48,20	-
B2	99,9	5,0	106,2	154,6	48,4	7,93	48,63	-
1	99,8	4,9	144,9	191,8	46,8	8,19	47,12	18,7
2	99,9	5,0	116,7	163,7	46,9	8,19	47,12	-
3	100,0	4,9	165,2	211,6	46,5	8,27	46,63	-
4	99,8	4,8	147,2	194,0	46,8	8,20	47,07	-
5	99,9	5,0	121,4	168,4	46,9	8,18	47,18	-
6	99,8	4,7	123,6	169,9	46,3	8,28	46,61	-
7	100,0	4,9	109,6	156,4	46,8	8,22	46,93	-
8	99,9	5,0	152,5	199,0	46,5	8,26	46,73	18,6



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	8,19	47,1
2	8,19	47,1
3	8,27	46,6
4	8,20	47,1
5	8,18	47,2
6	8,28	46,6
7	8,22	46,9
8	8,26	46,7
Average	8,22	46,9
Std. Dev.	0,04	0,2
Temp. [°C]	18,7	

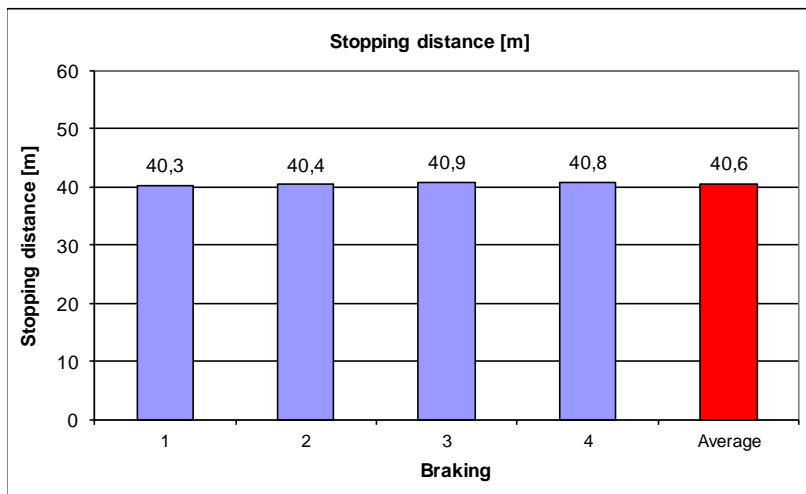
Validation of the test (< 2%)		
Std. Dev. / AVG	0,50%	0,50%

MICHELIN - Agilis CrossClimate SET R2 (Reference)

Dry braking test (stopping distances)

Test conditions	
Test Location	IDIADA Proving Ground (L'Albomar)
Track Denomination	Dry Asphalt Straight Line Braking (Track No. 2)
Track Specifications	Braking Area 5 x 250m
Track Conditions	Dry
Test Date (day/month/year)	15/12/2017 14:50
Air Temperature [°C]	14,7
Ground Temperature [°C]	17,3

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	99,8	4,9	196,1	236,6	40,5	9,47	40,76	-
B2	99,8	4,9	190,8	230,7	39,9	9,61	40,16	-
1	99,8	4,7	79,1	119,2	40,1	9,57	40,32	17,5
2	99,9	4,8	129,0	169,2	40,2	9,55	40,40	-
3	99,9	5,0	145,1	185,7	40,7	9,44	40,85	-
4	100,0	5,0	116,3	157,0	40,7	9,46	40,80	17,0



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	9,57	40,3
2	9,55	40,4
3	9,44	40,9
4	9,46	40,8
Average	9,50	40,6
Std. Dev.	0,06	0,3
Temp. [°C]	17,3	

Validation of the test (< 2%)		
Std. Dev. / AVG	0,67%	0,67%

Reference evolution (AVG)	0,51%
---------------------------	--------------

Condition for validation: <2%

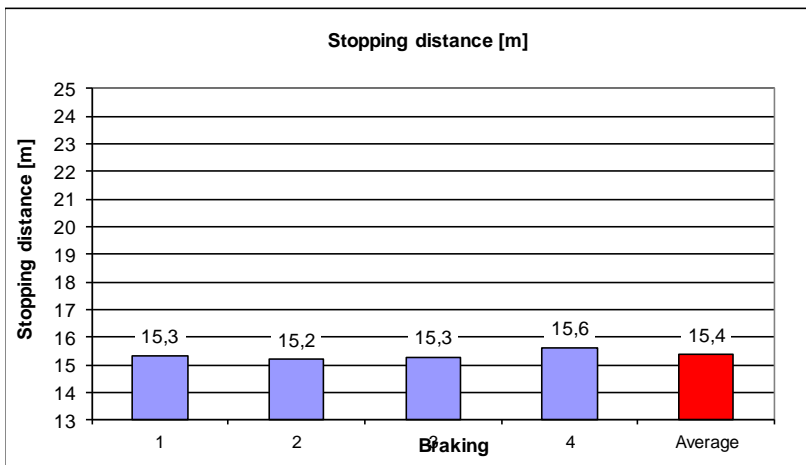
6.4. Wet low mu old asphalt 15 °C SET A

MICHELIN - Agilis CrossClimate SET R1 (Reference)

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track specifications	Braking Area 5 x 250m
Track conditions	PBFC: 0,82
Test date (day/month/year)	19/10/2017 12:00
Air Temperature [°C]	16,7
Ground Temperature [°C]	18,1

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,9	19,8	65,5	80,2	14,7	8,36	14,8	-
B2	59,5	20,0	61,3	76,1	14,8	8,22	15,0	-
1	59,9	19,9	55,0	70,3	15,3	8,05	15,3	17,3
2	59,9	19,5	85,0	100,2	15,2	8,14	15,2	-
3	59,9	20,0	72,9	88,1	15,2	8,08	15,3	-
4	59,9	20,0	69,4	85,0	15,6	7,90	15,6	18,9



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	8,05	15,3
2	8,14	15,2
3	8,08	15,3
4	7,90	15,6
Average	8,04	15,4
Std. Dev.	0,10	0,2
Temp. [°C]	18,1	

Validation of the test (< 3%)		
Std. Dev. / AVG	1,23%	1,24%

Reference evolution (AVG)	2,52%
---------------------------	--------------

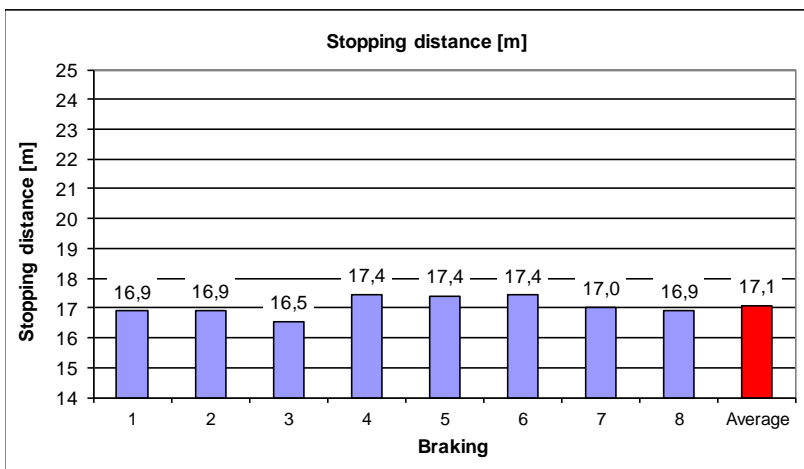
Condition for validation: <3%

MICHELIN - Agilis+ - SET A-1

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track specifications	Braking Area 5 x 250m
Track conditions	PBFC: 0,82
Test date (day/month/year)	20/10/2017 12:00
Air Temperature [°C]	20,5
Ground Temperature [°C]	25,1

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,8	19,8	68,0	84,0	16,0	7,70	16,0	-
B2	59,5	19,8	54,8	70,9	16,2	7,53	16,4	-
1	59,9	19,8	60,3	77,2	16,9	7,31	16,9	25,3
2	59,6	19,9	57,0	73,7	16,7	7,30	16,9	-
3	59,7	19,8	53,4	69,7	16,3	7,47	16,5	-
4	59,6	20,0	59,5	76,7	17,2	7,08	17,4	-
5	59,8	19,9	56,3	73,6	17,3	7,10	17,4	-
6	59,6	20,0	49,4	66,6	17,1	7,09	17,4	-
7	60,0	19,7	46,9	64,0	17,1	7,25	17,0	-
8	59,9	19,9	54,4	71,3	16,9	7,30	16,9	24,9



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,31	16,9
2	7,30	16,9
3	7,47	16,5
4	7,08	17,4
5	7,10	17,4
6	7,09	17,4
7	7,25	17,0
8	7,30	16,9
Average	7,24	17,1
Std. Dev.	0,14	0,3
Temp. [°C]	25,1	

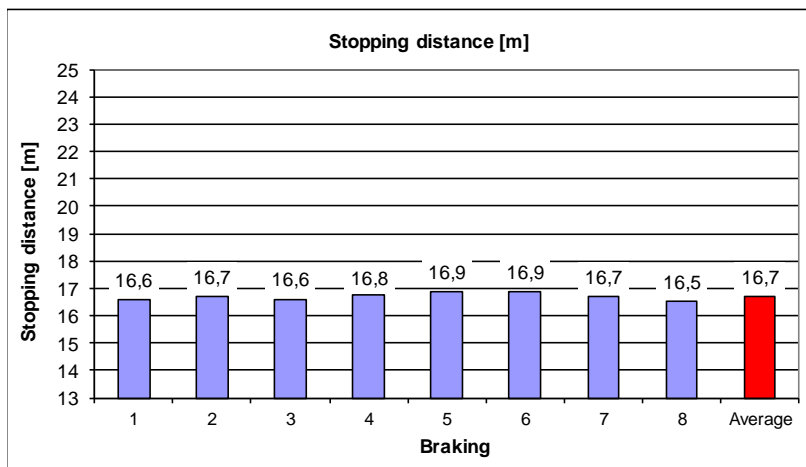
Validation of the test (< 3%)		
Std. Dev. / AVG	1,92%	1,91%

MICHELIN - Agilis Alpin- SET A-2

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track specifications	Braking Area 5 x 250m
Track conditions	PBFC: 0,82
Test date (day/month/year)	21/10/2017 9:20
Air Temperature [°C]	15,2
Ground Temperature [°C]	17,4

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,7	19,9	186,2	203,5	17,3	7,06	17,5	-
B2	59,9	19,8	199,0	216,1	17,0	7,22	17,1	-
1	59,7	19,9	177,0	193,4	16,4	7,45	16,6	16,8
2	59,7	19,7	236,8	253,3	16,6	7,40	16,7	-
3	60,0	19,9	244,2	260,8	16,6	7,44	16,6	-
4	60,0	19,8	280,9	297,7	16,8	7,37	16,8	-
5	59,9	20,0	242,9	259,7	16,8	7,32	16,9	-
6	60,0	19,9	177,8	194,7	16,9	7,32	16,9	-
7	59,8	19,9	205,0	221,6	16,6	7,40	16,7	-
8	59,9	19,8	208,0	224,5	16,5	7,48	16,5	17,9



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,45	16,6
2	7,40	16,7
3	7,44	16,6
4	7,37	16,8
5	7,32	16,9
6	7,32	16,9
7	7,40	16,7
8	7,48	16,5
Average	7,40	16,7
Std. Dev.	0,06	0,1
Temp. [°C]	17,4	

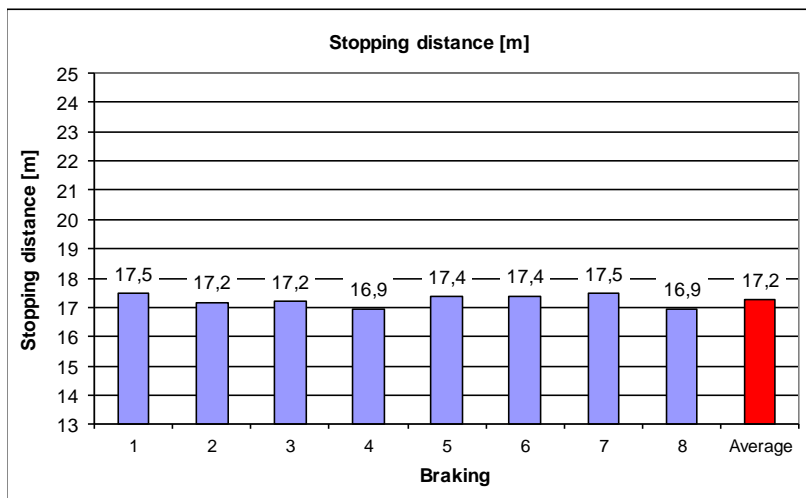
Validation of the test (< 3%)		
Std. Dev. / AVG	0,79%	0,79%

GOOD YEAR - Cargo Vector 2 - SET A-3

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track specifications	Braking Area 5 x 250m
Track conditions	PBFC: 0,82
Test date (day/month/year)	21/10/2017 10:45
Air Temperature [°C]	19,4
Ground Temperature [°C]	21,0

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	60,0	20,0	146,8	163,2	16,4	7,52	16,4	-
B2	59,9	20,0	194,0	210,5	16,5	7,45	16,6	-
1	59,8	19,9	136,9	154,3	17,4	7,07	17,5	20,2
2	59,9	19,8	195,2	212,3	17,1	7,19	17,2	-
3	60,0	20,0	256,9	274,1	17,2	7,17	17,2	-
4	59,8	19,9	177,1	194,0	16,9	7,29	16,9	-
5	60,0	19,9	122,3	139,6	17,4	7,12	17,4	-
6	59,9	19,9	152,9	170,3	17,3	7,10	17,4	-
7	59,7	19,8	161,3	178,7	17,3	7,07	17,5	-
8	59,9	20,0	188,2	205,1	16,9	7,29	16,9	21,8



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,07	17,5
2	7,19	17,2
3	7,17	17,2
4	7,29	16,9
5	7,12	17,4
6	7,10	17,4
7	7,07	17,5
8	7,29	16,9
Average	7,16	17,2
Std. Dev.	0,09	0,2
Temp. [°C]	21,0	

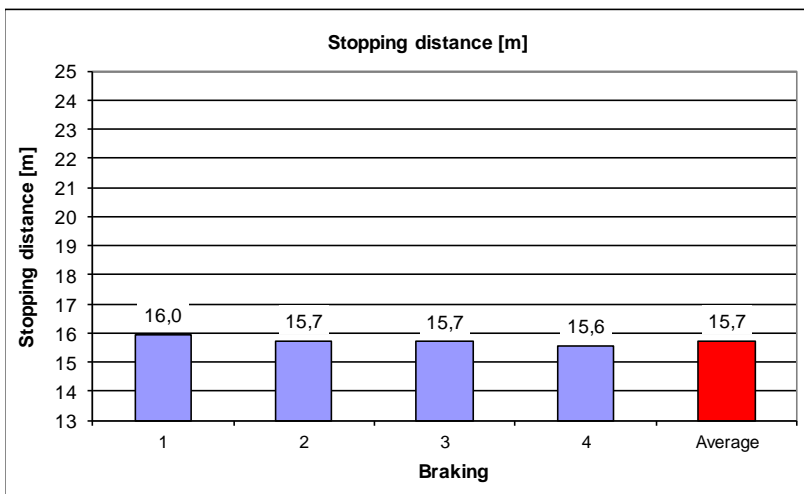
Validation of the test (< 3%)		
Std. Dev. / AVG	1,26%	1,25%

MICHELIN - Agilis CrossClimate SET R1 (Reference)

Wet braking test (stopping distances)

Test conditions	
Test Location	IDIADA Proving Ground (L'Albomar)
Track Denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track Specifications	Braking Area 5 x 250m
Track Conditions	PBFC: 0,82
Test Date (day/month/year)	21/10/2017 12:40
Air Temperature [°C]	22,4
Ground Temperature [°C]	25,0

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,7	19,9	104,0	120,2	16,1	7,57	16,3	-
B2	60,0	20,0	91,1	107,1	16,1	7,68	16,1	-
1	59,9	20,0	150,0	165,9	15,9	7,74	16,0	23,7
2	60,0	19,9	263,1	278,8	15,7	7,84	15,7	-
3	59,8	19,8	199,8	215,4	15,6	7,86	15,7	-
4	59,8	20,0	135,2	150,7	15,4	7,93	15,6	26,2



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,74	16,0
2	7,84	15,7
3	7,86	15,7
4	7,93	15,6
Average	7,84	15,7
Std. Dev.	0,08	0,2
Temp. [°C]	25,0	

Validation of the test (< 3%)		
Std. Dev. / AVG	1,04%	1,04%

Reference evolution (AVG)	2,52%
---------------------------	--------------

Condition for validation: <3%

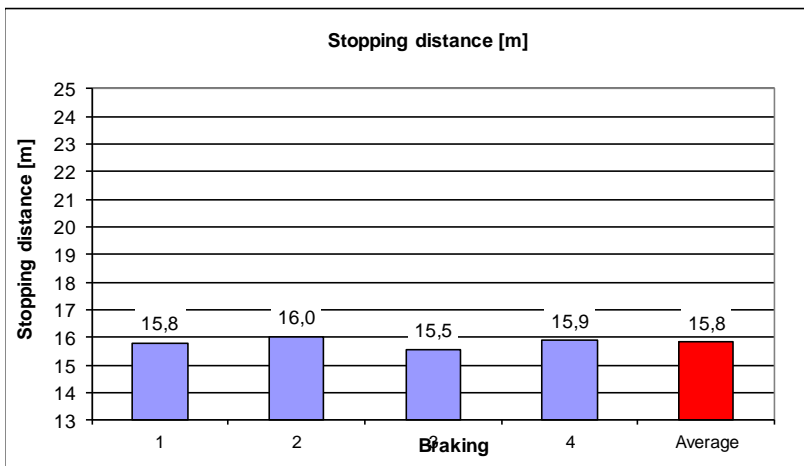
6.5. Wet low mu old asphalt 15 °C SET B

MICHELIN - Agilis CrossClimate SET R1 (Reference)

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track specifications	Braking Area 5 x 250m
Track conditions	PBFC: 0,82
Test date (day/month/year)	23/10/2017 11:30
Air Temperature [°C]	17,2
Ground Temperature [°C]	22,9

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	60,0	19,8	51,7	67,0	15,2	8,12	15,2	-
B2	59,8	19,9	68,8	84,1	15,3	8,00	15,4	-
1	59,9	19,7	73,7	89,5	15,8	7,81	15,8	22,6
2	59,8	19,9	60,4	76,3	15,9	7,70	16,0	-
3	60,0	20,0	85,4	100,9	15,5	7,94	15,5	-
4	59,9	19,7	64,7	80,6	15,9	7,77	15,9	23,1



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,81	15,8
2	7,70	16,0
3	7,94	15,5
4	7,77	15,9
Average	7,81	15,8
Std. Dev.	0,10	0,2
Temp. [°C]	22,9	

Validation of the test (< 3%)		
Std. Dev. / AVG	1,28%	1,27%

Reference evolution (AVG)	0,43%
---------------------------	--------------

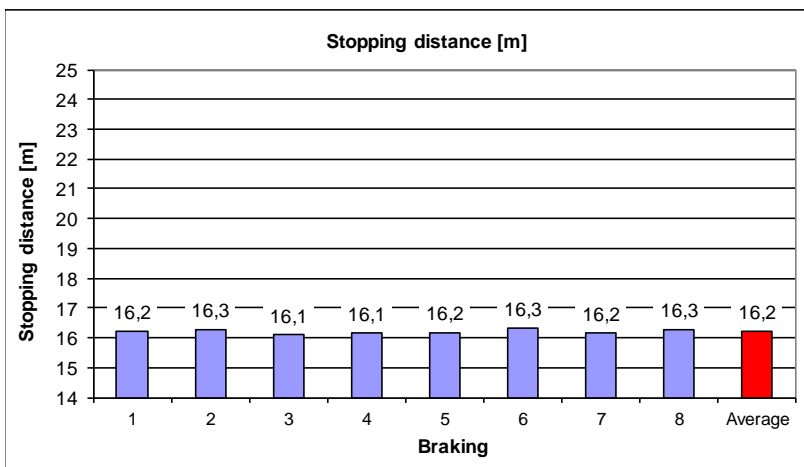
Condition for validation: <3%

Pirelli Carrier All Season - SET B-4

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track specifications	Braking Area 5 x 250m
Track conditions	PBFC: 0,82
Test date (day/month/year)	23/10/2017 15:00
Air Temperature [°C]	21,8
Ground Temperature [°C]	24,0

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,9	20,0	75,2	91,1	16,0	7,71	16,0	-
B2	59,8	19,9	65,8	82,3	16,5	7,45	16,6	-
1	59,8	19,8	69,5	85,6	16,2	7,61	16,2	24,1
2	59,8	20,0	57,3	73,5	16,2	7,58	16,3	-
3	60,0	20,0	63,0	79,1	16,1	7,67	16,1	-
4	59,9	20,0	61,4	77,5	16,1	7,65	16,1	-
5	60,0	20,0	53,1	69,2	16,1	7,64	16,2	-
6	59,9	20,0	67,2	83,5	16,2	7,57	16,3	-
7	60,0	20,0	54,3	70,5	16,2	7,64	16,2	-
8	59,9	19,9	62,3	78,5	16,2	7,59	16,3	23,8



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,61	16,2
2	7,58	16,3
3	7,67	16,1
4	7,65	16,1
5	7,64	16,2
6	7,57	16,3
7	7,64	16,2
8	7,59	16,3
Average	7,62	16,2
Std. Dev.	0,04	0,1
Temp. [°C]	24,0	

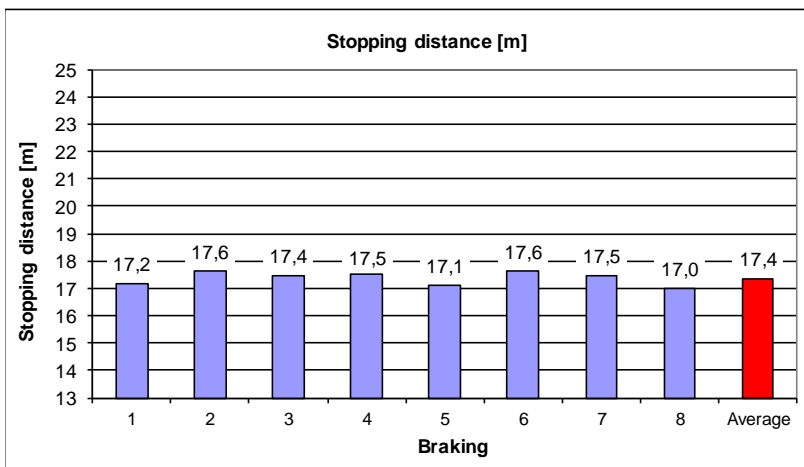
Validation of the test (< 3%)		
Std. Dev. / AVG	0,48%	0,48%

Pirelli Carrier Winter- SET B-5

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track specifications	Braking Area 5 x 250m
Track conditions	PBFC: 0,82
Test date (day/month/year)	24/10/2017 9:30
Air Temperature [°C]	15,2
Ground Temperature [°C]	20,0

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,8	20,0	45,3	63,0	17,7	6,94	17,8	-
B2	60,0	19,9	59,3	77,2	18,0	6,87	18,0	-
1	60,0	20,0	41,4	58,5	17,2	7,20	17,2	18,7
2	59,9	19,9	56,6	74,1	17,5	7,01	17,6	-
3	59,9	19,8	53,4	70,9	17,4	7,08	17,4	-
4	60,0	19,7	56,7	74,3	17,6	7,05	17,5	-
5	60,0	19,7	41,3	58,5	17,2	7,22	17,1	-
6	60,0	20,0	47,2	64,9	17,6	7,01	17,6	-
7	59,9	20,0	53,0	70,4	17,4	7,07	17,5	-
8	60,0	19,7	63,9	80,9	17,0	7,27	17,0	21,3



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,20	17,2
2	7,01	17,6
3	7,08	17,4
4	7,05	17,5
5	7,22	17,1
6	7,01	17,6
7	7,07	17,5
8	7,27	17,0
Average	7,11	17,4
Std. Dev.	0,10	0,2
Temp. [°C]	20,0	

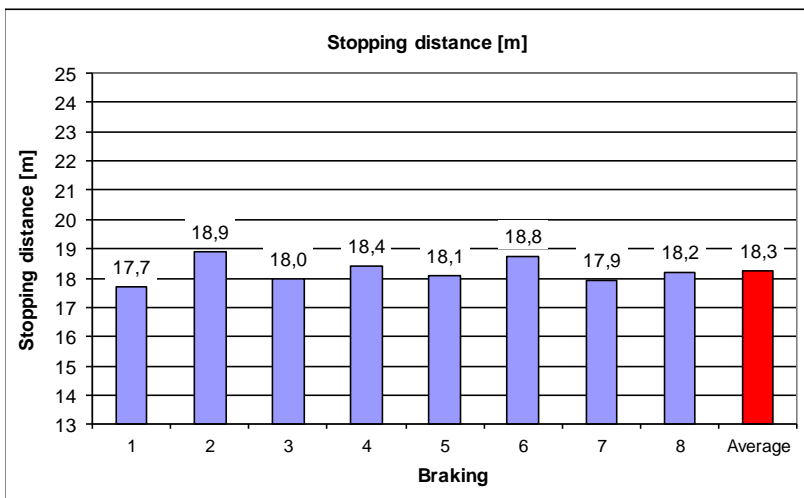
Validation of the test (< 3%)		
Std. Dev. / AVG	1,42%	1,41%

Bridgestone Duravis 660- SET B-6

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track specifications	Braking Area 5 x 250m
Track conditions	PBFC: 0,82
Test date (day/month/year)	24/10/2017 11:30
Air Temperature [°C]	22,5
Ground Temperature [°C]	24,7

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	60,0	19,9	63,7	83,1	19,4	6,37	19,4	-
B2	59,7	19,9	54,7	74,8	20,0	6,10	20,2	-
1	59,9	19,9	64,5	82,2	17,7	6,97	17,7	24,1
2	59,9	19,8	49,2	68,1	18,9	6,53	18,9	-
3	60,0	19,8	60,5	78,5	18,0	6,87	18,0	-
4	59,9	19,9	67,2	85,6	18,4	6,70	18,4	-
5	59,9	19,9	66,2	84,3	18,1	6,83	18,1	-
6	59,8	19,9	60,0	78,7	18,7	6,58	18,8	-
7	59,9	20,0	48,5	66,4	17,9	6,88	17,9	-
8	59,8	19,9	52,2	70,3	18,1	6,78	18,2	25,2



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	6,97	17,7
2	6,53	18,9
3	6,87	18,0
4	6,70	18,4
5	6,83	18,1
6	6,58	18,8
7	6,88	17,9
8	6,78	18,2
Average	6,77	18,3
Std. Dev.	0,15	0,4
Temp. [°C]	24,7	

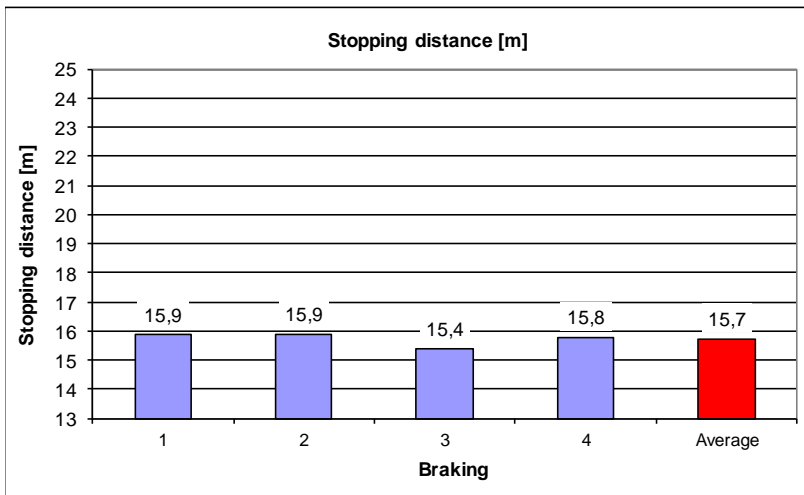
Validation of the test (< 3%)		
Std. Dev. / AVG	2,26%	2,28%

MICHELIN - Agilis CrossClimate SET R1 (Reference)

Wet braking test (stopping distances)

Test conditions	
Test Location	IDIADA Proving Ground (L'Albomar)
Track Denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track Specifications	Braking Area 5 x 250m
Track Conditions	PBFC: 0,82
Test Date (day/month/year)	25/10/2017 10:30
Air Temperature [°C]	16,7
Ground Temperature [°C]	19,4

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,9	19,8	51,8	67,2	15,4	7,98	15,5	-
B2	59,8	19,9	49,3	64,8	15,5	7,89	15,6	-
1	60,0	19,7	51,9	67,8	15,9	7,77	15,9	18,6
2	59,9	19,9	59,1	75,0	15,9	7,76	15,9	-
3	60,0	19,8	65,0	80,5	15,4	8,01	15,4	-
4	59,9	19,8	52,3	68,1	15,8	7,81	15,8	20,2



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,77	15,9
2	7,76	15,9
3	8,01	15,4
4	7,81	15,8
Average	7,84	15,7
Std. Dev.	0,12	0,2
Temp. [°C]	19,4	

Validation of the test (< 3%)		
Std. Dev. / AVG	1,47%	1,45%

Reference evolution (AVG)	0,43%
---------------------------	--------------

Condition for validation: <3%

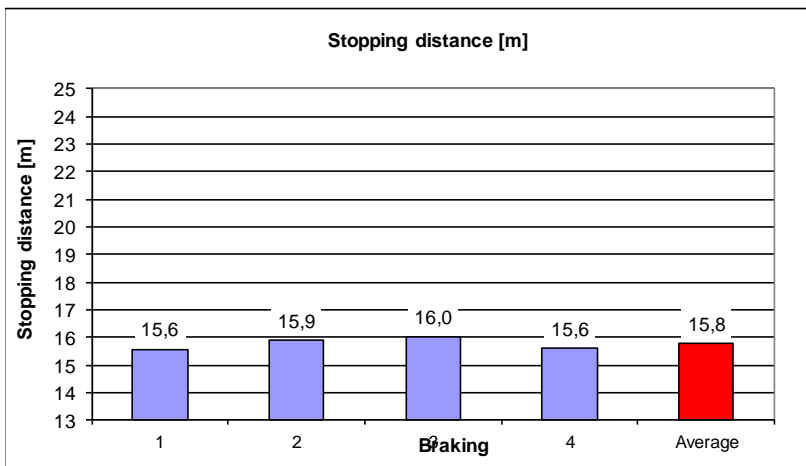
6.6. Wet low mu old asphalt 15 °C SET C

MICHELIN - Agilis CrossClimate SET R2 (Reference)

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track specifications	Braking Area 5 x 250m
Track conditions	PBFC: 0,82
Test date (day/month/year)	25/10/2017 14:45
Air Temperature [°C]	23
Ground Temperature [°C]	25,4

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	60,0	19,9	50,2	65,9	15,7	7,88	15,7	-
B2	60,0	19,9	55,2	71,0	15,7	7,84	15,7	-
1	59,9	19,9	65,3	80,9	15,5	7,93	15,6	25,6
2	60,0	20,0	59,8	75,7	15,9	7,77	15,9	-
3	59,9	19,7	45,2	61,2	16,0	7,70	16,0	-
4	59,9	20,0	53,8	69,3	15,5	7,92	15,6	25,2



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,93	15,6
2	7,77	15,9
3	7,70	16,0
4	7,92	15,6
Average	7,83	15,8
Std. Dev.	0,11	0,2
Temp. [°C]	25,4	

Validation of the test (< 3%)		
Std. Dev. / AVG	1,43%	1,44%

Reference evolution (AVG)	1,48%
---------------------------	--------------

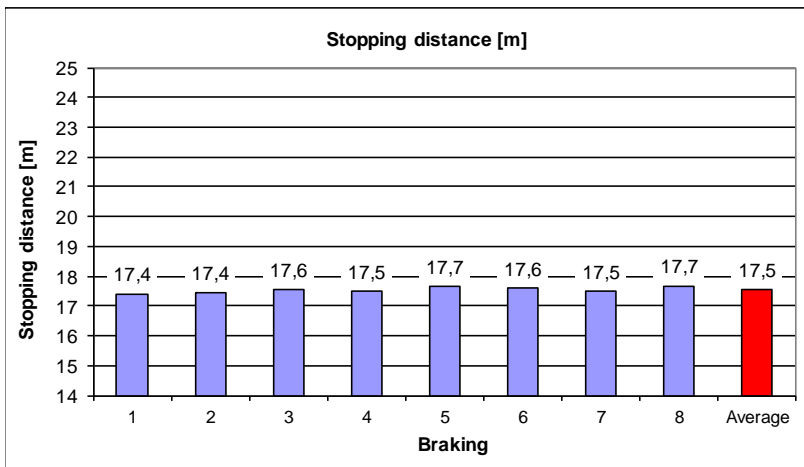
Condition for validation: <3%

Continental Vanco FourSeason 2 - SET C-7

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track specifications	Braking Area 5 x 250m
Track conditions	PBFC: 0,82
Test date (day/month/year)	26/10/2017 11:15
Air Temperature [°C]	19,1
Ground Temperature [°C]	25,8

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,9	19,9	40,3	58,7	18,4	6,69	18,5	-
B2	59,9	19,9	50,0	67,8	17,8	6,92	17,8	-
1	60,0	19,7	52,4	69,8	17,5	7,09	17,4	24,8
2	60,0	20,0	49,7	67,1	17,4	7,08	17,4	-
3	59,9	19,9	53,9	71,5	17,5	7,03	17,6	-
4	60,0	20,0	44,5	61,9	17,5	7,07	17,5	-
5	59,9	19,8	59,0	76,6	17,6	6,99	17,7	-
6	59,9	20,0	51,6	69,1	17,5	7,02	17,6	-
7	59,9	20,0	52,7	70,1	17,4	7,06	17,5	-
8	59,7	19,9	46,3	63,8	17,5	6,99	17,7	26,8



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,09	17,4
2	7,08	17,4
3	7,03	17,6
4	7,07	17,5
5	6,99	17,7
6	7,02	17,6
7	7,06	17,5
8	6,99	17,7
Average	7,04	17,5
Std. Dev.	0,04	0,1
Temp. [°C]	25,8	

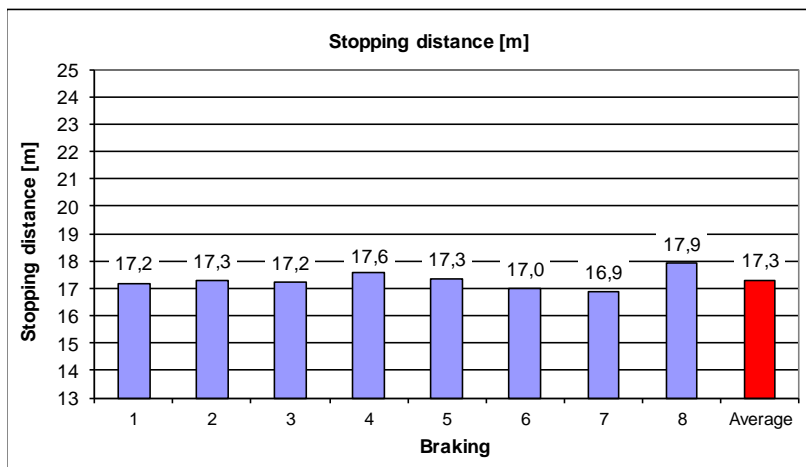
Validation of the test (< 3%)		
Std. Dev. / AVG	0,57%	0,57%

Continental Vancontact 100- SET C-8

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track specifications	Braking Area 5 x 250m
Track conditions	PBFC: 0,82
Test date (day/month/year)	26/10/2017 15:00
Air Temperature [°C]	23,2
Ground Temperature [°C]	25,5

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	60,0	19,8	46,5	64,6	18,0	6,87	18,0	-
B2	59,9	20,0	43,8	62,3	18,5	6,67	18,5	-
1	59,9	19,9	62,1	79,2	17,1	7,18	17,2	25,6
2	60,0	20,0	75,7	93,0	17,3	7,14	17,3	-
3	60,0	19,9	63,3	80,5	17,2	7,17	17,2	-
4	60,0	20,0	51,0	68,6	17,6	7,03	17,6	-
5	60,0	19,9	53,6	70,9	17,4	7,12	17,3	-
6	59,9	19,9	43,9	60,9	16,9	7,27	17,0	-
7	59,9	20,0	52,0	68,8	16,8	7,32	16,9	-
8	60,0	19,9	58,4	76,3	17,9	6,89	17,9	25,4



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,18	17,2
2	7,14	17,3
3	7,17	17,2
4	7,03	17,6
5	7,12	17,3
6	7,27	17,0
7	7,32	16,9
8	6,89	17,9
Average	7,14	17,3
Std. Dev.	0,13	0,3
Temp. [°C]	25,5	

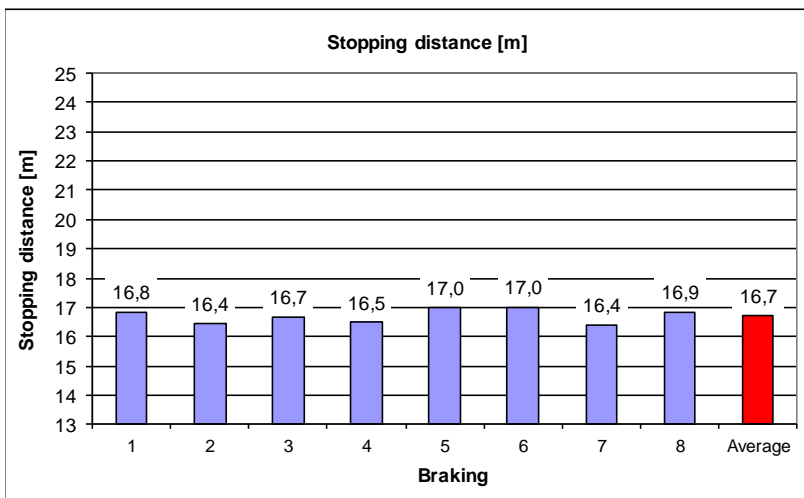
Validation of the test (< 3%)		
Std. Dev. / AVG	1,87%	1,89%

Continental Vancontact Winter - SET C-9

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track specifications	Braking Area 5 x 250m
Track conditions	PBFC: 0,82
Test date (day/month/year)	27/10/2017 11:00
Air Temperature [°C]	20,7
Ground Temperature [°C]	21,6

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,9	20,0	50,8	68,3	17,5	7,03	17,6	-
B2	60,0	19,8	50,5	68,2	17,7	7,01	17,6	-
1	59,9	19,8	41,9	58,7	16,8	7,33	16,8	21,2
2	60,0	19,8	49,4	65,8	16,5	7,51	16,4	-
3	59,9	19,9	58,8	75,4	16,6	7,40	16,7	-
4	59,7	20,0	73,5	89,8	16,3	7,49	16,5	-
5	60,0	20,0	45,0	62,0	17,0	7,27	17,0	-
6	59,9	19,9	54,5	71,4	17,0	7,26	17,0	-
7	59,9	20,0	50,2	66,6	16,4	7,52	16,4	-
8	60,0	20,0	58,3	75,1	16,8	7,33	16,9	21,9



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,33	16,8
2	7,51	16,4
3	7,40	16,7
4	7,49	16,5
5	7,27	17,0
6	7,26	17,0
7	7,52	16,4
8	7,33	16,9
Average	7,39	16,7
Std. Dev.	0,11	0,2
Temp. [°C]	21,6	

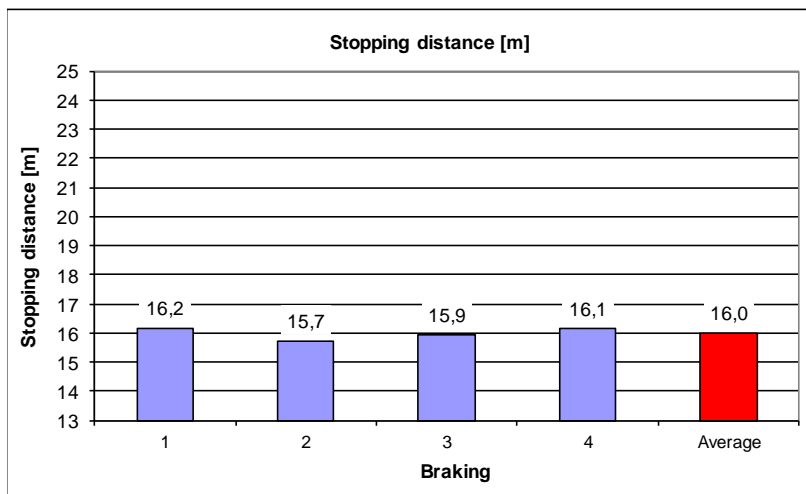
Validation of the test (< 3%)		
Std. Dev. / AVG	1,46%	1,45%

MICHELIN - Agilis CrossClimate SET R2 (Reference)

Wet braking test (stopping distances)

Test conditions	
Test Location	IDIADA Proving Ground (L'Albomar)
Track Denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track Specifications	Braking Area 5 x 250m
Track Conditions	PBFC: 0,82
Test Date (day/month/year)	27/10/2017 15:00
Air Temperature [°C]	25
Ground Temperature [°C]	23,6

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	60,0	20,0	54,2	69,9	15,8	7,84	15,8	-
B2	59,9	19,8	42,3	58,0	15,8	7,84	15,7	-
1	60,0	20,0	65,3	81,5	16,2	7,63	16,2	23,9
2	59,9	20,0	60,9	76,6	15,7	7,84	15,7	-
3	60,0	19,8	48,7	64,7	16,0	7,74	15,9	-
4	59,7	20,0	63,8	79,8	16,0	7,64	16,1	23,2



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,63	16,2
2	7,84	15,7
3	7,74	15,9
4	7,64	16,1
Average	7,72	16,0
Std. Dev.	0,10	0,2
Temp. [°C]	23,6	

Validation of the test (< 3%)		
Std. Dev. / AVG	1,28%	1,28%

Reference evolution (AVG)	1,48%
---------------------------	-------

Condition for validation: <3%

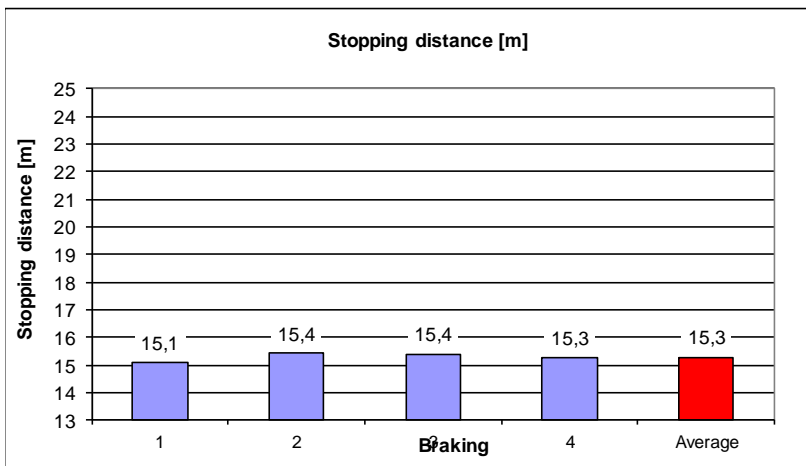
6.7. Wet high mu new asphalt 15 °C SET A

MICHELIN - Agilis CrossClimate SET R1 (Reference)

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	R117 (utilisation of adhesion)
Test date (day/month/year)	20/10/2017 9:00
Air Temperature [°C]	16,4
Ground Temperature [°C]	17,8

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,9	19,9	77,6	92,9	15,3	8,06	15,3	-
B2	60,0	20,0	94,3	109,5	15,1	8,16	15,1	-
1	59,7	19,8	67,3	82,2	14,9	8,20	15,1	17,1
2	59,9	19,9	71,6	87,0	15,4	8,01	15,4	-
3	59,6	19,6	95,8	111,1	15,2	8,02	15,4	-
4	59,3	19,9	66,2	81,1	14,9	8,09	15,3	18,4



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	8,20	15,1
2	8,01	15,4
3	8,02	15,4
4	8,09	15,3
Average	8,08	15,3
Std. Dev.	0,09	0,2
Temp. [°C]	17,8	

Validation of the test (< 3%)		
Std. Dev. / AVG	1,07%	1,06%

Reference evolution (AVG)	2,49%
---------------------------	--------------

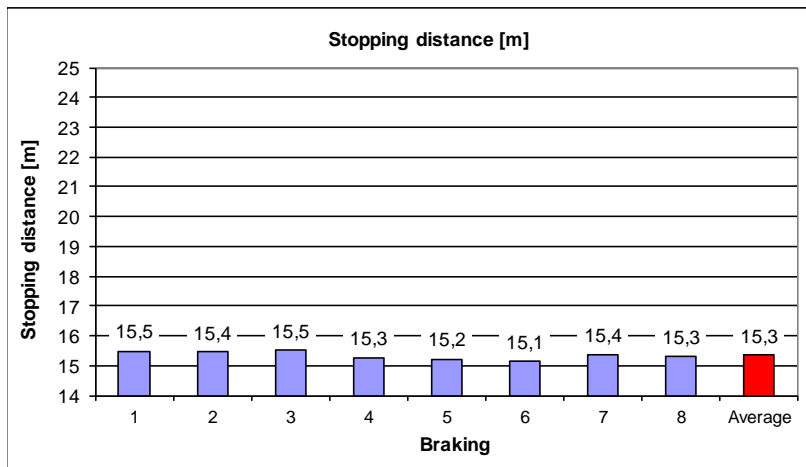
Condition for validation: <3%

MICHELIN - Agilis+ - SET A-1

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	R117 (utilisation of adhesion)
Test date (day/month/year)	20/10/2017 13:00
Air Temperature [°C]	22,2
Ground Temperature [°C]	21,7

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,7	19,5	49,9	65,6	15,7	7,82	15,8	-
B2	59,7	19,8	63,5	78,3	14,8	8,27	14,9	-
1	59,7	19,9	76,7	92,1	15,3	7,97	15,5	21,3
2	60,0	19,8	67,2	82,6	15,5	7,99	15,4	-
3	59,7	19,7	76,6	92,0	15,4	7,96	15,5	-
4	60,0	19,7	57,9	73,2	15,3	8,08	15,3	-
5	59,9	19,9	87,7	102,9	15,2	8,11	15,2	-
6	59,6	19,9	71,4	86,4	14,9	8,16	15,1	-
7	59,9	19,9	74,6	89,9	15,3	8,03	15,4	-
8	59,9	19,6	69,4	84,7	15,3	8,08	15,3	22,0



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,97	15,5
2	7,99	15,4
3	7,96	15,5
4	8,08	15,3
5	8,11	15,2
6	8,16	15,1
7	8,03	15,4
8	8,08	15,3
Average	8,05	15,3
Std. Dev.	0,07	0,1
Temp. [°C]	21,7	

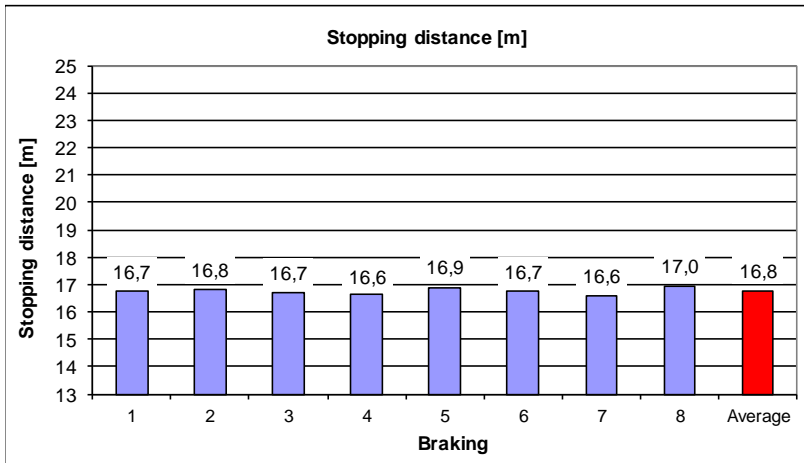
Validation of the test (< 3%)		
Std. Dev. / AVG	0,88%	0,88%

MICHELIN - Agilis Alpin- SET A-2

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	R117 (utilisation of adhesion)
Test date (day/month/year)	21/10/2017 8:25
Air Temperature [°C]	14,7
Ground Temperature [°C]	16,0

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	60,0	20,0	233,7	251,1	17,4	7,08	17,4	-
B2	59,9	19,8	103,5	120,5	16,9	7,26	17,0	-
1	59,8	19,8	152,2	168,9	16,7	7,37	16,7	15,2
2	59,8	19,5	118,2	135,0	16,8	7,35	16,8	-
3	59,7	20,0	104,4	120,9	16,5	7,40	16,7	-
4	59,9	19,7	108,4	125,1	16,7	7,42	16,6	-
5	59,9	20,0	168,5	185,3	16,8	7,31	16,9	-
6	59,7	19,8	124,0	140,6	16,6	7,38	16,7	-
7	59,9	19,7	136,7	153,3	16,6	7,44	16,6	-
8	59,9	19,9	75,8	92,7	16,9	7,28	17,0	16,7



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,37	16,7
2	7,35	16,8
3	7,40	16,7
4	7,42	16,6
5	7,31	16,9
6	7,38	16,7
7	7,44	16,6
8	7,28	17,0
Average	7,37	16,8
Std. Dev.	0,05	0,1
Temp. [°C]	16,0	

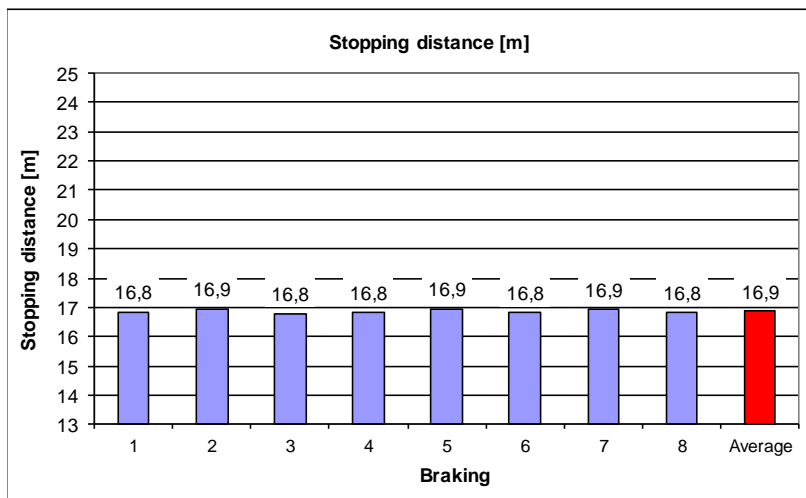
Validation of the test (< 3%)		
Std. Dev. / AVG	0,72%	0,72%

GOOD YEAR - Cargo Vector 2 - SET A-3

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	R117 (utilisation of adhesion)
Test date (day/month/year)	21/10/2017 11:30
Air Temperature [°C]	21,6
Ground Temperature [°C]	20,5

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,7	19,8	102,0	119,2	17,2	7,11	17,4	-
B2	59,9	19,9	153,1	170,3	17,2	7,16	17,2	-
1	59,4	19,8	124,8	141,4	16,5	7,33	16,8	20,3
2	59,9	19,9	173,4	190,3	16,9	7,29	16,9	-
3	60,0	19,9	165,4	182,2	16,8	7,35	16,8	-
4	59,9	19,9	54,5	71,3	16,8	7,34	16,8	-
5	59,8	19,8	107,7	124,5	16,8	7,29	16,9	-
6	60,0	20,0	192,1	208,9	16,8	7,34	16,8	-
7	59,9	19,8	62,8	79,7	16,9	7,30	16,9	-
8	59,9	19,8	204,7	221,5	16,8	7,34	16,8	20,6



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,33	16,8
2	7,29	16,9
3	7,35	16,8
4	7,34	16,8
5	7,29	16,9
6	7,34	16,8
7	7,30	16,9
8	7,34	16,8
Average	7,32	16,9
Std. Dev.	0,03	0,1
Temp. [°C]	20,5	

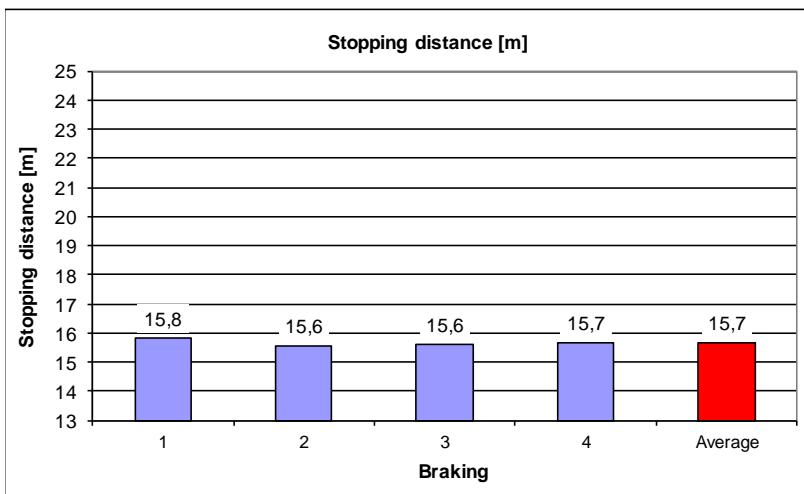
Validation of the test (< 3%)		
Std. Dev. / AVG	0,35%	0,35%

MICHELIN - Agilis CrossClimate SET R1 (Reference)

Wet braking test (stopping distances)

Test conditions	
Test Location	IDIADA Proving Ground (L'Albomar)
Track Denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track Specifications	Braking Area 5 x 250m
Track Conditions	R117 (utilisation of adhesion)
Test Date (day/month/year)	21/10/2017 13:15
Air Temperature [°C]	23,3
Ground Temperature [°C]	21,8

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,8	19,8	116,3	132,5	16,1	7,62	16,2	-
B2	59,9	19,5	117,7	133,7	16,0	7,76	15,9	-
1	60,0	20,0	126,7	142,5	15,8	7,81	15,8	21,4
2	59,9	19,9	97,6	113,2	15,5	7,92	15,6	-
3	59,8	20,0	66,1	81,6	15,5	7,92	15,6	-
4	60,0	20,0	186,3	202,0	15,7	7,88	15,7	22,2



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,81	15,8
2	7,92	15,6
3	7,92	15,6
4	7,88	15,7
Average	7,88	15,7
Std. Dev.	0,05	0,1
Temp. [°C]	21,8	

Validation of the test (< 3%)		
Std. Dev. / AVG	0,65%	0,65%

Reference evolution (AVG)	2,49%
---------------------------	--------------

Condition for validation: <3%

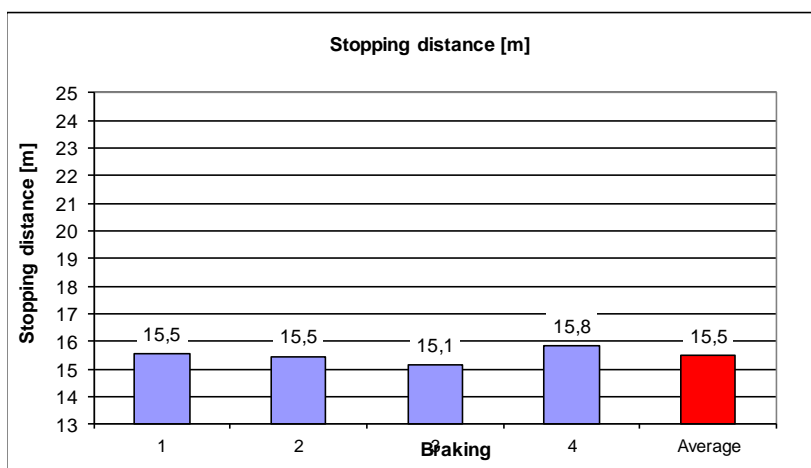
6.8. Wet high mu new asphalt 15 °C SET B

MICHELIN - Agilis CrossClimate SET R1 (Reference)

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	R117 (utilisation of adhesion)
Test date (day/month/year)	23/10/2017 11:30
Air Temperature [°C]	19,2
Ground Temperature [°C]	19,3

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,9	19,9	89,3	105,0	15,6	7,86	15,7	-
B2	60,0	20,0	76,5	92,0	15,5	7,98	15,5	-
1	59,8	20,0	65,1	80,5	15,4	7,94	15,5	18,8
2	60,0	19,8	62,8	78,3	15,5	7,99	15,5	-
3	59,4	19,8	76,6	91,4	14,8	8,16	15,1	-
4	59,9	19,5	74,9	90,7	15,9	7,80	15,8	19,8



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,94	15,5
2	7,99	15,5
3	8,16	15,1
4	7,80	15,8
Average	7,97	15,5
Std. Dev.	0,15	0,3
Temp. [°C]	19,3	

Validation of the test (< 3%)		
Std. Dev. / AVG	1,85%	1,84%

Reference evolution (AVG)	1,40%
---------------------------	--------------

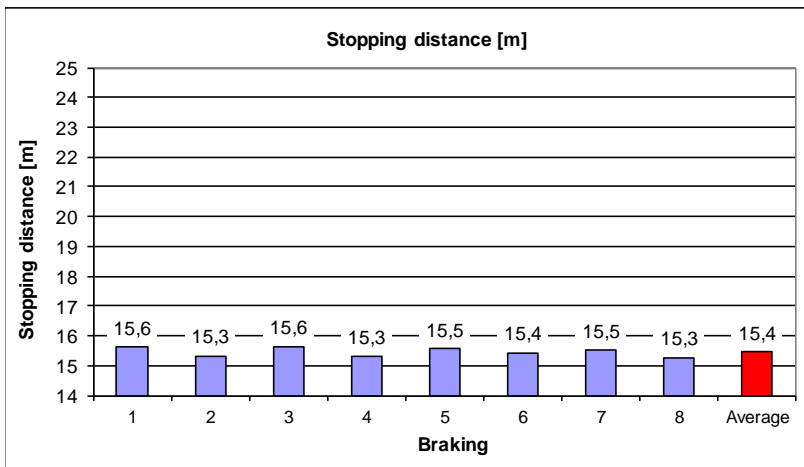
Condition for validation: <3%

Pirelli Carrier All Season - SET B-4

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	R117 (utilisation of adhesion)
Test date (day/month/year)	23/10/2017 15:50
Air Temperature [°C]	22,2
Ground Temperature [°C]	20,5

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,8	19,9	92,0	107,6	15,7	7,84	15,7	-
B2	60,0	19,9	54,8	70,5	15,7	7,84	15,7	-
1	59,8	19,8	81,3	96,9	15,5	7,91	15,6	20,4
2	60,0	19,9	57,7	73,0	15,3	8,06	15,3	-
3	59,9	20,0	81,3	96,9	15,6	7,90	15,6	-
4	59,7	20,0	68,3	83,4	15,1	8,07	15,3	-
5	59,5	19,9	72,9	88,2	15,3	7,94	15,5	-
6	59,7	19,9	72,6	87,9	15,3	8,01	15,4	-
7	60,0	20,0	80,4	95,9	15,5	7,96	15,5	-
8	59,6	20,0	72,1	87,2	15,1	8,09	15,3	20,6



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,91	15,6
2	8,06	15,3
3	7,90	15,6
4	8,07	15,3
5	7,94	15,5
6	8,01	15,4
7	7,96	15,5
8	8,09	15,3
Average	7,99	15,4
Std. Dev.	0,07	0,1
Temp. [°C]	20,5	

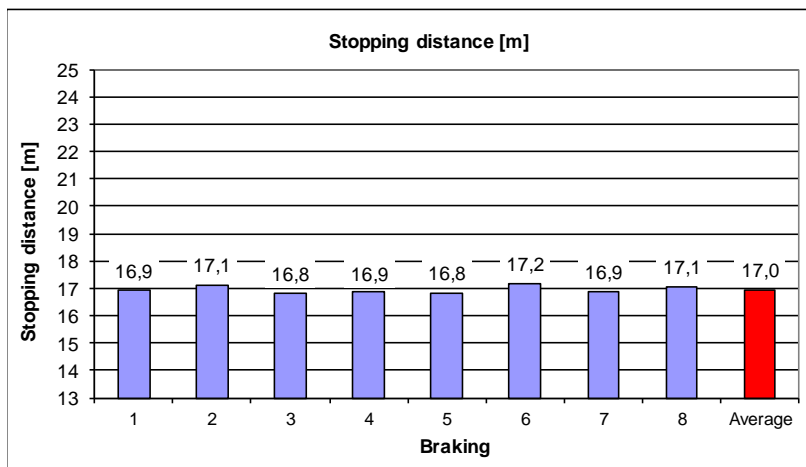
Validation of the test (< 3%)		
Std. Dev. / AVG	0,93%	0,93%

Pirelli Carrier Winter- SET B-5

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	R117 (utilisation of adhesion)
Test date (day/month/year)	24/10/2017 9:30
Air Temperature [°C]	17,9
Ground Temperature [°C]	18,1

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	60,0	20,0	77,4	93,8	16,4	7,51	16,4	-
B2	60,0	20,0	53,6	69,8	16,3	7,59	16,3	-
1	59,9	19,7	75,0	91,9	16,9	7,30	16,9	17,7
2	59,9	20,0	73,2	90,2	17,1	7,21	17,1	-
3	60,0	19,9	72,5	89,3	16,8	7,35	16,8	-
4	59,9	19,9	81,7	98,5	16,9	7,31	16,9	-
5	59,7	19,9	59,6	76,2	16,6	7,33	16,8	-
6	59,9	19,8	69,2	86,3	17,1	7,20	17,2	-
7	60,0	19,8	65,9	82,8	16,9	7,32	16,9	-
8	60,0	20,0	65,3	82,3	17,1	7,23	17,1	18,4



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,30	16,9
2	7,21	17,1
3	7,35	16,8
4	7,31	16,9
5	7,33	16,8
6	7,20	17,2
7	7,32	16,9
8	7,23	17,1
Average	7,28	17,0
Std. Dev.	0,06	0,1
Temp. [°C]	18,1	

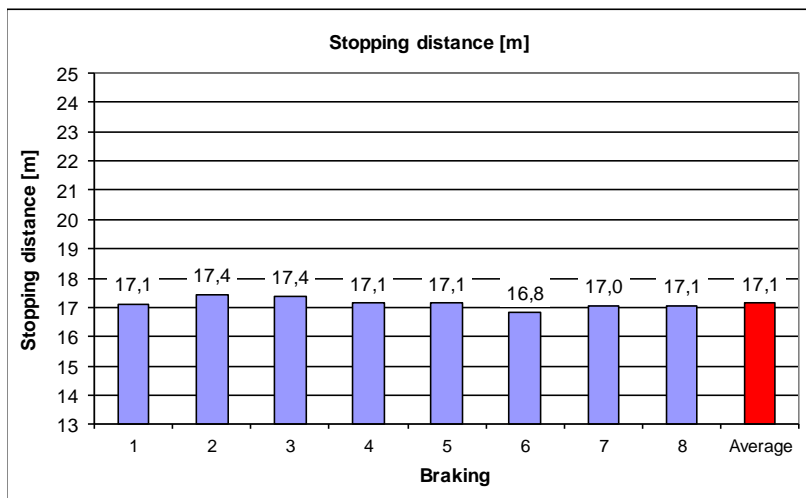
Validation of the test (< 3%)		
Std. Dev. / AVG	0,83%	0,84%

Bridgestone Duravis 660- SET B-6

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	R117 (utilisation of adhesion)
Test date (day/month/year)	24/10/2017 14:45
Air Temperature [°C]	22,3
Ground Temperature [°C]	21,2

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	60,0	19,9	78,0	95,4	17,4	7,09	17,4	-
B2	59,9	19,9	75,9	93,4	17,5	7,05	17,5	-
1	60,0	19,9	81,1	98,2	17,1	7,21	17,1	21,2
2	59,8	19,8	68,4	85,7	17,4	7,09	17,4	-
3	59,7	20,0	70,4	87,6	17,2	7,11	17,4	-
4	59,9	19,9	65,0	82,2	17,1	7,21	17,1	-
5	59,9	19,9	89,4	106,5	17,1	7,20	17,1	-
6	59,9	19,8	83,9	100,7	16,8	7,35	16,8	-
7	60,0	19,9	96,9	113,9	17,0	7,24	17,0	-
8	59,9	19,9	76,5	93,5	17,0	7,24	17,1	21,1



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,21	17,1
2	7,09	17,4
3	7,11	17,4
4	7,21	17,1
5	7,20	17,1
6	7,35	16,8
7	7,24	17,0
8	7,24	17,1
Average	7,21	17,1
Std. Dev.	0,08	0,2
Temp. [°C]	21,2	

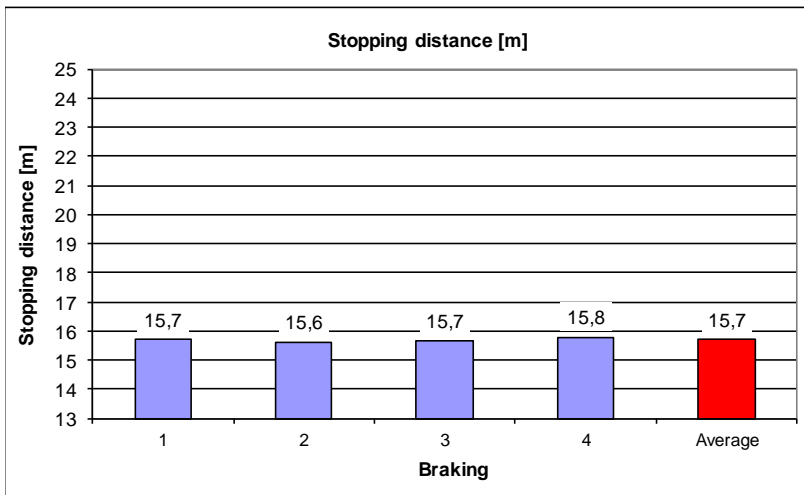
Validation of the test (< 3%)		
Std. Dev. / AVG	1,11%	1,11%

MICHELIN - Agilis CrossClimate SET R1 (Reference)

Wet braking test (stopping distances)

Test conditions	
Test Location	IDIADA Proving Ground (L'Albomar)
Track Denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track Specifications	Braking Area 5 x 250m
Track Conditions	R117 (utilisation of adhesion)
Test Date (day/month/year)	25/10/2017 10:30
Air Temperature [°C]	19,7
Ground Temperature [°C]	20,1

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,9	19,6	76,6	92,0	15,4	8,01	15,4	-
B2	59,9	20,0	63,8	78,9	15,1	8,12	15,2	-
1	59,8	19,8	72,1	87,7	15,6	7,85	15,7	19,8
2	59,9	19,8	90,2	105,8	15,6	7,90	15,6	-
3	60,0	20,0	61,8	77,5	15,7	7,87	15,7	-
4	59,8	20,0	76,8	92,5	15,7	7,82	15,8	20,4



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,85	15,7
2	7,90	15,6
3	7,87	15,7
4	7,82	15,8
Average	7,86	15,7
Std. Dev.	0,03	0,1
Temp. [°C]	20,1	

Validation of the test (< 3%)		
Std. Dev. / AVG	0,43%	0,43%

Reference evolution (AVG)	1,40%
---------------------------	--------------

Condition for validation: <3%

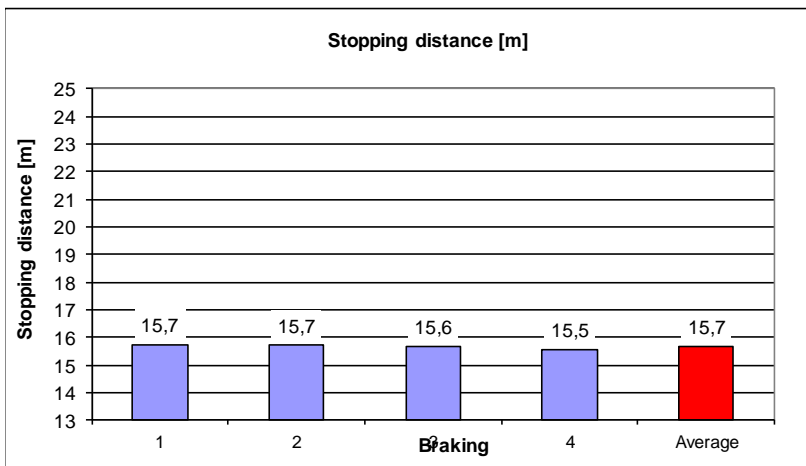
6.9. Wet high mu new asphalt 15 °C SET C

MICHELIN - Agilis CrossClimate SET R2 (Reference)

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	R117 (utilisation of adhesion)
Test date (day/month/year)	25/10/2017 14:45
Air Temperature [°C]	23,3
Ground Temperature [°C]	22,6

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,9	19,9	86,5	102,0	15,5	7,93	15,6	-
B2	59,8	19,9	80,5	95,9	15,4	7,95	15,5	-
1	59,9	19,9	65,4	81,0	15,7	7,84	15,7	22,5
2	60,0	19,9	81,9	97,6	15,7	7,86	15,7	-
3	60,0	19,8	77,6	93,2	15,7	7,89	15,6	-
4	59,9	19,9	87,1	102,7	15,5	7,95	15,5	22,7



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,84	15,7
2	7,86	15,7
3	7,89	15,6
4	7,95	15,5
Average	7,88	15,7
Std. Dev.	0,05	0,1
Temp. [°C]	22,6	

Validation of the test (< 3%)		
Std. Dev. / AVG	0,57%	0,57%

Reference evolution (AVG)	1,62%
---------------------------	--------------

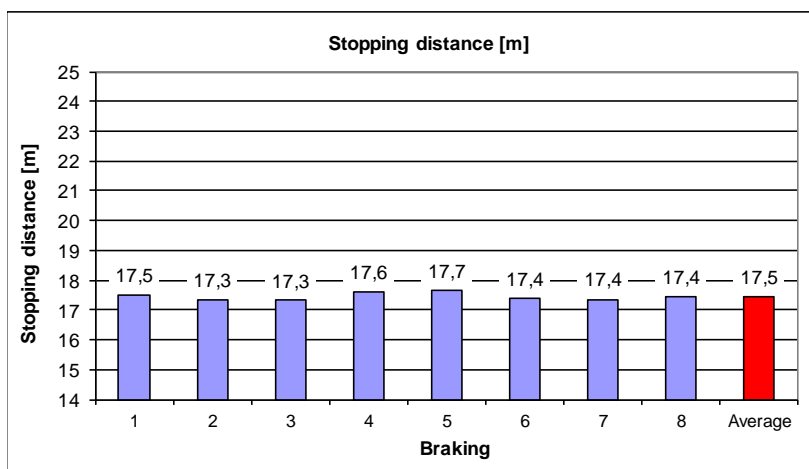
Condition for validation: <3%

Continental Vanco FourSeason 2 - SET C-7

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	R117 (utilisation of adhesion)
Test date (day/month/year)	26/10/2017 11:15
Air Temperature [°C]	19,4
Ground Temperature [°C]	21,4

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,7	19,9	63,6	81,5	17,9	6,83	18,1	-
B2	59,6	19,9	71,0	88,9	17,9	6,82	18,1	-
1	59,9	20,0	82,2	99,6	17,4	7,06	17,5	20,9
2	59,8	19,9	77,4	94,7	17,3	7,12	17,3	-
3	60,0	19,9	74,3	91,6	17,3	7,13	17,3	-
4	59,8	20,0	78,8	96,3	17,5	7,01	17,6	-
5	59,8	20,0	69,8	87,3	17,5	6,99	17,7	-
6	59,8	20,0	65,0	82,3	17,3	7,10	17,4	-
7	60,0	19,9	63,3	80,6	17,4	7,11	17,4	-
8	60,0	20,0	65,5	83,0	17,4	7,08	17,4	21,9



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,06	17,5
2	7,12	17,3
3	7,13	17,3
4	7,01	17,6
5	6,99	17,7
6	7,10	17,4
7	7,11	17,4
8	7,08	17,4
Average	7,07	17,5
Std. Dev.	0,05	0,1
Temp. [°C]	21,4	

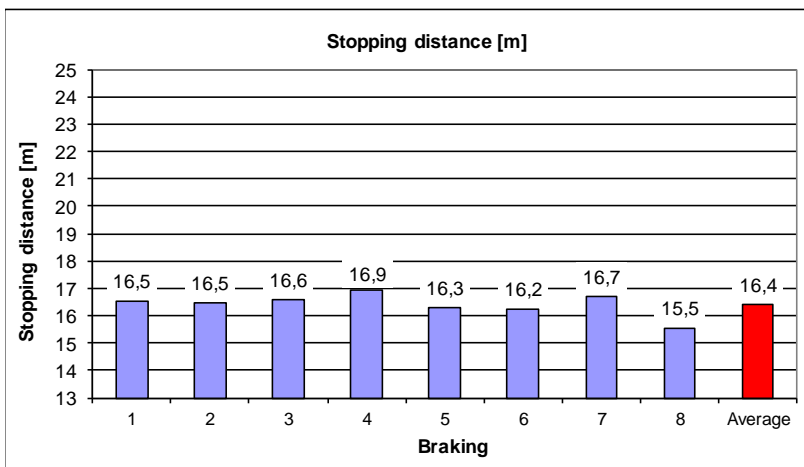
Validation of the test (< 3%)		
Std. Dev. / AVG	0,73%	0,74%

Continental Vancontact 100- SET C-8

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	R117 (utilisation of adhesion)
Test date (day/month/year)	26/10/2017 15:00
Air Temperature [°C]	23,2
Ground Temperature [°C]	24,6

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,9	20,0	87,5	102,7	15,2	8,12	15,2	-
B2	59,8	19,9	78,7	94,1	15,4	7,97	15,5	-
1	59,8	20,0	60,3	76,7	16,4	7,46	16,5	24,1
2	59,8	20,0	51,2	67,5	16,3	7,50	16,5	-
3	59,9	19,8	86,2	102,8	16,6	7,44	16,6	-
4	60,0	19,9	72,4	89,4	16,9	7,30	16,9	-
5	59,7	19,9	67,8	83,9	16,1	7,58	16,3	-
6	59,8	19,8	70,4	86,6	16,2	7,60	16,2	-
7	59,6	19,7	80,8	97,3	16,5	7,39	16,7	-
8	59,7	19,9	59,7	75,1	15,4	7,94	15,5	25,1



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,46	16,5
2	7,50	16,5
3	7,44	16,6
4	7,30	16,9
5	7,58	16,3
6	7,60	16,2
7	7,39	16,7
8	7,94	15,5
Average	7,53	16,4
Std. Dev.	0,19	0,4
Temp. [°C]	24,6	

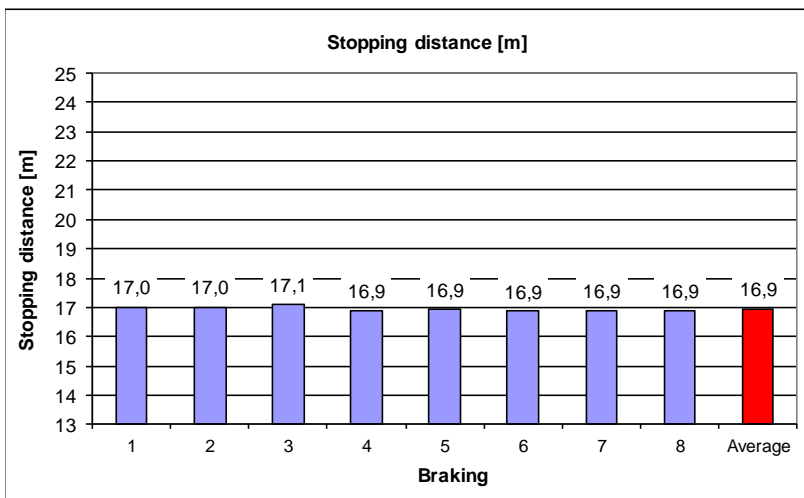
Validation of the test (< 3%)		
Std. Dev. / AVG	2,57%	2,50%

Continental Vancontact Winter - SET C-9

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	R117 (utilisation of adhesion)
Test date (day/month/year)	27/10/2017 11:00
Air Temperature [°C]	23,5
Ground Temperature [°C]	21,6

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	60,0	20,0	82,5	99,7	17,2	7,18	17,2	-
B2	59,7	19,9	111,6	128,8	17,2	7,12	17,3	-
1	59,8	19,8	101,1	118,0	16,9	7,26	17,0	21,7
2	60,0	20,0	90,8	107,8	17,0	7,26	17,0	-
3	60,0	20,0	74,5	91,6	17,1	7,23	17,1	-
4	59,7	19,9	91,4	108,2	16,7	7,31	16,9	-
5	60,0	20,0	103,3	120,3	16,9	7,30	16,9	-
6	60,0	20,0	87,1	103,9	16,9	7,32	16,9	-
7	59,9	20,0	86,9	103,7	16,9	7,31	16,9	-
8	59,8	19,9	77,5	94,3	16,8	7,31	16,9	21,5



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,26	17,0
2	7,26	17,0
3	7,23	17,1
4	7,31	16,9
5	7,30	16,9
6	7,32	16,9
7	7,31	16,9
8	7,31	16,9
Average	7,29	16,9
Std. Dev.	0,03	0,1
Temp. [°C]	21,6	

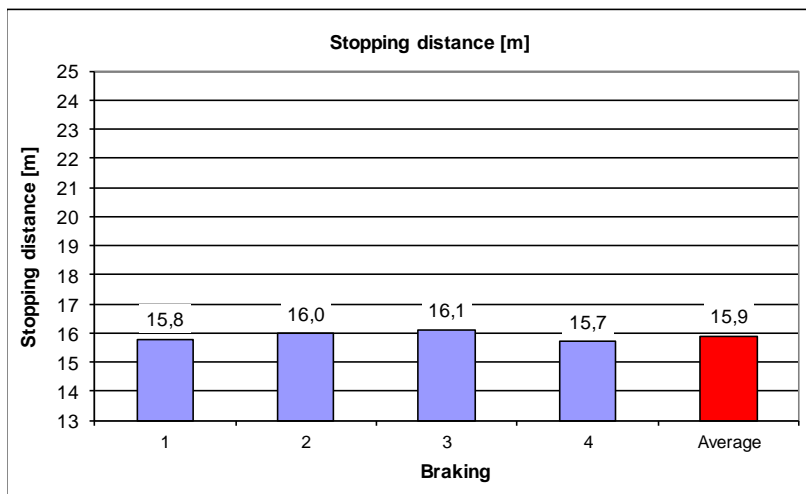
Validation of the test (< 3%)		
Std. Dev. / AVG	0,48%	0,48%

MICHELIN - Agilis CrossClimate SET R2 (Reference)

Wet braking test (stopping distances)

Test conditions	
Test Location	IDIADA Proving Ground (L'Albomar)
Track Denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track Specifications	Braking Area 5 x 250m
Track Conditions	R117 (utilisation of adhesion)
Test Date (day/month/year)	27/10/2017 15:00
Air Temperature [°C]	25,3
Ground Temperature [°C]	22,3

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	60,0	19,9	90,5	106,6	16,1	7,67	16,1	-
B2	59,9	19,5	77,2	93,2	16,0	7,73	16,0	-
1	60,0	19,9	85,8	101,6	15,8	7,82	15,8	21,4
2	60,0	19,6	94,2	110,2	16,1	7,72	16,0	-
3	59,9	19,9	86,6	102,7	16,1	7,65	16,1	-
4	60,0	19,9	90,1	105,8	15,7	7,85	15,7	23,2



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,82	15,8
2	7,72	16,0
3	7,65	16,1
4	7,85	15,7
Average	7,76	15,9
Std. Dev.	0,09	0,2
Temp. [°C]	22,3	

Validation of the test (< 3%)		
Std. Dev. / AVG	1,17%	1,18%

Reference evolution (AVG)	1,62%
---------------------------	--------------

Condition for validation: <3%

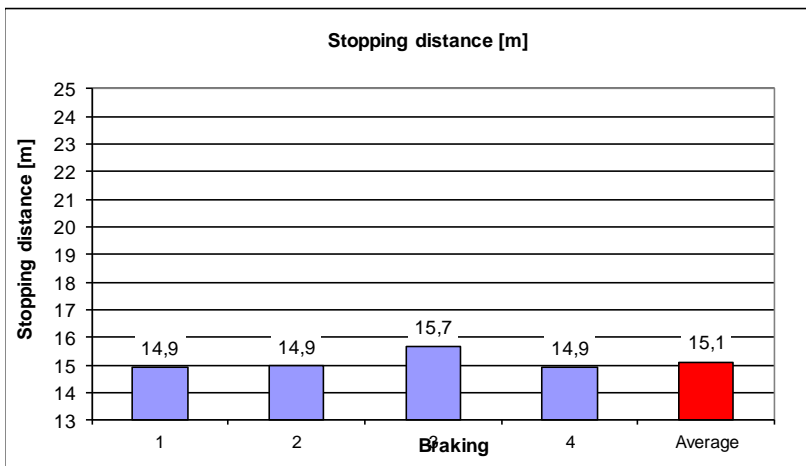
6.10. Wet low mu old asphalt 5 °C SET A

MICHELIN - Agilis CrossClimate SET R1 (Reference)

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track specifications	Braking Area 5 x 250m
Track conditions	PBFC:0,82
Test date (day/month/year)	17/11/2017 0:40
Air Temperature [°C]	5
Ground Temperature [°C]	6,7

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	60,0	20,0	78,0	92,8	14,9	8,30	14,9	-
B2	59,8	19,7	83,9	98,5	14,6	8,41	14,7	-
1	59,8	20,0	113,0	127,8	14,8	8,29	14,9	6,8
2	60,0	19,8	98,8	113,8	15,0	8,26	14,9	-
3	59,9	19,9	73,5	89,0	15,6	7,89	15,7	-
4	60,0	19,8	94,2	109,1	14,9	8,28	14,9	6,6



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	8,29	14,9
2	8,26	14,9
3	7,89	15,7
4	8,28	14,9
Average	8,18	15,1
Std. Dev.	0,19	0,4
Temp. [°C]	6,7	

Validation of the test (< 3%)		
Std. Dev. / AVG	2,37%	2,43%

Reference evolution (AVG)	1,97%
---------------------------	--------------

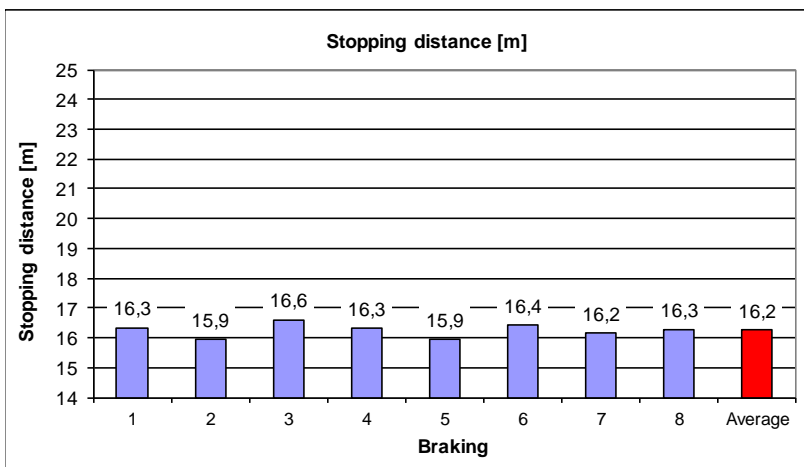
Condition for validation: <3%

MICHELIN - Agilis+ - SET A-1

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track specifications	Braking Area 5 x 250m
Track conditions	PBFC:0,82
Test date (day/month/year)	17/11/2017 1:45
Air Temperature [°C]	4,5
Ground Temperature [°C]	5,7

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	60,0	20,0	68,1	85,3	17,2	7,16	17,2	-
B2	59,5	19,9	64,5	81,9	17,4	6,96	17,7	-
1	59,8	19,9	64,3	80,6	16,3	7,55	16,3	6,1
2	60,0	19,9	173,8	189,8	16,0	7,74	15,9	-
3	59,9	19,9	71,7	88,2	16,6	7,43	16,6	-
4	60,0	19,9	49,9	66,2	16,3	7,57	16,3	-
5	59,8	19,9	90,7	106,5	15,9	7,74	15,9	-
6	59,9	19,9	74,5	90,9	16,4	7,52	16,4	-
7	59,8	20,0	84,0	100,1	16,0	7,64	16,2	-
8	59,9	19,6	70,3	86,5	16,3	7,59	16,3	5,3



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,55	16,3
2	7,74	15,9
3	7,43	16,6
4	7,57	16,3
5	7,74	15,9
6	7,52	16,4
7	7,64	16,2
8	7,59	16,3
Average	7,60	16,2
Std. Dev.	0,11	0,2
Temp. [°C]	5,7	

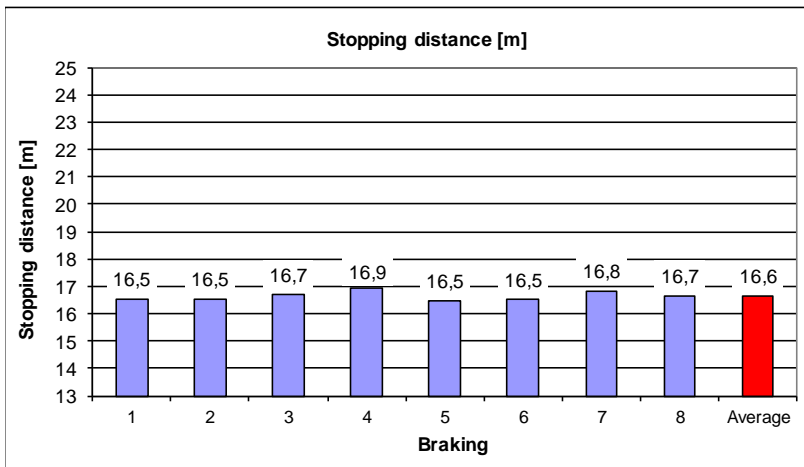
Validation of the test (< 3%)		
Std. Dev. / AVG	1,40%	1,40%

MICHELIN - Agilis Alpin- SET A-2

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track specifications	Braking Area 5 x 250m
Track conditions	PBFC:0,82
Test date (day/month/year)	17/11/2017 3:00
Air Temperature [°C]	4,2
Ground Temperature [°C]	5,3

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,8	20,0	83,7	100,6	16,9	7,24	17,0	-
B2	60,0	19,7	59,8	76,9	17,1	7,24	17,1	-
1	59,8	19,9	60,2	76,6	16,4	7,47	16,5	5,5
2	59,9	20,0	77,7	94,2	16,5	7,47	16,5	-
3	59,9	19,9	80,6	97,2	16,7	7,40	16,7	-
4	60,0	20,0	49,9	66,8	16,9	7,30	16,9	-
5	59,9	20,0	54,7	71,1	16,4	7,50	16,5	-
6	59,9	20,0	164,7	181,2	16,5	7,48	16,5	-
7	59,9	19,9	74,4	91,2	16,8	7,34	16,8	-
8	60,0	19,9	40,6	57,2	16,7	7,41	16,7	5,1



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,47	16,5
2	7,47	16,5
3	7,40	16,7
4	7,30	16,9
5	7,50	16,5
6	7,48	16,5
7	7,34	16,8
8	7,41	16,7
Average	7,42	16,6
Std. Dev.	0,07	0,2
Temp. [°C]	5,3	

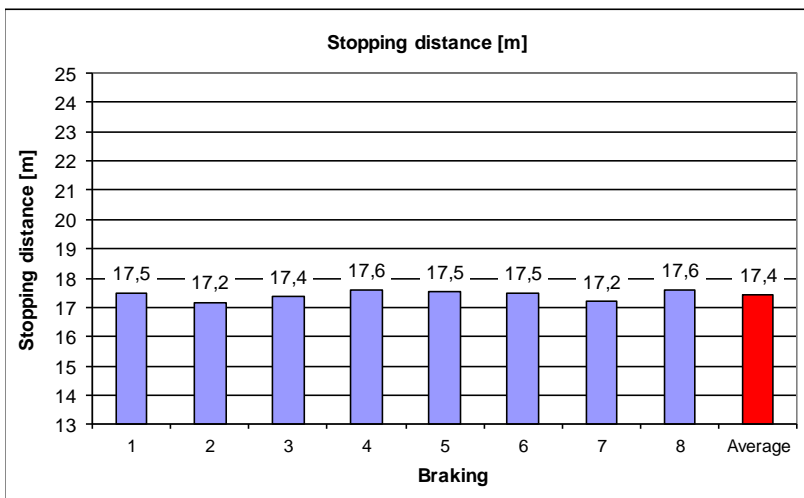
Validation of the test (< 3%)		
Std. Dev. / AVG	0,97%	0,98%

GOOD YEAR - Cargo Vector 2 - SET A-3

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track specifications	Braking Area 5 x 250m
Track conditions	PBFC:0,82
Test date (day/month/year)	17/11/2017 4:10
Air Temperature [°C]	4,7
Ground Temperature [°C]	4,9

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	60,0	20,0	85,3	103,9	18,6	6,64	18,6	-
B2	60,0	20,0	68,4	86,0	17,6	7,02	17,6	-
1	59,9	19,9	68,1	85,6	17,5	7,06	17,5	4,8
2	60,0	19,8	78,4	95,6	17,2	7,19	17,2	-
3	59,8	20,0	93,6	110,9	17,2	7,12	17,4	-
4	60,0	19,9	59,8	77,4	17,6	7,01	17,6	-
5	60,0	19,8	66,1	83,7	17,6	7,04	17,5	-
6	59,8	19,9	61,9	79,3	17,4	7,05	17,5	-
7	60,0	19,9	71,0	88,2	17,2	7,18	17,2	-
8	59,8	20,0	69,0	86,5	17,5	7,01	17,6	5,0



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,06	17,5
2	7,19	17,2
3	7,12	17,4
4	7,01	17,6
5	7,04	17,5
6	7,05	17,5
7	7,18	17,2
8	7,01	17,6
Average	7,08	17,4
Std. Dev.	0,07	0,2
Temp. [°C]	4,9	

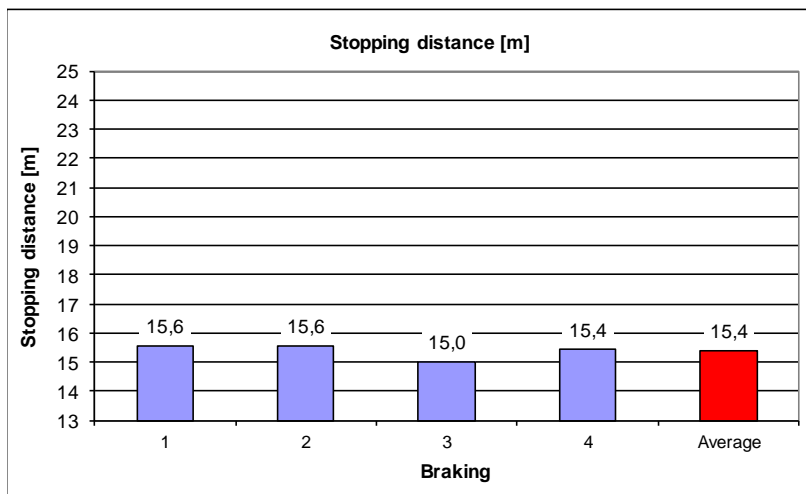
Validation of the test (< 3%)		
Std. Dev. / AVG	0,98%	0,97%

MICHELIN - Agilis CrossClimate SET R1 (Reference)

Wet braking test (stopping distances)

Test conditions	
Test Location	IDIADA Proving Ground (L'Albomar)
Track Denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track Specifications	Braking Area 5 x 250m
Track Conditions	PBFC:0,82
Test Date (day/month/year)	17/11/2017 5:55
Air Temperature [°C]	3,4
Ground Temperature [°C]	4,1

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,9	19,9	67,8	83,6	15,8	7,81	15,8	-
B2	59,9	20,0	53,8	69,5	15,8	7,79	15,8	-
1	60,0	20,0	48,9	64,5	15,6	7,92	15,6	4,0
2	59,8	19,6	63,6	79,1	15,5	7,93	15,6	-
3	59,9	19,9	69,2	84,2	15,0	8,22	15,0	-
4	59,9	19,9	53,7	69,1	15,4	8,00	15,4	4,1



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,92	15,6
2	7,93	15,6
3	8,22	15,0
4	8,00	15,4
Average	8,02	15,4
Std. Dev.	0,14	0,3
Temp. [°C]	4,1	

Validation of the test (< 3%)		
Std. Dev. / AVG	1,73%	1,71%

Reference evolution (AVG)	1,97%
---------------------------	--------------

Condition for validation: <3%

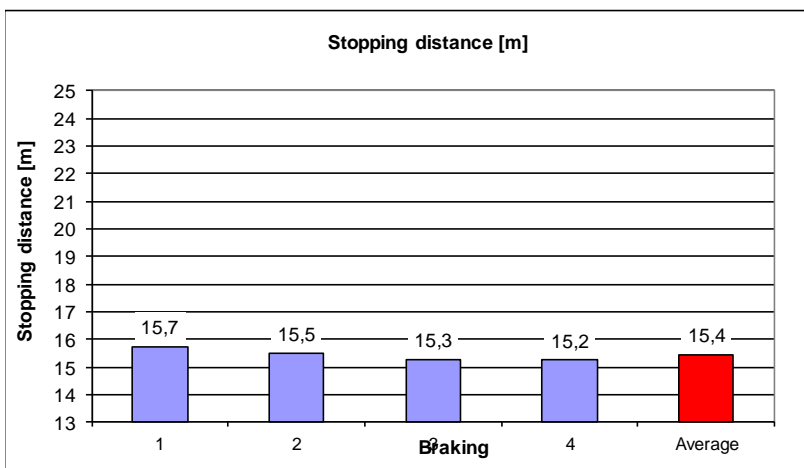
6.11. Wet low mu old asphalt 5 °C SET B

MICHELIN - Agilis CrossClimate SET R1 (Reference)

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track specifications	Braking Area 5 x 250m
Track conditions	PBFC: 0,82
Test date (day/month/year)	18/11/2017 1:05
Air Temperature [°C]	6,6
Ground Temperature [°C]	5,9

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,9	19,9	65,8	81,8	15,9	7,74	16,0	-
B2	59,9	19,9	69,8	85,7	15,9	7,76	15,9	-
1	59,8	19,9	77,9	93,5	15,6	7,85	15,7	6,1
2	59,9	20,0	74,7	90,1	15,4	7,97	15,5	-
3	59,7	19,7	72,3	87,4	15,1	8,08	15,3	-
4	60,0	19,9	59,6	74,8	15,3	8,10	15,2	5,6



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,85	15,7
2	7,97	15,5
3	8,08	15,3
4	8,10	15,2
Average	8,00	15,4
Std. Dev.	0,12	0,2
Temp. [°C]	5,9	

Validation of the test (< 3%)		
Std. Dev. / AVG	1,44%	1,45%

Reference evolution (AVG)	1,82%
---------------------------	--------------

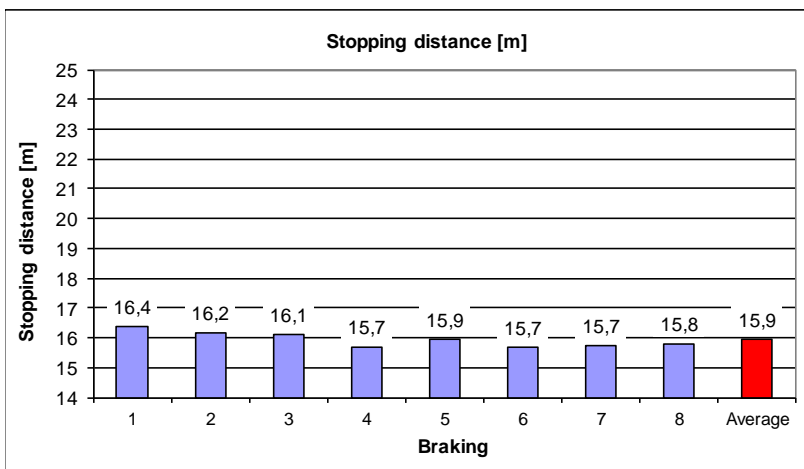
Condition for validation: <3%

Pirelli Carrier All Season - SET B-4

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track specifications	Braking Area 5 x 250m
Track conditions	PBFC: 0,82
Test date (day/month/year)	18/11/2017 2:20
Air Temperature [°C]	5,7
Ground Temperature [°C]	5,7

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,9	20,0	78,8	95,2	16,4	7,50	16,5	-
B2	59,9	19,9	58,9	75,3	16,4	7,51	16,4	-
1	59,8	19,7	58,2	74,5	16,3	7,55	16,4	5,8
2	59,9	20,0	66,9	83,0	16,1	7,64	16,2	-
3	59,8	19,9	62,2	78,2	16,0	7,67	16,1	-
4	60,0	20,0	61,1	76,8	15,7	7,86	15,7	-
5	59,9	19,9	73,6	89,5	15,9	7,75	15,9	-
6	60,0	19,9	68,7	84,4	15,7	7,87	15,7	-
7	59,9	19,9	66,6	82,3	15,7	7,84	15,7	-
8	59,8	19,9	62,4	78,1	15,7	7,81	15,8	5,6



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,55	16,4
2	7,64	16,2
3	7,67	16,1
4	7,86	15,7
5	7,75	15,9
6	7,87	15,7
7	7,84	15,7
8	7,81	15,8
Average	7,75	15,9
Std. Dev.	0,12	0,2
Temp. [°C]	5,7	

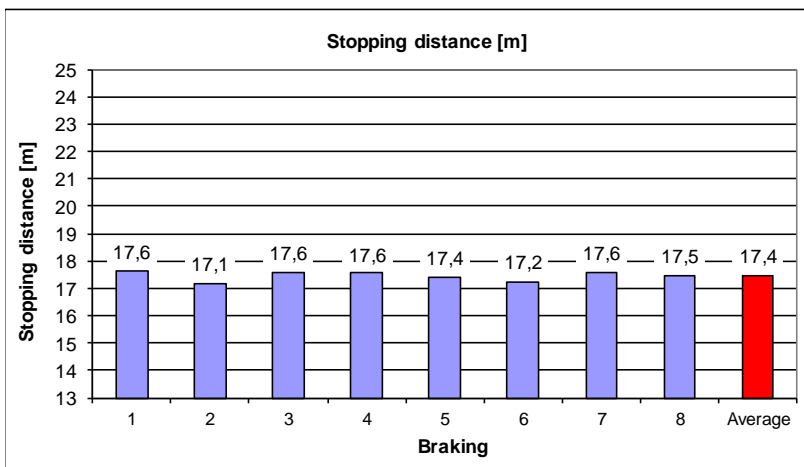
Validation of the test (< 3%)		
Std. Dev. / AVG	1,56%	1,57%

Pirelli Carrier Winter- SET B-5

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track specifications	Braking Area 5 x 250m
Track conditions	PBFC: 0,82
Test date (day/month/year)	18/11/2017 3:35
Air Temperature [°C]	4,9
Ground Temperature [°C]	4,9

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,9	20,0	64,1	80,8	16,7	7,36	16,8	-
B2	60,0	20,0	74,5	91,6	17,1	7,22	17,1	-
1	59,8	19,9	63,2	80,7	17,5	7,01	17,6	5,2
2	59,7	19,8	58,0	75,0	17,0	7,20	17,1	-
3	59,9	20,0	46,7	64,2	17,5	7,03	17,6	-
4	60,0	20,0	56,9	74,5	17,6	7,01	17,6	-
5	60,0	19,9	50,7	68,1	17,4	7,10	17,4	-
6	59,9	19,8	65,1	82,3	17,2	7,17	17,2	-
7	60,0	19,9	72,2	89,8	17,6	7,02	17,6	-
8	59,9	20,0	71,0	88,4	17,4	7,07	17,5	4,6



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,01	17,6
2	7,20	17,1
3	7,03	17,6
4	7,01	17,6
5	7,10	17,4
6	7,17	17,2
7	7,02	17,6
8	7,07	17,5
Average	7,08	17,4
Std. Dev.	0,07	0,2
Temp. [°C]	4,9	

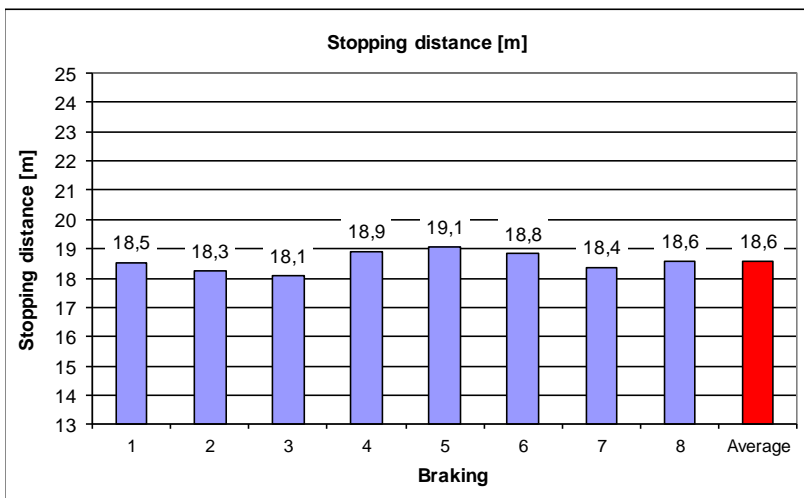
Validation of the test (< 3%)		
Std. Dev. / AVG	1,04%	1,03%

Bridgestone Duravis 660- SET B-6

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track specifications	Braking Area 5 x 250m
Track conditions	PBFC: 0,82
Test date (day/month/year)	18/11/2017 4:40
Air Temperature [°C]	4,5
Ground Temperature [°C]	4,9

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	60,0	19,9	60,5	79,9	19,4	6,37	19,4	-
B2	59,9	19,9	65,8	86,2	20,4	6,05	20,4	-
1	59,9	19,9	65,2	83,7	18,5	6,66	18,5	5,1
2	60,0	19,8	77,2	95,5	18,3	6,76	18,3	-
3	59,9	20,0	67,5	85,5	18,0	6,83	18,1	-
4	59,8	19,9	68,7	87,5	18,8	6,53	18,9	-
5	60,0	19,9	64,7	83,8	19,1	6,47	19,1	-
6	59,9	19,9	62,3	81,1	18,8	6,55	18,8	-
7	60,0	19,9	75,5	93,9	18,4	6,72	18,4	-
8	60,0	19,9	55,3	73,9	18,6	6,65	18,6	4,7



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	6,66	18,5
2	6,76	18,3
3	6,83	18,1
4	6,53	18,9
5	6,47	19,1
6	6,55	18,8
7	6,72	18,4
8	6,65	18,6
Average	6,65	18,6
Std. Dev.	0,12	0,3
Temp. [°C]	4,9	

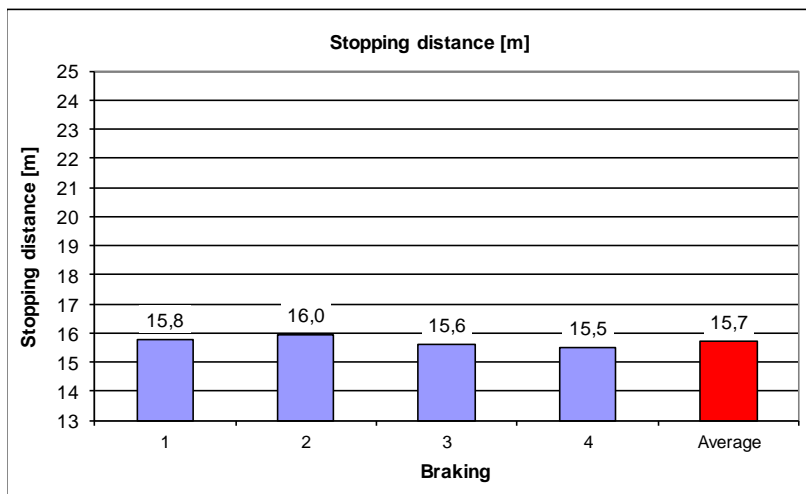
Validation of the test (< 3%)		
Std. Dev. / AVG	1,87%	1,87%

MICHELIN - Agilis CrossClimate SET R1 (Reference)

Wet braking test (stopping distances)

Test conditions	
Test Location	IDIADA Proving Ground (L'Albomar)
Track Denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track Specifications	Braking Area 5 x 250m
Track Conditions	PBFC: 0,82
Test Date (day/month/year)	18/11/2017 5:45
Air Temperature [°C]	4,5
Ground Temperature [°C]	5,0

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,6	19,8	54,5	69,7	15,2	8,02	15,4	-
B2	59,6	19,9	67,8	83,3	15,5	7,86	15,7	-
1	60,0	19,9	71,3	87,1	15,8	7,82	15,8	4,6
2	59,7	19,4	63,9	79,8	15,9	7,73	16,0	-
3	59,8	20,0	71,3	86,8	15,5	7,91	15,6	-
4	59,6	19,8	56,3	71,6	15,3	7,97	15,5	5,3



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,82	15,8
2	7,73	16,0
3	7,91	15,6
4	7,97	15,5
Average	7,86	15,7
Std. Dev.	0,10	0,2
Temp. [°C]	5,0	

Validation of the test (< 3%)		
Std. Dev. / AVG	1,29%	1,29%

Reference evolution (AVG)	1,82%
---------------------------	-------

Condition for validation: <3%

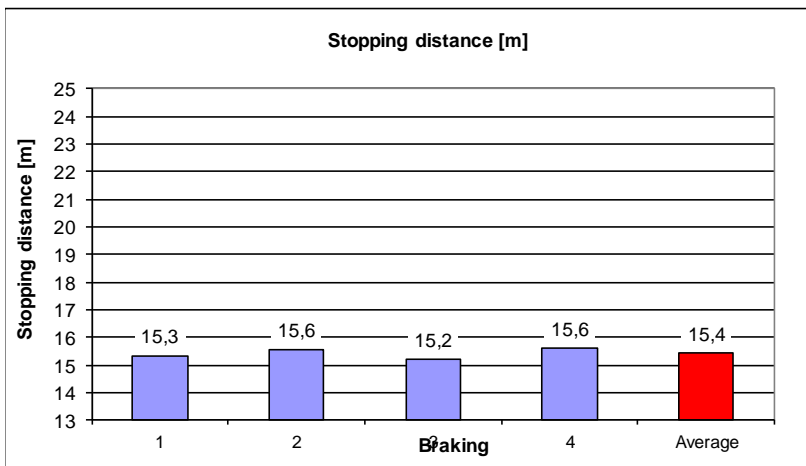
6.12. Wet low mu old asphalt 5 °C SET C

MICHELIN - Agilis CrossClimate SET R2 (Reference)

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track specifications	Braking Area 5 x 250m
Track conditions	PBFC: 0,82
Test date (day/month/year)	19/11/2017 0:55
Air Temperature [°C]	6,8
Ground Temperature [°C]	5,9

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	60,0	19,9	66,3	81,6	15,3	8,08	15,3	-
B2	60,0	19,6	68,6	84,2	15,6	7,95	15,5	-
1	59,6	20,0	79,0	94,1	15,1	8,05	15,3	6,1
2	59,9	20,0	60,2	75,7	15,5	7,94	15,6	-
3	60,0	19,9	67,6	82,8	15,2	8,13	15,2	-
4	59,8	19,8	68,1	83,6	15,5	7,93	15,6	5,7



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	8,05	15,3
2	7,94	15,6
3	8,13	15,2
4	7,93	15,6
Average	8,01	15,4
Std. Dev.	0,10	0,2
Temp. [°C]	5,9	

Validation of the test (< 3%)		
Std. Dev. / AVG	1,24%	1,24%

Reference evolution (AVG)	0,29%
---------------------------	-------

Condition for validation: <3%

Continental Vanco FourSeason 2 - SET C-7

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track specifications	Braking Area 5 x 250m
Track conditions	PBFC: 0,82
Test date (day/month/year)	19/11/2017 1:55
Air Temperature [°C]	4,9
Ground Temperature [°C]	5,6

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,7	19,9	59,5	77,0	17,5	6,98	17,7	-
B2	59,9	19,6	55,2	71,7	16,5	7,49	16,5	-
1	60,0	19,8	70,0	86,9	16,9	7,32	16,9	5,7
2	59,7	19,8	73,1	89,9	16,8	7,28	16,9	-
3	60,0	19,9	61,2	78,0	16,8	7,36	16,8	-
4	59,9	20,0	72,3	89,3	17,0	7,23	17,1	-
5	60,0	20,0	62,5	79,4	16,9	7,31	16,9	-
6	59,8	19,9	76,1	92,9	16,8	7,30	16,9	-
7	59,9	19,9	65,8	82,8	17,0	7,24	17,0	-
8	60,0	19,8	70,9	87,8	16,9	7,32	16,9	5,4



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,32	16,9
2	7,28	16,9
3	7,36	16,8
4	7,23	17,1
5	7,31	16,9
6	7,30	16,9
7	7,24	17,0
8	7,32	16,9
Average	7,30	16,9
Std. Dev.	0,04	0,1
Temp. [°C]	5,6	

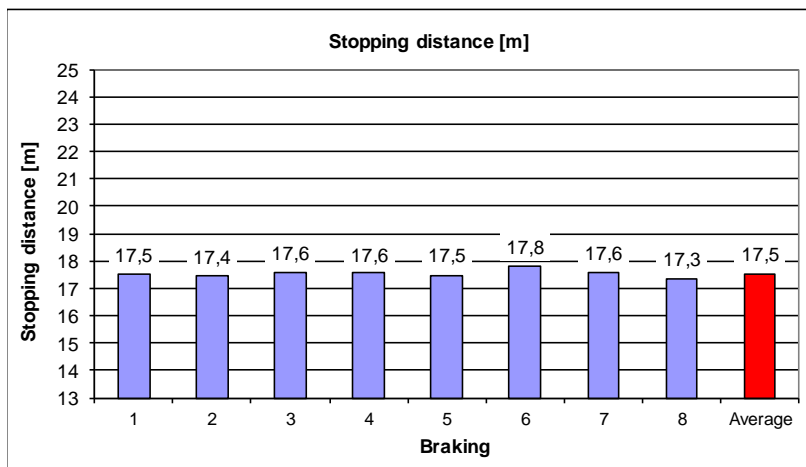
Validation of the test (< 3%)		
Std. Dev. / AVG	0,57%	0,57%

Continental Vancontact 100- SET C-8

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track specifications	Braking Area 5 x 250m
Track conditions	PBFC: 0,82
Test date (day/month/year)	19/11/2017 3:10
Air Temperature [°C]	5,7
Ground Temperature [°C]	5,8

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	60,0	19,8	68,6	86,8	18,2	6,80	18,2	-
B2	60,0	19,9	71,8	90,0	18,2	6,79	18,2	-
1	59,8	19,8	69,8	87,2	17,4	7,06	17,5	5,8
2	59,8	20,0	65,8	83,1	17,3	7,08	17,4	-
3	60,0	19,9	65,5	83,1	17,6	7,02	17,6	-
4	59,8	19,8	73,8	91,3	17,5	7,02	17,6	-
5	60,0	19,9	79,9	97,4	17,5	7,06	17,5	-
6	60,0	19,9	62,1	79,9	17,8	6,94	17,8	-
7	59,9	20,0	70,3	87,8	17,5	7,03	17,6	-
8	59,9	19,9	72,0	89,3	17,3	7,12	17,3	5,8



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,06	17,5
2	7,08	17,4
3	7,02	17,6
4	7,02	17,6
5	7,06	17,5
6	6,94	17,8
7	7,03	17,6
8	7,12	17,3
Average	7,04	17,5
Std. Dev.	0,05	0,1
Temp. [°C]	5,8	

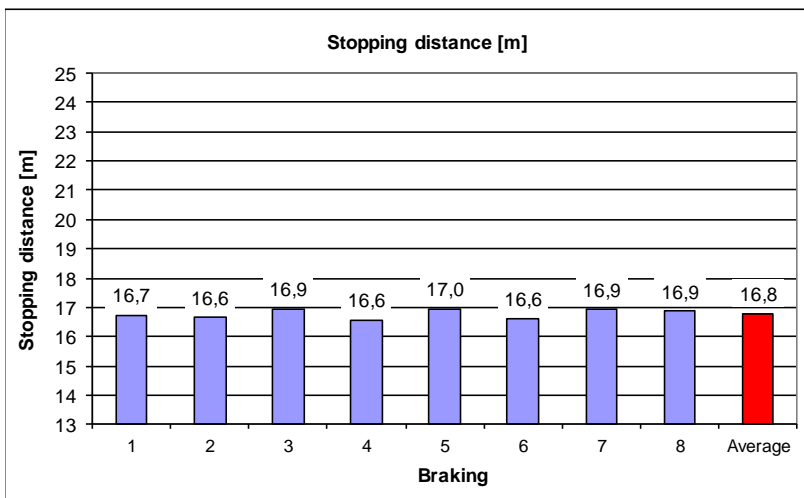
Validation of the test (< 3%)		
Std. Dev. / AVG	0,74%	0,74%

Continental Vancontact Winter - SET C-9

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track specifications	Braking Area 5 x 250m
Track conditions	PBFC: 0,82
Test date (day/month/year)	19/11/2017 4:11
Air Temperature [°C]	4,7
Ground Temperature [°C]	5,4

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,9	19,9	74,4	91,5	17,2	7,18	17,2	-
B2	60,0	19,9	69,0	86,1	17,1	7,22	17,1	-
1	59,9	19,9	71,5	88,2	16,7	7,37	16,7	5,4
2	59,9	19,9	77,9	94,5	16,6	7,42	16,6	-
3	59,7	19,8	69,3	86,1	16,8	7,28	16,9	-
4	60,0	19,9	81,2	97,8	16,6	7,45	16,6	-
5	60,0	19,8	69,1	86,1	17,0	7,28	17,0	-
6	60,0	20,0	75,8	92,4	16,6	7,44	16,6	-
7	59,9	19,8	76,6	93,5	16,9	7,30	16,9	-
8	60,0	19,8	74,6	91,5	16,9	7,32	16,9	5,3



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,37	16,7
2	7,42	16,6
3	7,28	16,9
4	7,45	16,6
5	7,28	17,0
6	7,44	16,6
7	7,30	16,9
8	7,32	16,9
Average	7,36	16,8
Std. Dev.	0,07	0,2
Temp. [°C]	5,4	

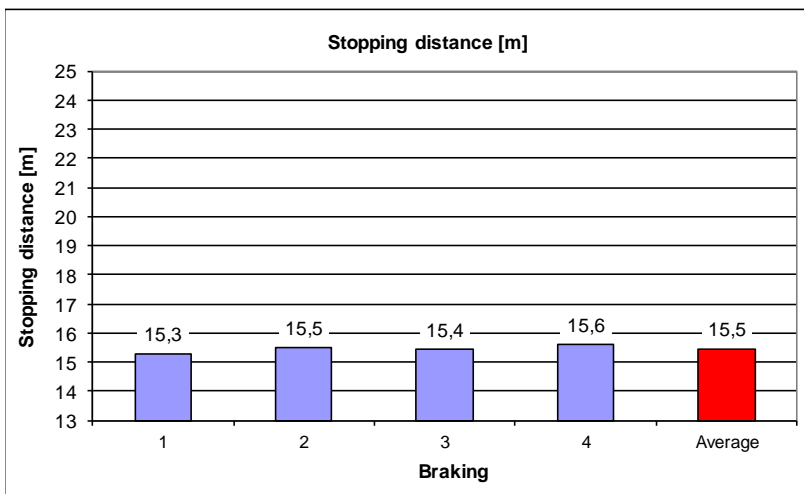
Validation of the test (< 3%)		
Std. Dev. / AVG	0,95%	0,95%

MICHELIN - Agilis CrossClimate SET R2 (Reference)

Wet braking test (stopping distances)

Test conditions	
Test Location	IDIADA Proving Ground (L'Albomar)
Track Denomination	Wet Asphalt Straight Line Braking (Track No. 1, part B)
Track Specifications	Braking Area 5 x 250m
Track Conditions	PBFC: 0,82
Test Date (day/month/year)	19/11/2017 5:10
Air Temperature [°C]	5,7
Ground Temperature [°C]	5,3

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	60,0	19,7	72,1	87,6	15,5	7,99	15,4	-
B2	59,9	19,6	75,5	90,9	15,4	8,03	15,4	-
1	59,5	20,0	71,3	86,3	15,0	8,08	15,3	5,4
2	60,0	20,0	59,3	74,8	15,5	7,96	15,5	-
3	59,9	19,9	70,0	85,4	15,4	8,00	15,4	-
4	59,9	19,7	80,5	96,1	15,6	7,91	15,6	5,1



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	8,08	15,3
2	7,96	15,5
3	8,00	15,4
4	7,91	15,6
Average	7,99	15,5
Std. Dev.	0,07	0,1
Temp. [°C]	5,3	

Validation of the test (< 3%)		
Std. Dev. / AVG	0,86%	0,85%

Reference evolution (AVG)	0,29%
---------------------------	--------------

Condition for validation: <3%

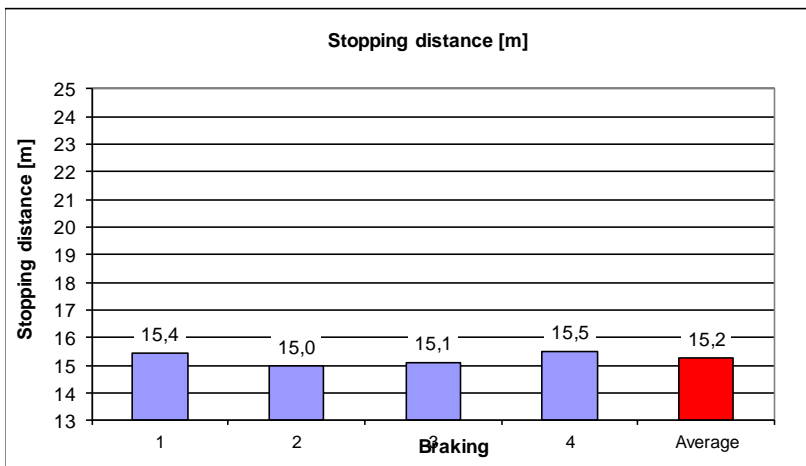
6.13. Wet high mu new asphalt 5 °C SET A

MICHELIN - Agilis CrossClimate SET R1 (Reference)

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	R117 (utilisation of adhesion)
Test date (day/month/year)	23/11/2017 1:40
Air Temperature [°C]	7,8
Ground Temperature [°C]	7,5

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,9	19,8	70,3	85,8	15,5	7,97	15,5	-
B2	59,7	20,0	72,3	87,2	14,9	8,21	15,0	-
1	59,7	19,9	66,4	81,6	15,2	8,01	15,4	7,6
2	59,8	20,0	64,1	79,0	14,9	8,25	15,0	-
3	60,0	19,9	57,4	72,5	15,1	8,19	15,1	-
4	59,7	19,7	66,3	81,7	15,4	7,97	15,5	7,3



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	8,01	15,4
2	8,25	15,0
3	8,19	15,1
4	7,97	15,5
Average	8,10	15,2
Std. Dev.	0,14	0,3
Temp. [°C]	7,5	

Validation of the test (< 3%)		
Std. Dev. / AVG	1,70%	1,70%

Reference evolution (AVG)	1,24%
---------------------------	--------------

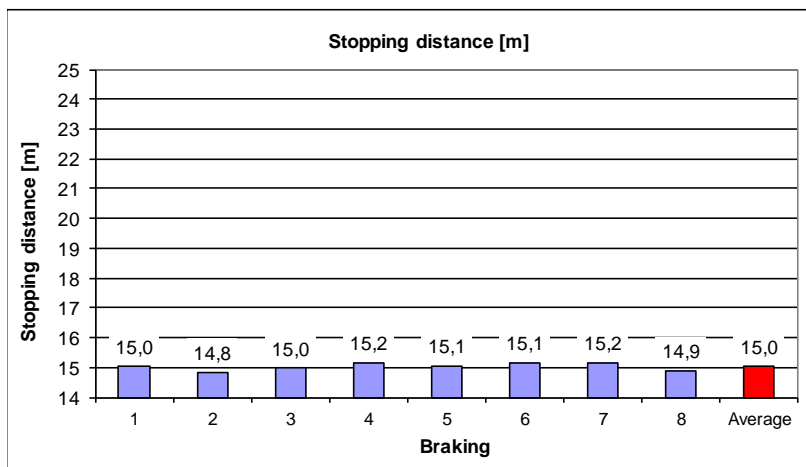
Condition for validation: <3%

MICHELIN - Agilis+ - SET A-1

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	R117 (utilisation of adhesion)
Test date (day/month/year)	23/11/2017 2:55
Air Temperature [°C]	7,5
Ground Temperature [°C]	7,1

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,6	19,8	53,1	68,3	15,2	8,02	15,4	-
B2	59,9	19,9	61,8	76,5	14,7	8,37	14,7	-
1	60,0	19,9	77,7	92,8	15,1	8,21	15,0	7,2
2	59,9	19,9	52,5	67,3	14,8	8,33	14,8	-
3	60,0	19,8	60,5	75,4	15,0	8,25	15,0	-
4	59,8	20,0	71,9	86,9	15,1	8,14	15,2	-
5	59,8	20,0	72,2	87,1	15,0	8,20	15,1	-
6	60,0	19,8	62,5	77,6	15,2	8,15	15,1	-
7	59,7	19,9	59,8	74,8	15,0	8,14	15,2	-
8	59,7	19,9	87,2	101,9	14,7	8,30	14,9	6,9



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	8,21	15,0
2	8,33	14,8
3	8,25	15,0
4	8,14	15,2
5	8,20	15,1
6	8,15	15,1
7	8,14	15,2
8	8,30	14,9
Average	8,21	15,0
Std. Dev.	0,07	0,1
Temp. [°C]	7,1	

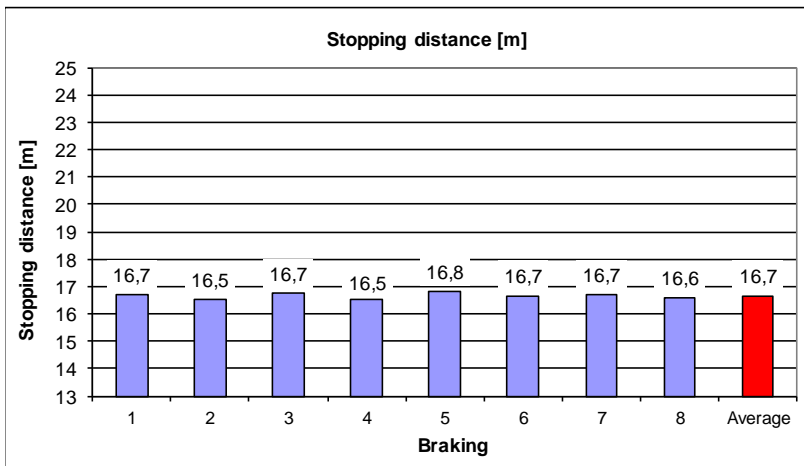
Validation of the test (< 3%)		
Std. Dev. / AVG	0,87%	0,86%

MICHELIN - Agilis Alpin- SET A-2

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	R117 (utilisation of adhesion)
Test date (day/month/year)	23/11/2017 4:30
Air Temperature [°C]	7,3
Ground Temperature [°C]	6,7

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	60,0	19,9	57,6	74,6	17,0	7,27	17,0	-
B2	60,0	19,8	63,0	80,3	17,4	7,13	17,3	-
1	59,8	19,9	74,2	90,7	16,6	7,40	16,7	6,7
2	59,9	19,9	83,2	99,7	16,5	7,48	16,5	-
3	59,9	20,0	56,4	73,1	16,7	7,37	16,7	-
4	60,0	19,9	70,5	87,1	16,5	7,48	16,5	-
5	59,9	19,8	57,8	74,6	16,8	7,34	16,8	-
6	59,9	20,0	72,1	88,7	16,6	7,41	16,7	-
7	60,0	19,9	55,8	72,5	16,7	7,39	16,7	-
8	59,8	19,9	75,3	91,7	16,5	7,44	16,6	6,6



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,40	16,7
2	7,48	16,5
3	7,37	16,7
4	7,48	16,5
5	7,34	16,8
6	7,41	16,7
7	7,39	16,7
8	7,44	16,6
Average	7,41	16,7
Std. Dev.	0,05	0,1
Temp. [°C]	6,7	

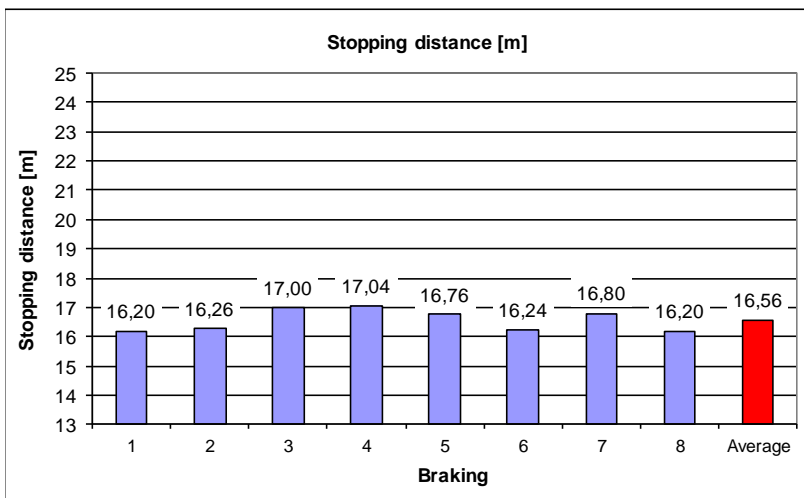
Validation of the test (< 3%)		
Std. Dev. / AVG	0,66%	0,66%

GOOD YEAR - Cargo Vector 2 - SET A-3

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	R117 (utilisation of adhesion)
Test date (day/month/year)	23/11/2017 5:35
Air Temperature [°C]	6,9
Ground Temperature [°C]	6,9

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,7	20,0	59,0	76,0	17,0	7,18	17,2	-
B2	59,9	19,9	55,2	72,2	17,0	7,24	17,0	-
1	59,8	19,9	98,4	114,5	16,1	7,62	16,2	6,7
2	59,7	19,9	71,7	87,8	16,1	7,59	16,3	-
3	59,9	19,7	64,9	81,9	17,0	7,26	17,0	-
4	59,9	19,9	55,9	72,9	17,0	7,24	17,0	-
5	59,9	20,0	59,1	75,8	16,7	7,36	16,8	-
6	59,9	19,9	60,7	76,9	16,2	7,60	16,2	-
7	60,0	20,0	62,5	79,3	16,8	7,35	16,8	-
8	60,0	20,0	82,3	98,5	16,2	7,62	16,2	7,0



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,62	16,20
2	7,59	16,26
3	7,26	17,00
4	7,24	17,04
5	7,36	16,76
6	7,60	16,24
7	7,35	16,80
8	7,62	16,20
Average	7,46	16,56
Std. Dev.	0,17	0,4
Temp. [°C]	6,9	

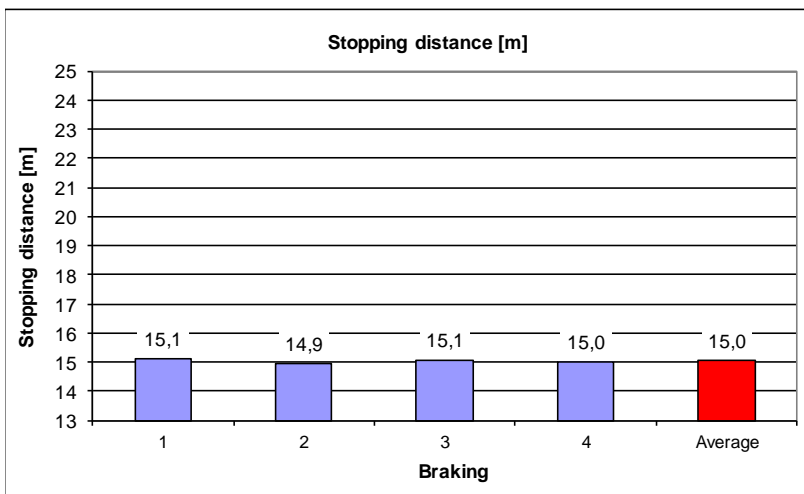
Validation of the test (< 3%)		
Std. Dev. / AVG	2,25%	2,25%

MICHELIN - Agilis CrossClimate SET R1 (Reference)

Wet braking test (stopping distances)

Test conditions	
Test Location	IDIADA Proving Ground (L'Albomar)
Track Denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track Specifications	Braking Area 5 x 250m
Track Conditions	R117 (utilisation of adhesion)
Test Date (day/month/year)	23/11/2017 6:35
Air Temperature [°C]	7,6
Ground Temperature [°C]	7,3

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,8	20,0	58,4	73,4	15,0	8,17	15,1	-
B2	59,8	19,6	61,7	76,4	14,7	8,38	14,7	-
1	59,9	19,9	62,6	77,7	15,1	8,16	15,1	7,2
2	60,0	19,7	68,5	83,5	15,0	8,26	14,9	-
3	60,0	19,9	77,8	92,9	15,1	8,19	15,1	-
4	59,6	20,0	67,2	82,0	14,8	8,22	15,0	7,4



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	8,16	15,1
2	8,26	14,9
3	8,19	15,1
4	8,22	15,0
Average	8,20	15,0
Std. Dev.	0,05	0,1
Temp. [°C]	7,3	

Validation of the test (< 3%)		
Std. Dev. / AVG	0,55%	0,55%

Reference evolution (AVG)	1,24%
---------------------------	--------------

Condition for validation: <3%

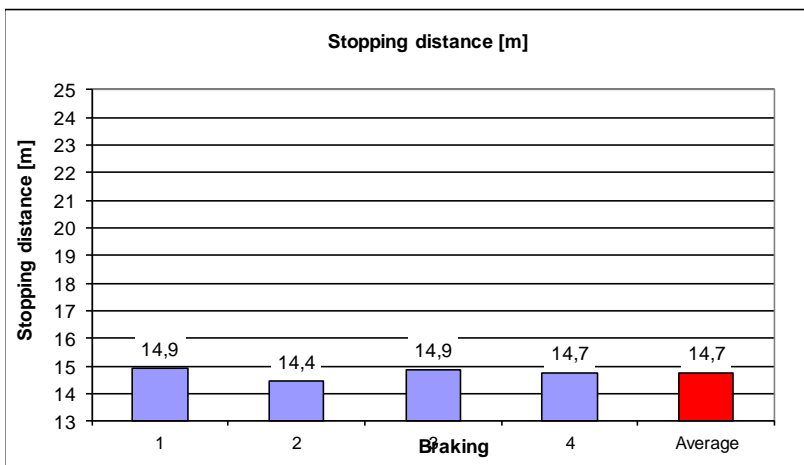
6.14. Wet high mu new asphalt 5 °C SET B

MICHELIN - Agilis CrossClimate SET R1 (Reference)

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	R117 (utilisation of adhesion)
Test date (day/month/year)	22/11/2017 1:15
Air Temperature [°C]	6,1
Ground Temperature [°C]	5,7

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,9	20,0	73,4	88,6	15,2	8,09	15,3	-
B2	59,9	20,0	57,3	71,8	14,5	8,48	14,6	-
1	59,8	20,0	71,9	86,7	14,8	8,28	14,9	5,8
2	59,9	19,9	63,7	78,1	14,4	8,55	14,4	-
3	59,8	19,8	65,1	79,9	14,8	8,30	14,9	-
4	59,9	19,9	77,7	92,4	14,7	8,38	14,7	5,5



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	8,28	14,9
2	8,55	14,4
3	8,30	14,9
4	8,38	14,7
Average	8,38	14,7
Std. Dev.	0,12	0,2
Temp. [°C]	5,7	

Validation of the test (< 3%)		
Std. Dev. / AVG	1,48%	1,47%

Reference evolution (AVG)	0,45%
---------------------------	--------------

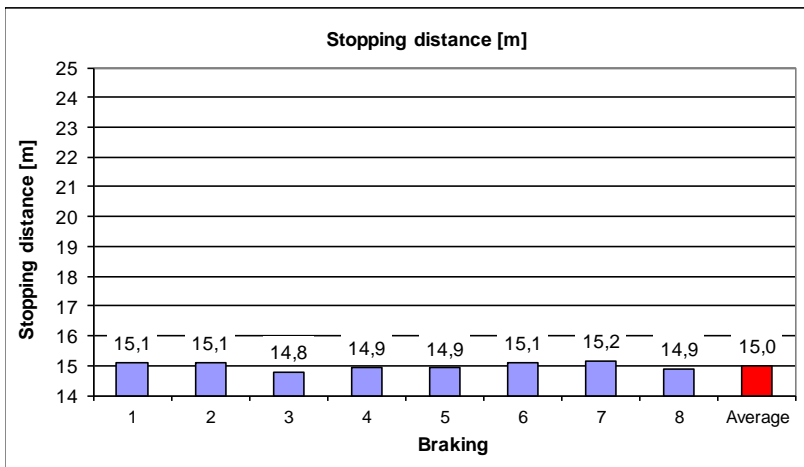
Condition for validation: <3%

Pirelli Carrier All Season - SET B-4

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	R117 (utilisation of adhesion)
Test date (day/month/year)	22/11/2017 2:15
Air Temperature [°C]	5,1
Ground Temperature [°C]	5,2

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	60,0	19,9	71,2	85,8	14,6	8,47	14,6	-
B2	59,8	19,9	75,6	90,3	14,6	8,38	14,7	-
1	59,7	19,7	72,5	87,5	15,0	8,17	15,1	5,3
2	59,8	19,9	74,4	89,4	15,0	8,18	15,1	-
3	60,0	20,0	68,0	82,8	14,8	8,34	14,8	-
4	59,5	19,7	66,9	81,6	14,7	8,27	14,9	-
5	59,8	20,0	76,0	90,8	14,8	8,28	14,9	-
6	59,8	20,0	73,7	88,7	15,0	8,17	15,1	-
7	59,7	19,9	56,1	71,1	15,0	8,15	15,2	-
8	59,8	19,9	84,4	99,2	14,8	8,29	14,9	5,0



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	8,17	15,1
2	8,18	15,1
3	8,34	14,8
4	8,27	14,9
5	8,28	14,9
6	8,17	15,1
7	8,15	15,2
8	8,29	14,9
Average	8,23	15,0
Std. Dev.	0,07	0,1
Temp. [°C]	5,2	

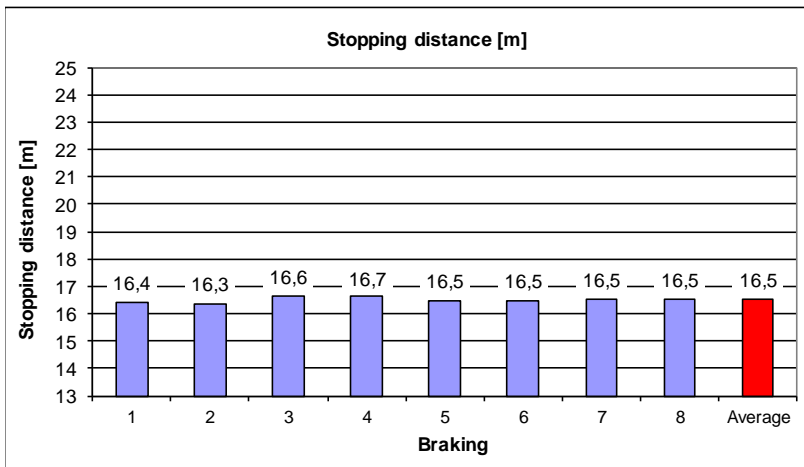
Validation of the test (< 3%)		
Std. Dev. / AVG	0,88%	0,88%

Pirelli Carrier Winter- SET B-5

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	R117 (utilisation of adhesion)
Test date (day/month/year)	22/11/2017 3:40
Air Temperature [°C]	4,7
Ground Temperature [°C]	4,6

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	60,0	19,9	65,6	82,3	16,7	7,40	16,7	-
B2	59,7	20,0	73,3	89,9	16,6	7,35	16,8	-
1	59,8	19,8	74,4	90,7	16,3	7,54	16,4	4,7
2	59,6	20,0	64,9	81,0	16,1	7,55	16,3	-
3	59,8	19,5	66,2	82,8	16,6	7,43	16,6	-
4	59,9	20,0	77,8	94,4	16,6	7,41	16,7	-
5	59,7	19,9	72,0	88,3	16,3	7,50	16,5	-
6	60,0	19,9	65,4	81,9	16,5	7,49	16,5	-
7	59,8	20,0	61,5	77,9	16,4	7,47	16,5	-
8	60,0	20,0	69,4	85,9	16,5	7,48	16,5	4,5



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,54	16,4
2	7,55	16,3
3	7,43	16,6
4	7,41	16,7
5	7,50	16,5
6	7,49	16,5
7	7,47	16,5
8	7,48	16,5
Average	7,48	16,5
Std. Dev.	0,05	0,1
Temp. [°C]	4,6	

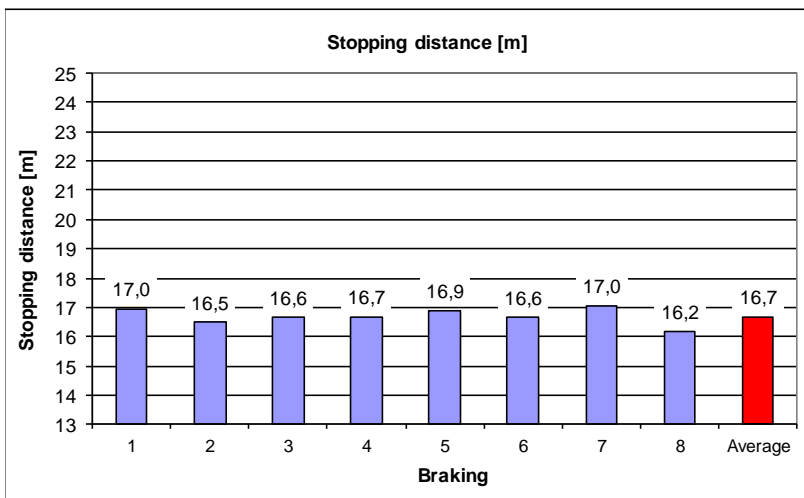
Validation of the test (< 3%)		
Std. Dev. / AVG	0,65%	0,65%

Bridgestone Duravis 660- SET B-6

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	R117 (utilisation of adhesion)
Test date (day/month/year)	22/11/2017 5:10
Air Temperature [°C]	4,6
Ground Temperature [°C]	4,3

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,7	20,0	65,5	81,5	16,0	7,63	16,2	-
B2	59,9	19,9	65,1	81,1	16,0	7,70	16,0	-
1	59,8	19,7	41,1	58,0	16,9	7,28	17,0	4,3
2	59,8	19,8	62,3	78,7	16,4	7,49	16,5	-
3	59,9	19,9	77,8	94,4	16,6	7,42	16,6	-
4	59,7	20,0	62,2	78,7	16,5	7,40	16,7	-
5	60,0	20,0	54,3	71,2	16,9	7,31	16,9	-
6	59,8	19,6	72,6	89,2	16,6	7,42	16,6	-
7	59,9	19,9	77,6	94,6	17,0	7,24	17,0	-
8	59,7	20,0	69,8	85,8	16,0	7,63	16,2	4,2



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,28	17,0
2	7,49	16,5
3	7,42	16,6
4	7,40	16,7
5	7,31	16,9
6	7,42	16,6
7	7,24	17,0
8	7,63	16,2
Average	7,40	16,7
Std. Dev.	0,13	0,3
Temp. [°C]	4,3	

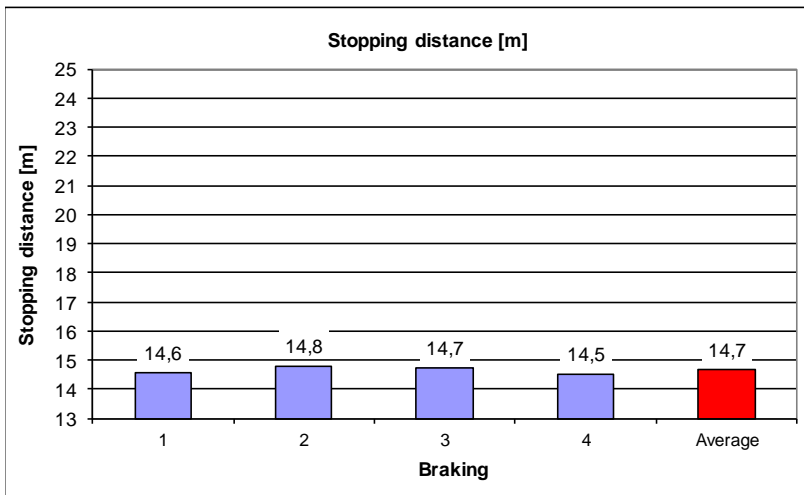
Validation of the test (< 3%)		
Std. Dev. / AVG	1,69%	1,68%

MICHELIN - Agilis CrossClimate SET R1 (Reference)

Wet braking test (stopping distances)

Test conditions	
Test Location	IDIADA Proving Ground (L'Albomar)
Track Denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track Specifications	Braking Area 5 x 250m
Track Conditions	R117 (utilisation of adhesion)
Test Date (day/month/year)	22/11/2017 6:15
Air Temperature [°C]	4,8
Ground Temperature [°C]	4,2

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,8	19,9	63,9	78,1	14,2	8,64	14,3	-
B2	59,8	19,8	65,1	79,2	14,1	8,71	14,2	-
1	59,8	19,9	73,2	87,7	14,5	8,46	14,6	4,2
2	59,8	20,0	52,8	67,5	14,7	8,34	14,8	-
3	60,0	20,0	71,1	85,9	14,7	8,37	14,7	-
4	59,7	19,9	63,3	77,7	14,4	8,49	14,5	4,1



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	8,46	14,6
2	8,34	14,8
3	8,37	14,7
4	8,49	14,5
Average	8,41	14,7
Std. Dev.	0,07	0,1
Temp. [°C]	4,2	

Validation of the test (< 3%)		
Std. Dev. / AVG	0,86%	0,86%

Reference evolution (AVG)	0,45%
---------------------------	--------------

Condition for validation: <3%

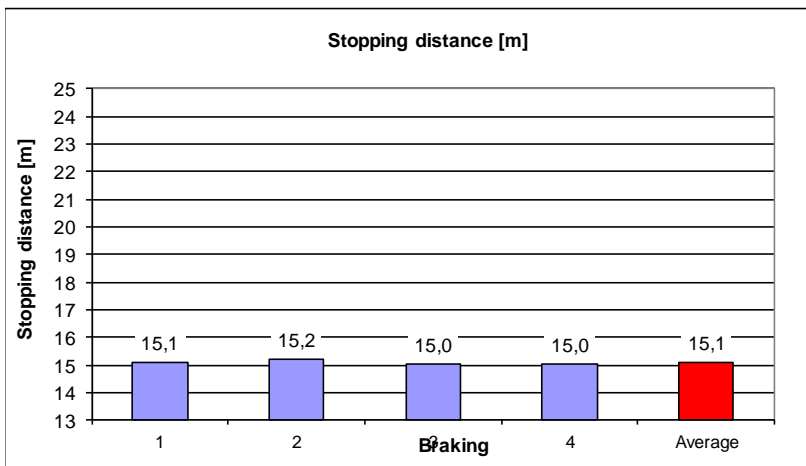
6.15. Wet high mu new asphalt 5 °C SET C

MICHELIN - Agilis CrossClimate SET R2 (Reference)

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	R117 (utilisation of adhesion)
Test date (day/month/year)	21/11/2017 1:00
Air Temperature [°C]	6
Ground Temperature [°C]	5,2

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,8	19,8	85,8	100,9	15,0	8,17	15,1	-
B2	59,7	19,9	72,8	87,6	14,8	8,27	14,9	-
1	59,4	20,0	81,3	96,0	14,7	8,20	15,1	5,4
2	59,8	20,0	85,1	100,3	15,1	8,13	15,2	-
3	59,8	19,7	79,4	94,4	15,0	8,23	15,0	-
4	59,9	19,9	83,2	98,2	15,0	8,22	15,0	5,0



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	8,20	15,1
2	8,13	15,2
3	8,23	15,0
4	8,22	15,0
Average	8,19	15,1
Std. Dev.	0,05	0,1
Temp. [°C]	5,2	

Validation of the test (< 3%)		
Std. Dev. / AVG	0,56%	0,57%

Reference evolution (AVG)	0,03%
---------------------------	--------------

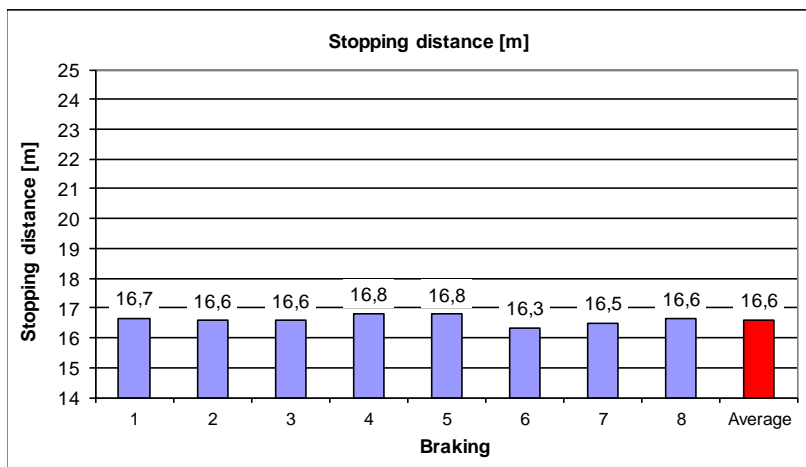
Condition for validation: <3%

Continental Vanco FourSeason 2 - SET C-7

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	R117 (utilisation of adhesion)
Test date (day/month/year)	21/11/2017 2:25
Air Temperature [°C]	4,7
Ground Temperature [°C]	4,6

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,8	19,9	57,9	74,2	16,3	7,54	16,4	-
B2	59,9	20,0	65,3	82,2	16,9	7,30	16,9	-
1	59,9	20,0	82,3	98,9	16,6	7,41	16,7	4,7
2	59,8	19,8	84,3	100,8	16,5	7,44	16,6	-
3	60,0	19,9	64,5	81,1	16,6	7,45	16,6	-
4	60,0	20,0	77,9	94,7	16,8	7,35	16,8	-
5	59,7	20,0	79,8	96,4	16,6	7,35	16,8	-
6	59,6	19,9	76,7	92,8	16,1	7,56	16,3	-
7	59,5	20,0	70,3	86,5	16,2	7,48	16,5	-
8	59,8	20,0	70,9	87,4	16,5	7,43	16,6	4,4



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,41	16,7
2	7,44	16,6
3	7,45	16,6
4	7,35	16,8
5	7,35	16,8
6	7,56	16,3
7	7,48	16,5
8	7,43	16,6
Average	7,43	16,6
Std. Dev.	0,07	0,2
Temp. [°C]	4,6	

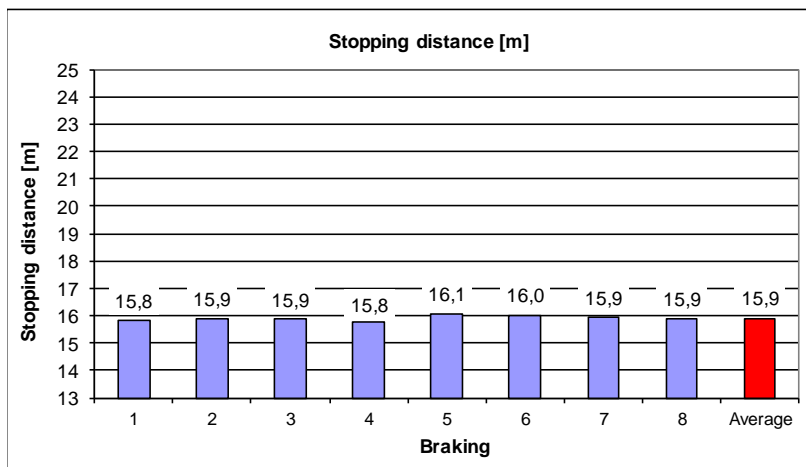
Validation of the test (< 3%)		
Std. Dev. / AVG	0,93%	0,92%

Continental Vancontact 100- SET C-8

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	R117 (utilisation of adhesion)
Test date (day/month/year)	21/11/2017 3:45
Air Temperature [°C]	4,7
Ground Temperature [°C]	4,1

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	59,2	19,8	44,3	60,1	15,8	7,60	16,2	-
B2	59,5	19,9	61,1	77,4	16,2	7,47	16,5	-
1	59,8	20,0	70,9	86,6	15,7	7,80	15,8	4,2
2	60,0	20,0	75,8	91,7	15,9	7,76	15,9	-
3	59,9	20,0	81,3	97,1	15,8	7,78	15,9	-
4	59,7	20,0	70,4	86,0	15,6	7,83	15,8	-
5	59,8	19,8	70,8	86,8	16,0	7,68	16,1	-
6	59,6	19,9	80,1	95,9	15,8	7,71	16,0	-
7	59,9	19,9	75,4	91,3	15,9	7,75	15,9	-
8	60,0	19,9	64,6	80,5	15,9	7,77	15,9	3,9



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,80	15,8
2	7,76	15,9
3	7,78	15,9
4	7,83	15,8
5	7,68	16,1
6	7,71	16,0
7	7,75	15,9
8	7,77	15,9
Average	7,76	15,9
Std. Dev.	0,05	0,1
Temp. [°C]	4,1	

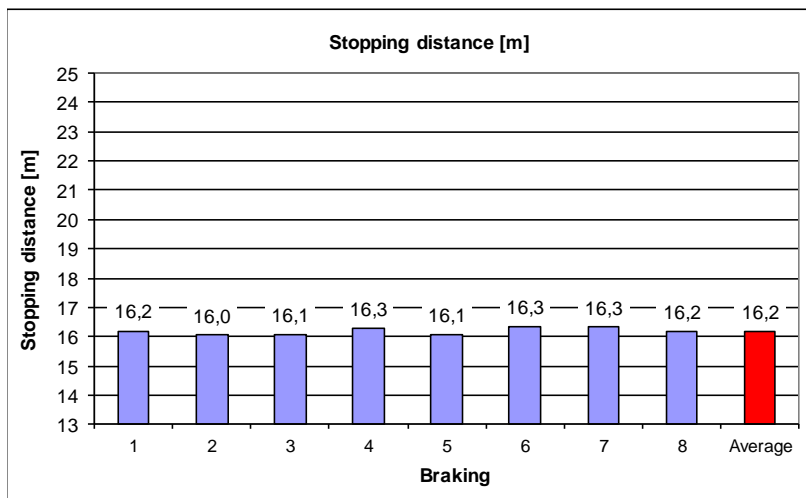
Validation of the test (< 3%)		
Std. Dev. / AVG	0,63%	0,64%

Continental Vancontact Winter - SET C-9

Wet braking test (stopping distances)

Test conditions	
Test location	IDIADA Proving Ground (L'Albomar)
Track denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track specifications	Braking Area 5 x 250m
Track conditions	R117 (utilisation of adhesion)
Test date (day/month/year)	21/11/2017 5:10
Air Temperature [°C]	3,9
Ground Temperature [°C]	3,5

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	60,0	19,6	64,7	80,4	15,7	7,90	15,6	-
B2	59,9	20,0	77,9	93,7	15,8	7,78	15,9	-
1	60,0	20,0	74,9	91,1	16,2	7,62	16,2	3,6
2	59,9	19,9	70,4	86,4	16,0	7,70	16,0	-
3	60,0	19,9	67,5	83,6	16,1	7,68	16,1	-
4	59,9	20,0	65,5	81,7	16,2	7,59	16,3	-
5	60,0	19,8	66,1	82,2	16,1	7,69	16,1	-
6	59,9	19,9	58,2	74,5	16,3	7,56	16,3	-
7	59,8	20,0	76,2	92,4	16,2	7,56	16,3	-
8	60,0	19,9	81,4	97,6	16,2	7,63	16,2	3,4



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	7,62	16,2
2	7,70	16,0
3	7,68	16,1
4	7,59	16,3
5	7,69	16,1
6	7,56	16,3
7	7,56	16,3
8	7,63	16,2
Average	7,63	16,2
Std. Dev.	0,06	0,1
Temp. [°C]	3,5	

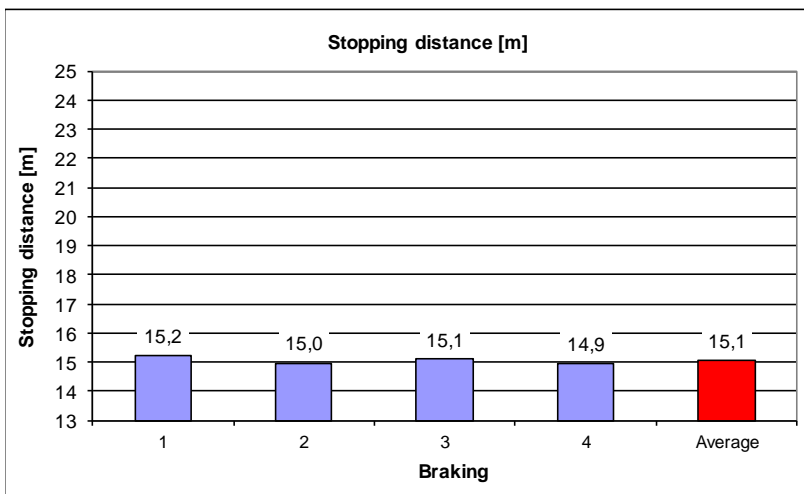
Validation of the test (< 3%)		
Std. Dev. / AVG	0,73%	0,73%

MICHELIN - Agilis CrossClimate SET R2 (Reference)

Wet braking test (stopping distances)

Test conditions	
Test Location	IDIADA Proving Ground (L'Albomar)
Track Denomination	Wet Asphalt Straight Line Braking (Track No. 2)
Track Specifications	Braking Area 5 x 250m
Track Conditions	R117 (utilisation of adhesion)
Test Date (day/month/year)	21/11/2017 6:30
Air Temperature [°C]	3,7
Ground Temperature [°C]	3,2

Braking	V1 [km/h]	V2 [km/h]	Distance 1 [m]	Distance 2 [m]	Distance between V1 and V2 [m]	Calculated accel. [m/s ²]	Stopping distance [m]	Ground temp. [°C]
B1	60,0	19,9	63,2	78,4	15,2	8,13	15,2	-
B2	59,7	19,9	71,5	86,7	15,2	8,04	15,4	-
1	60,0	19,7	81,3	96,6	15,3	8,10	15,2	3,3
2	60,0	19,9	67,4	82,4	15,0	8,24	15,0	-
3	59,6	19,9	75,5	90,4	14,9	8,17	15,1	-
4	59,9	19,9	69,9	84,8	14,9	8,26	14,9	3,1



Braking	Calculated accel. [m/s ²]	Stopping distance [m]
1	8,10	15,2
2	8,24	15,0
3	8,17	15,1
4	8,26	14,9
Average	8,19	15,1
Std. Dev.	0,07	0,1
Temp. [°C]	3,2	

Validation of the test (< 3%)		
Std. Dev. / AVG	0,91%	0,91%

Reference evolution (AVG)	0,03%
---------------------------	--------------

Condition for validation: <3%