

# TEST REPORT

## Benchmarking tests of Goodyear Ultra Grip Ice+ 205/55R16

Test World Ltd  
Test report TW20100032

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## 1. Objective

The objective of the project was to test the performance of Goodyear Ultra Grip Ice+ against leading contemporary competitor winter tires.

The project consisted of 17 tests on ice, snow, dry and wet surfaces.

## 2. Tyres

The tyre selection in the project was the following

Manufacturer	Name	Size	Speed/Load	DOT	Date
Goodyear	Ultra Grip Ice+	205/55R16	94T	H3OF LA1R	4509
Continental	ContiVikingContact 5	205/55R16	94T	CPOF NVX1	4009
Michelin	X-Ice XI2	205/55R16	91T	FUWC 002X	3909
Nokian	Hakkapeliitta R	205/55R16	94R	YLCP	4109

- All test tyres were delivered by the customer
- The tyres were run in by Test World Ltd
- Separate sets of tyres used for ice/snow and wet/dry tests to avoid any wear problems

### 3. Tests

The test selection and test methods in the project were

#### 3.1. Ice tests

Test	Method
Braking	Measurement of braking distance from 20 - 5 kph (ABS on).
Acceleration	Measurement of acceleration time from 5 - 20 kph (traction control on).
Handling, objective	Measurement of lap times on a circuit track (ESC off).
Handling, subjective	Subjective analysis of tyre behaviour (ESC off).

#### 3.2. Snow tests

Test	Method
Braking	Measurement of braking distance from 30 - 5 kph (ABS on).
Acceleration	Measurement of acceleration time from 5 - 30 kph (traction control on).
Handling, objective	Measurement of lap times on a circuit track (ESC off).
Handling, subjective	Subjective analysis of tyre behaviour (ESC off).
Hill climb, objective	Timing on a serpentine uphill track (ESC off).
Hill climb, subjective	Subjective analysis of tyre behaviour and ability to climb uphill (ESC off).

#### 3.3. Wet tests

Test	Method
Braking	Measurement of braking distance from 80 - 5 kph (ABS on).
Handling, objective	Measurement of lap times on a circuit track (ESC off).
Handling, subjective	Subjective analysis of tyre behaviour (ESC off).
Circle	Measurement of lap times on a circle track (ESC off).
Aquaplaning resistance	Measurement of lateral acceleration and speed (ESC off).

#### 3.4. Dry tests

Test	Method
Braking	Measurement of braking distance from 100 - 5 kph (ABS on).
Handling, subjective	Subjective analysis of tyre behaviour (ESC off).

## 4. Test cars

The test car fleet consisted of the following cars for the different tests.

Tests	Car	Engine	Power	Torque	Gearbox
Ice and snow	Ford Focus	2.0 petrol	107 kW / 6000 -----	185 Nm / 4500 rpm	Manual
Wet and dry	VW Golf 6	2.0 TDI	81 kW / 4200 rpm	320 Nm / 1500-2500 rpm	Manual

## 5. Test tracks

The tests were performed at two locations and at different temperatures.

Tests	Track	Test time	Test temperatures
Ice and snow	Test World Ltd, Ivalo, Finland	23.12.2009 – 11.1.2010	-1 ... -19 °C
Wet and dry	Mireval, France	4.-8.1.2010	+1 ... +6 °C

## 6. Results

### 6.1. Ice tests

#### 6.1.1. Ice braking

<i>Tyre</i>	<i>Index</i>
Nokian Hakkapeliitta R	102.7
Michelin X-Ice XI2	101.1
Goodyear Ultra Grip Ice+	100.0
Continental ContiVikingContact 5	98.2

#### 6.1.2. Ice acceleration

<i>Tyre</i>	<i>Index</i>
Nokian Hakkapeliitta R	100.6
Goodyear Ultra Grip Ice+	100.0
Michelin X-Ice XI2	99.8
Continental ContiVikingContact 5	95.7

#### 6.1.3. Ice handling, objective

<i>Tyre</i>	<i>Index</i>
Goodyear Ultra Grip Ice+	100.0
Continental ContiVikingContact 5	99.5
Nokian Hakkapeliitta R	99.3
Michelin X-Ice XI2	94.3

#### 6.1.4. Ice handling, subjective

<i>Tyre</i>	<i>Grade</i>
Goodyear Ultra Grip Ice+	9
Continental ContiVikingContact 5	9
Michelin X-Ice XI2	7
Nokian Hakkapeliitta R	8

## 6.2. Snow tests

### 6.2.1. Snow braking

<i>Tyre</i>	<i>Index</i>
Goodyear Ultra Grip Ice+	100.0
Continental ContiVikingContact 5	98.2
Nokian Hakkapeliitta R	97.0
Michelin X-Ice XI2	95.3

### 6.2.2. Snow acceleration

<i>Tyre</i>	<i>Index</i>
Goodyear Ultra Grip Ice+	100.0
Continental ContiVikingContact 5	99.3
Nokian Hakkapeliitta R	98.4
Michelin X-Ice XI2	96.8

### 6.2.3. Snow handling, objective

<i>Tyre</i>	<i>Index</i>
Continental ContiVikingContact 5	100.0
Goodyear Ultra Grip Ice+	100.0
Nokian Hakkapeliitta R	99.7
Michelin X-Ice XI2	99.2

### 6.2.4. Snow handling, subjective

<i>Tyre</i>	<i>Grade</i>
Goodyear Ultra Grip Ice+	10
Continental ContiVikingContact 5	9
Nokian Hakkapeliitta R	9
Michelin X-Ice XI2	8

### 6.2.5. Snow hill climb, objective

<i>Tyre</i>	<i>Index</i>
Continental ContiVikingContact 5	101.0
Nokian Hakkapeliitta R	100.1
Goodyear Ultra Grip Ice+	100.0
Michelin X-Ice XI2	99.3

### 6.2.6. Snow hill climb, subjective

<i>Tyre</i>	<i>Grade</i>
Continental ContiVikingContact 5	10
Goodyear Ultra Grip Ice+	9
Nokian Hakkapeliitta R	9
Michelin X-Ice XI2	8



## 6.3. Wet tests

### 6.3.1. Wet braking

<i>Tyre</i>	<i>Index</i>
Goodyear Ultra Grip Ice+	100.0
Michelin X-Ice XI2	95.0
Nokian Hakkapeliitta R	90.2
Continental ContiVikingContact 5	86.5

### 6.3.2. Wet handling, objective

<i>Tyre</i>	<i>Index</i>
Goodyear Ultra Grip Ice+	100.0
Michelin X-Ice XI2	96.0
Nokian Hakkapeliitta R	95.7
Continental ContiVikingContact 5	94.8

### 6.3.3. Wet handling, subjective

<i>Tyre</i>	<i>Grade</i>
Goodyear Ultra Grip Ice+	9
Michelin X-Ice XI2	8
Nokian Hakkapeliitta R	8
Continental ContiVikingContact 5	7

### 6.3.4. Wet circle

<i>Tyre</i>	<i>Index</i>
Goodyear Ultra Grip Ice+	100.0
Continental ContiVikingContact 5	97.0
Michelin X-Ice XI2	96.9
Nokian Hakkapeliitta R	95.5

### 6.3.5. Aquaplaning resistance

<i>Tyre</i>	<i>Index</i>
Goodyear Ultra Grip Ice+	100.0
Michelin X-Ice XI2	91.0
Continental ContiVikingContact 5	90.5
Nokian Hakkapeliitta R	89.9

## 6.4. Dry tests

### 6.4.1. Dry braking

<i>Tyre</i>	<i>Index</i>
Michelin X-Ice XI2	106.4
Nokian Hakkapeliitta R	104.8
Continental ContiVikingContact 5	101.1
Goodyear Ultra Grip Ice+	100.0

### 6.4.2. Dry handling, subjective

<i>Tyre</i>	<i>Grade</i>
Michelin X-Ice XI2	9
Continental ContiVikingContact 5	8
Goodyear Ultra Grip Ice+	8
Nokian Hakkapeliitta R	7

## 7. Test protocols

### 7.1. General preparations

#### 7.1.1. Test methods

- Test protocol checks
- Customer requirements

#### 7.1.2. Tyre preparation

- Tyre preparations
- Information for tyre changing personnel
- Measurement of inflation pressures

#### 7.1.3. Test car preparation

- Measuring equipment installations and checks

#### 7.1.4. Track preparations

- Test track condition checks, requirements for maintenance
- Weather condition and forecast checks before the test
  - Wind
  - Rain and snow
  - Sun

## 7.2. Braking

### 7.2.1. Results

- Braking distance for a selected speed interval
- Ice 20-5 km/h
- Snow 30-5 km/h
- Wet asphalt 80-5 km/h
- Dry asphalt 100-5 km/h

### 7.2.2. Car systems

- ABS on

### 7.2.3. Measurements

#### Ice and snow

- Reference tyre used after two test tires (REF-A-B-REF-C-D-REF)
- 16 brakings per tyre
- Brakings always on a new spot

#### Wet and dry

- Reference tyre used in the beginning and at the end (REF-A-B-C-D-REF)
- 8 brakings per tyre
- Brakings always on the same spot

### 7.2.4. Driving protocol

- Accelerate the vehicle over the chosen speed
- Put the clutch down and let the vehicle roll freely for a short time
- Brake hard, from 2-3 km/h over the target speed
- Steer straight
- Wait for the vehicle to stop
- Check the data after each braking
- Mark and repeat any faulty measurements

### 7.2.5. Measuring unit

- Racelogic VBox

## 7.3. Acceleration

### 7.3.1. Results

- Acceleration time for a selected speed interval
- Ice 20-5 km/h
- Snow 30-5 km/h
- Asphalt 60-5, 80-5, 100-5 km/h

### 7.3.2. Car systems

- Traction control on

### 7.3.3. Measurements

- Reference tyre used after two test tires (REF-A-B-REF-C-D-REF)
- 16 accelerations per tyre
- Accelerations always on a new spot

### 7.3.4. Driving protocol

- Stay still
- First gear, clutch down
- Lift clutch, throttle bottom
- Steer straight
- Wait for the vehicle to accelerate 2-3 km/h over the chosen speed
- Check the data after each acceleration
- Mark and repeat any faulty measurements

### 7.3.5. Measuring unit

- Racelogic VBox

## 7.4. Handling and hill climb

### 7.4.1. Results

- Sector times
- 2-4 sectors on a track
- subjective comments

### 7.4.2. Car systems

- ABS on
- Traction control on
- ESC off

### 7.4.3. Measurements

#### Ice and snow

- Reference tyre used after two test tires (REF-A-B-REF-C-D-REF)
- 3-4 laps (12-16 sector times) per tyre

#### Wet

- Reference tyre used in the beginning and at the end (REF-A-B-C-D-REF)
- 3-4 laps (12-16 sector times) per tyre

#### Dry

- No timing for dry

### 7.4.4. Driving protocol

- Drive normally finding the limit of grip
- No left foot braking / hand brake etc allowed
- Subjective comments of
  - steering
  - controllability on and over limit
  - behaviour during acceleration/braking in straight/curves

### 7.4.5. Measuring unit

- Racelogic VBox

## 7.5. Circle

### 7.5.1. Results

- Sector times
- 2 sectors on a track

### 7.5.2. Car systems

- ABS on
- Traction control on
- ESC off

### 7.5.3. Measurements

#### **Wet**

- Reference tyre used in the beginning and at the end (REF-A-B-C-D-REF)
- 5 laps (10 sector times) per tyre

### 7.5.4. Driving protocol

- Drive as fast as possible finding the limit of grip
- No left foot braking / hand brake etc allowed

### 7.5.5. Measuring unit

- Racelogic VBox



## 7.6. Lateral aquaplaning

### 7.6.1. Results

- Aquaplaning speed for lateral acceleration of  $1 \text{ m/s}^2$

### 7.6.2. Car systems

- ABS on
- Traction control on
- ESC off

### 7.6.3. Measurements

- Reference tyre used in the beginning and at the end (REF-A-B-C-D-REF)
- 8-12 measurements of lateral acceleration vs speed per tyre

### 7.6.4. Driving protocol

- Follow the marked line when entering water
- First drive into the watered curve at 5 km/h below the expected aquaplaning speed
- Increase the speed at 1 km/h for every pass
- Repeat measurement 4 times at the aquaplaning speed

### 7.6.5. Measuring unit

- Racelogic VBox III (100 Hz)

## 7.7. Result calculation methods

### 7.7.1. Indexes

- In all tests, Goodyear Ultra Grip Ice+ is given an index of 100%
- Values above 100% = better
- Values below 100% = worse

### 7.7.2. Grades

- In subjective tests, a grading scale is used.
- The scale is from 4 = unacceptable to 10 = excellent.
- A one point grade difference can normally be recognized by a normal driver

### 7.7.3. Reference calculation

- In all tests, a reference method is used in calculations
- In the method, a reference tyre is driven at certain intervals to control any change in conditions
- The reference tyre was used just for control, and its results are not relevant and not displayed

### 7.7.4. Measuring systems

- In all tests, a GPS-based Racelogic VBox was used

## 8. Conclusion

All tests have been executed applying Test World quality systems and requirements for test conditions, deviation, methods and security. Tests were executed using the same test methods as normally for magazines.

Test World Ltd hereby claims that the test results are representative for the tyre selection when tested under outlined conditions, cars, tracks and methods. Test World Ltd does not take responsibility for any liabilities from the conclusions drawn from the test results.



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