

# TMM

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COMPARISON OF 12 studded tyres ■ 8 non-studded tyres

## WINTER TYRES 2013



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## More or fewer studs

■ THE NEW regulations concerning studded tyres allow manufacturers to use any type of stud on their tyres, and even their number is not limited, as long as the tyre does not exceed the road wear limits. Another option is to adhere to the maximum number of studs and certain other limitations; a road wear test is not required in this case. Some manufacturers have been happy to take up the opportunity to add studs and improve grip.

The winner of our winter tyre comparison test that starts on page 14 has 190 studs, whereas tyres from another large manufacturer only have half of this number.

Non-studded tyres are also developing rapidly. We are at a point where the difference in grip between the best non-studded tyres and the weakest studded tyres is more or less non-existent, even on an icy road. Even the most die-hard fans of studs should try them out – the results may be surprising.

The authorities also need to account for the development of tyres when contemplating usage limitations and other controls. Non-studded tyres are now an even better alternative. On the other hand, the best studded tyres have improved their safety characteristics while reducing their road wear. Both the consumers and the authorities need to consider the situation, and old attitudes deserve to be changed.

JUKKA ANTILA

IN OUR COMPARISON TESTS, we award stars to products that we have tested and that we can recommend. One star means that the product is satisfactory. Five stars mean that the product is at the absolute top of its class.



# A mixed bag

A few years ago, buying tyres was easy. You bought studded tyres for grip and non-studded tyres for comfort. The more expensive tyres were usually better, largely regardless of the brand. This is no longer as straightforward, however.

JUKKA ANTILA  
LASSE ALLARD, Photos  
TEST WORLD, Tests and measurements



**T**he legislation concerning studded tyres has been tightened constantly. Over the years, usage time limitations have been set, rules limiting stud weight and placement have been written, the maximum number of studs has been reduced; even stud protrusion now has a maximum value that applies to new tyres.

The goal has been to reduce road wear and dust accumulation, and the costs and detrimental health effects caused by them. This has been partially successful, but street dust is still a problem in the spring. Resurfacing the grooves on roads also takes up a lot of money that could be used for other purposes.

The extent to which studded tyres are the cause of street dust is another thing altogether; many who consider themselves to be absolute authorities in this field have completely opposite opinions on this matter.

Limiting the number and features of studs will usually lead to reduced tyre grip under icy conditions. Developments in tyre technology have worked wonders to offset this, but under certain conditions, studs remain completely essential in terms of grip and safety.

Nevertheless, non-studded tyres have developed significantly, and the difference between studded and non-studded tyres keeps reducing. We have already reached a point where the weakest studded tyres lose to the best non-studded tyres, even on smooth ice. If the number of studs is low, their shape and placement are poor, and the tyre has a hard rubber compound, the studded tyre might not be a match for a Nordic non-studded tyre.

#### Fewer studs – or maybe more?

A rule came into force in July 2013 that aims to reduce the number of studs further. Manufacturers using commonly approved studs may only install 50 studs per each metre of tyre tread. The nominal diameter of the tyres that we tested is approx. 63 cm, which means that the tyre travels almost exactly two metres as it rolls around once. If the manufacturer chooses to follow the legislation and gain official approval, only 100 studs may be installed on a tyre like this.

But there is another way. If the manufacturer can demonstrate that the road-wearing effect of its tyre falls below certain limit values, it can install as many studs as it likes, and even equip them

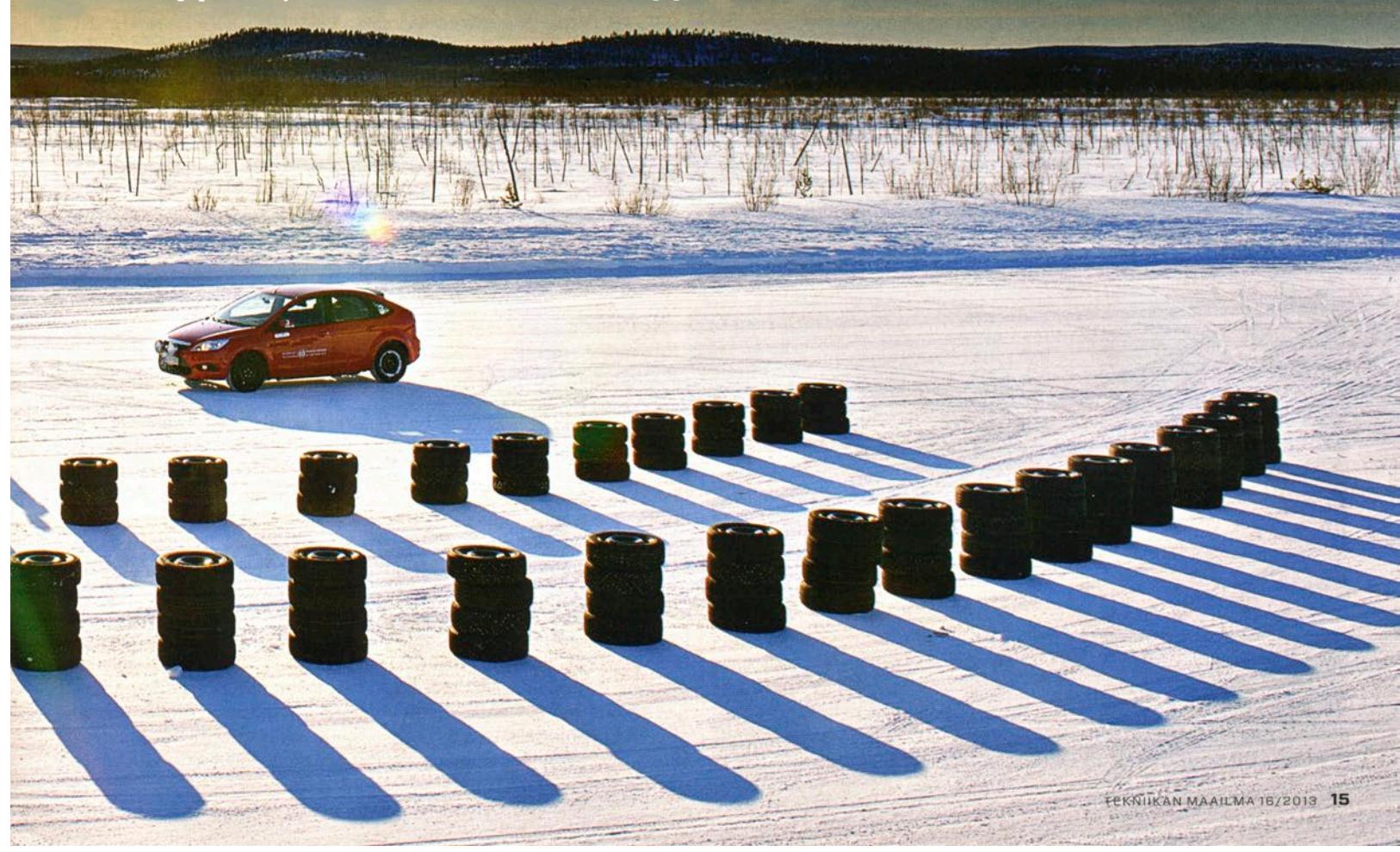
#### STUDDED TYRES

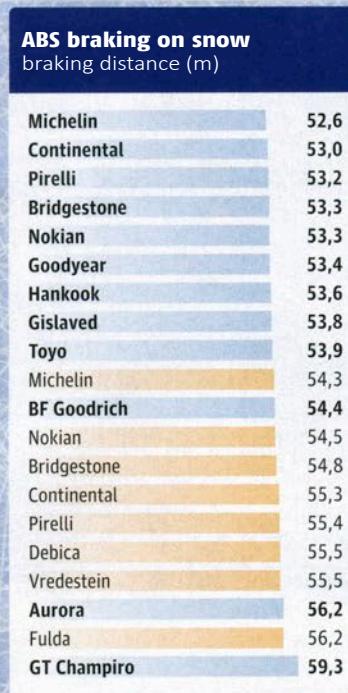
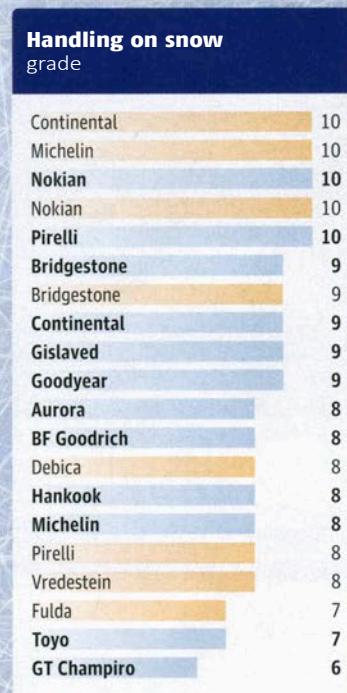
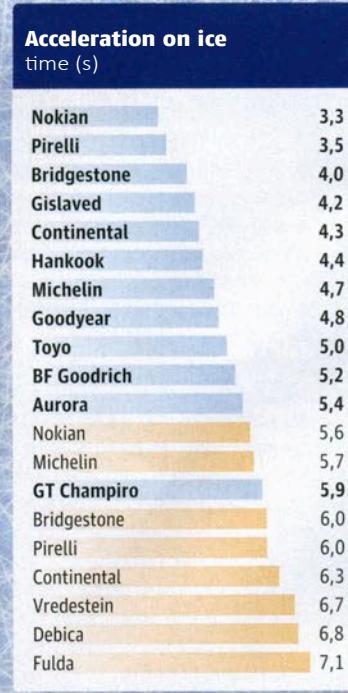
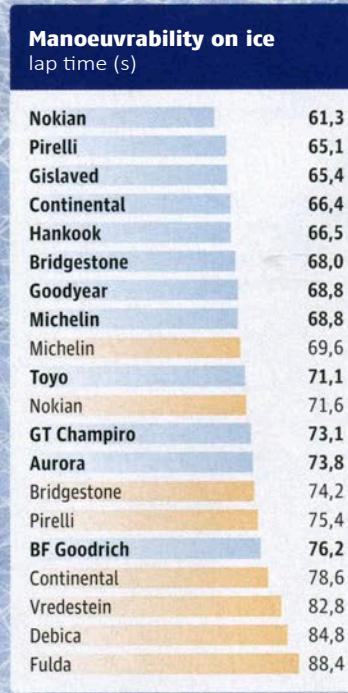
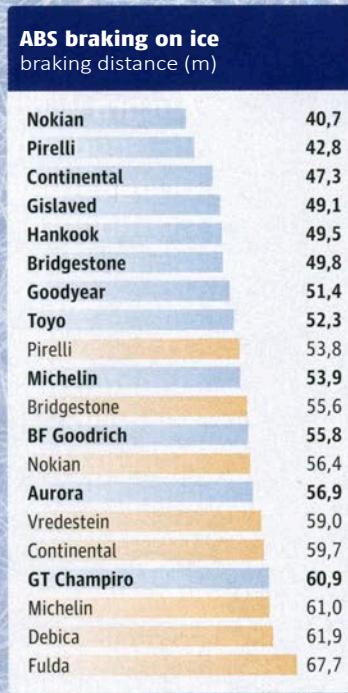
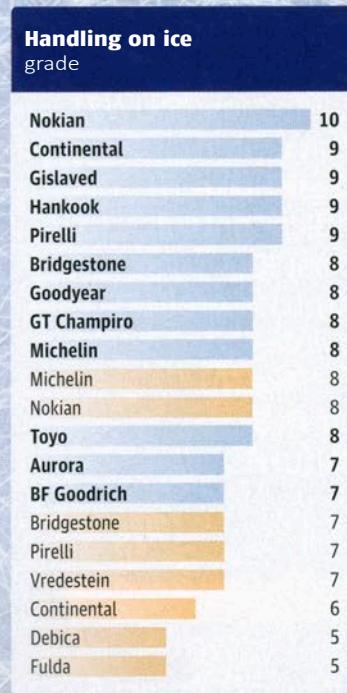
- **Aurora** Winter Route Master UW71
- **BF Goodrich** g-Force Stud
- **Bridgestone** Blizzak Spike-01
- **Continental** ContilceContact
- **Gislaved** Nord Frost 100
- **Goodyear** Ultra Grip Ice Arctic
- **GT** Champiro Ice Pro
- **Hankook** Winter I\*Pike RS
- **Michelin** X-Ice North 3
- **Nokian** Hakkapeliitta 8
- **Pirelli** Ice Zero
- **Toyo** Observe G3-Ice

#### NON-STUDDED TYRES

- **Bridgestone** Blizzak WS70
- **Continental** ContiVikingContact 5
- **Debica** Frigo 2
- **Fulda** Montero 3
- **Michelin** X-Ice XI3
- **Nokian** Hakkapeliitta R2
- **Pirelli** Icecontrol
- **Vredestein** Nord-Trac 2

TYRE SIZE 205/55 R 16 TEST VEHICLE FORD FOCUS 2,0





them with one-centimetre studs designed for ice track racing. Some manufacturers have taken the easy way and adhered to the number limit, but others have seen the deregulation of the number and properties of the studs as an opportunity to improve tyre grip and to try and solve the road wear problem.

### Do we have grip, is the road wearing out?

It can be assumed that increasing the number of studs will improve the grip of

the tyre – at least up to a certain point. However, at some stage you will get to a point where the road-holding force of a single stud is so low that the grip starts to weaken; therefore, overshooting the number of studs is not necessarily a sensible thing to do. Furthermore, it can cause other handling issues, and increase instability, noise, and manufacturing costs.

The challenge is similar in terms of road wear. Non-studded tyres will not wear out the roads. If the entire surface of the tyre were covered by studs, road

wear would also be low, since none of the studs could penetrate the asphalt with any significant force.

What is the optimal number of studs, then? Researching this and developing new products is costly and time-consuming. The new Hakkapeliitta 8 from Nokian Tyres is the first real pioneer that takes advantage of the new legislation. It uses a number of studs that is clearly higher than in any of the other tyres – twice that of the Michelin, for example. Never before have we had

such structural differences between studded tyres in our tests.

### What are the detrimental health effects?

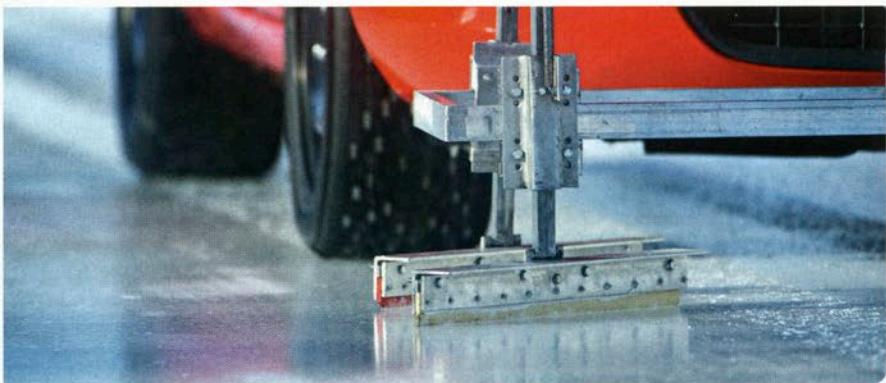
The problem of grooves and street dust has been assessed in several studies in different countries. Nearly all of them have come to roughly the same conclusion: the studs do cause road wear, but they also improve traffic safety. The increase in safety is caused both by the better grip of the tyre and the fact that

Handling on dry asphalt grade		Braking on dry asphalt braking distance (m)		Directional stability grade		Fuel economy increase in fuel consumption (%)	
Fulda	8	GT Champiro	26,6	Fulda	9	Nokian	0,0
Michelin	8	Aurora	26,7	Michelin	9	Michelin	0,6
BF Goodrich	7	Bridgestone	26,8	BF Goodrich	8	Debica	1,0
Bridgestone	7	Fulda	26,8	Bridgestone	8	Vredestein	1,2
Continental	7	BF Goodrich	27,2	Continental	8	Continental	1,5
Debica	7	Gislaved	27,3	Debica	8	Toyo	1,5
Goodyear	7	Vredestein	27,4	Gislaved	8	Goodyear	1,6
Hankook	7	Debica	27,5	Pirelli	8	Pirelli	1,7
Nokian	7	Continental	27,6	Pirelli	8	Aurora	1,8
Pirelli	7	Continental	27,8	Vredestein	8	Nokian	1,8
Pirelli	7	Hankook	28,1	Bridgestone	7	Pirelli	1,8
Vredestein	7	Nokian	28,1	Continental	7	Bridgestone	1,9
Aurora	6	Toyo	28,1	Goodyear	7	Fulda	2,0
Bridgestone	6	Michelin	28,2	GT Champiro	7	GT Champiro	2,0
Continental	6	Pirelli	28,2	Hankook	7	Hankook	2,2
Gislaved	6	Michelin	28,3	Michelin	7	Gislaved	2,4
GT Champiro	6	Pirelli	28,3	Nokian	7	BF Goodrich	2,9
Michelin	6	Goodyear	28,5	Nokian	7	Continental	3,1
Nokian	6	Bridgestone	28,7	Aurora	6	Bridgestone	3,5
Toyo	6	Nokian	28,7	Toyo	6	Michelin	3,8
Handling on wet asphalt grade		ABS braking on wet asphalt braking distance (m)		Manoeuvrability on wet asphalt lap time (s)		Noise grade	
Fulda	9	Fulda	30,2	Fulda	29,7	Bridgestone	10
Bridgestone	8	BF Goodrich	32,2	Gislaved	29,7	Continental	10
Continental	8	GT Champiro	32,8	Continental	30,0	Nokian	10
Gislaved	8	Gislaved	33,4	Bridgestone	30,2	Pirelli	10
Michelin	8	Debica	33,9	BF Goodrich	30,5	Debica	9
Pirelli	8	Michelin	34,4	Goodyear	30,6	Fulda	9
BF Goodrich	7	Aurora	34,5	GT Champiro	30,6	Michelin	9
Debica	7	Michelin	34,9	Debica	30,8	Vredestein	9
Goodyear	7	Vredestein	34,9	Pirelli	30,9	BF Goodrich	6
Hankook	7	Nokian	35,0	Michelin	31,2	Continental	6
Pirelli	7	Continental	35,1	Aurora	31,3	Gislaved	6
Vredestein	7	Nokian	35,2	Vredestein	31,4	Goodyear	6
Aurora	6	Bridgestone	35,3	Continental	31,5	Hankook	6
Bridgestone	6	Goodyear	35,4	Pirelli	31,5	Nokian	6
Continental	6	Hankook	35,4	Hankook	31,6	Toyo	6
Michelin	6	Pirelli	35,4	Nokian	31,7	Bridgestone	5
Nokian	6	Bridgestone	35,5	Nokian	31,7	GT Champiro	5
Nokian	6	Pirelli	35,5	Bridgestone	32,0	Michelin	5
GT Champiro	5	Continental	36,2	Toyo	32,2	Pirelli	5
Toyo	5	Toyo	37,1			Aurora	4

the studs roughen the road surface.

This is all logical and easy to accept. However, the researchers are much more divided on several other related issues. How much of the dust is actually caused by studs, and how much of it originates from other sources? What are the detrimental health effects of dust, and to what extent are they caused by studded tyres? How many more accidents would we have if there were fewer studded tyres on the roads? What percentage of cars should be

 IN THE ICE TESTS, a clean surface is an absolute requirement for reliable results. The snow dust and flakes from studded tyres are removed using equipment that is mounted on the vehicle.





THE NUMBER OF STUDS varies greatly between tyres; this can be seen in the handling and in the acceleration and braking marks left on the surface of the ice. A larger number of studs will usually provide more grip on ice, but it may negatively affect tyre noise and handling in warmer conditions.

equipped with studded tyres in order to keep winter roads rougher and to provide more grip? Do we actually need studded tyres, or could the problem be solved with road maintenance?

Calculating the costs of the different solutions, and deciding on limiting the use of studded tyres or imposing a fee on them, as some countries do, is even more difficult. What is the price of health? Is it better to be injured in an accident due to bad tyres, or to become ill due to dust? If the number of studded tyres is reduced, more people will most likely be injured. And if it isn't, the dust problem will continue.

The authorities and politicians do not have it easy. The most important thing would be to acquire as much unbiased and researched information about all of the above issues as possible, and to avoid prejudices.

### **Freedom of choice**

Individual persons need not concern themselves with the ethical side of their tyre choice – or to feel guilty, regardless of which tyre they choose. You should always make the choice on the basis of your own needs.

If you want the safest tyres for slippery winter weather, studded tyres are the best option. This means that you will need to cut back slightly on comfort, mainly in terms of tyre noise.

If you want the most comfortable and the quietest winter driving, non-studded tyres are the right choice; the risk of accidents will increase slightly, however.

In both cases – and now, more than ever – you should read through the test and choose tyres that have kept up with the recent developments and that are the most suitable for you. The differences are exceptionally large. Some manufacturers focus on ice grip, while others favour handling on asphalt. Regardless of whether you choose a studded or non-studded tyre, you will always need to compromise between the two.

■ OUR TEST follows the standard weighting that focuses on the most difficult conditions and their driving safety. If you feel that our weight values are incorrect for your driving conditions and preferences, you can – and should – adjust them; this might significantly alter the order of the tyres and make the choice easier for you. TM

### **HOW WE TESTED**

**BRAKING TEST:** The test was done on ice, snow, and wet asphalt at different temperatures. The final result for each tyre is the average from all the tests. The tests were performed using ABS, and the results are from 50 to 0 km/h on ice, from 80 to 0 km/h on snow and wet asphalt, and from 100 to 0 km/h on dry asphalt. The braking tests on snow and ice were performed on outdoor tracks and inside a hall where the conditions were highly controlled and the temperatures could be adjusted.

**ACCELERATION TEST:** The traction of the tyres on ice and snow was measured by accelerating the car from 5 to 20 km/h on ice and from 5 to 35 km/h on snow. The acceleration test was also performed under different temperatures, and the end result is an average of several different tests. The tests on snow and ice were performed on outdoor tracks and inside a hall where the conditions were highly controlled and the temperatures could be adjusted.

**MANOEUVRABILITY:** The grip of the tyres under dynamic driving conditions was measured by driving along a test track and measuring lap times. The result is an average of the times from different drivers.

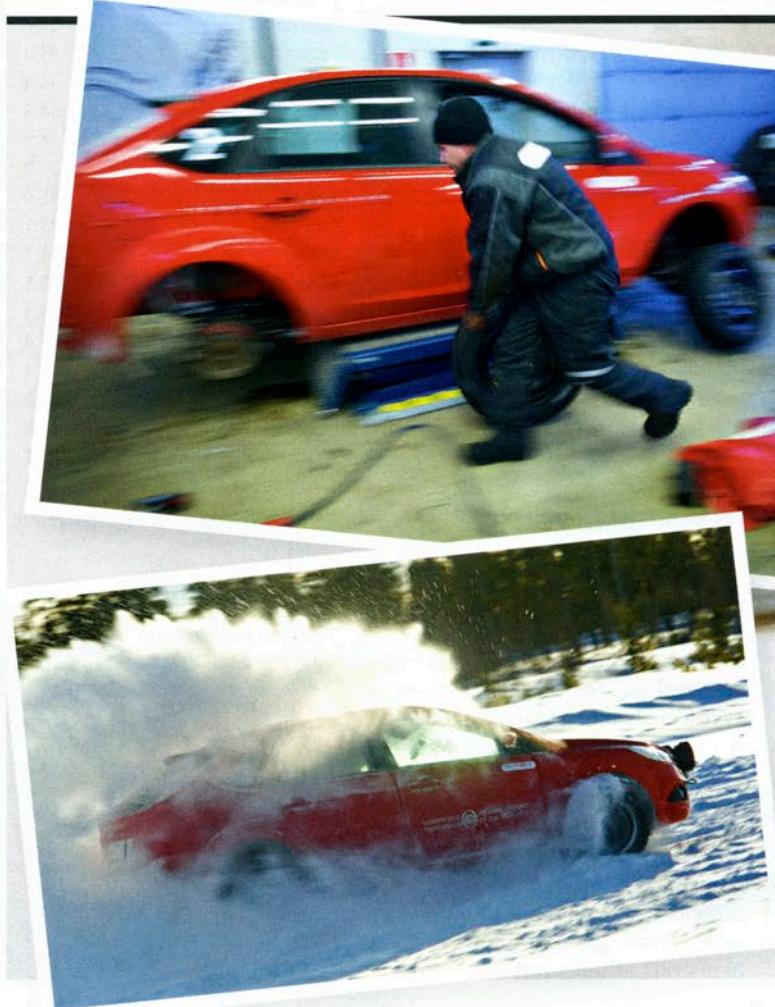
**HANDLING:** In addition to measurements, the handling of the tyre was subjectively evaluated on ice, snow, and wet and dry asphalt. The final grades are a rounded average of all the grades from the drivers.

**DIRECTIONAL STABILITY:** Directional stability was tested by driving along a grooved main road at different speeds. The test evaluated how the grooves affect the movements of the car's body, and how often the direction had to be corrected by steering. The result is an average of grades from different drivers.

**NOISE:** Tyre noise inside the car was rated subjectively. During the test, the car was allowed to slow down freely from 100 km/h to 40 km/h while listening to the noise. Our testers listened to the noise while seated in the front and back seats of the vehicle.

**ROLLING RESISTANCE:** Rolling resistance was tested by means of a rolling test. The test measured the rolling distance of the car from 80 to 40 km/h, and it was carried out under wind-free conditions at different temperatures. The results have been mathematically converted to differences in fuel economy.

**MEASUREMENT AND CALCULATION:** The tests were performed using a RaceLogic VBOX to measure the movements of the car using GPS and the necessary additional sensors. The calculation of the final results is based on a reference method. In this method, a reference tyre is used repeatedly. Any changes in the results indicate that the grip level and conditions have changed. We also used a spot correction method to manage the effects of grip differences at different points of the test track. This way, the systematic deviation caused by the variations in track surface will not distort the results for the tyres; instead, it can be mathematically removed from the final results.



GRADES	Weight (%)	STUDED TYRES												NON-STUDED TYRES							
		Aurora	BF Goodrich	Bridgestone	Continental	Gislaved	Goodyear	GT Chimpire	Hankook	Michelin	Nokian	Pirelli	Toyo	Bridgestone	Continental	Debica	Fulda	Michelin	Nokian	Pirelli	Vredestein
<b>Ice</b>	40																				
Braking	15	6	7	8	9	8	8	6	8	7	10	10	7	7	6	5	4	6	7	7	6
Acceleration	10	7	7	9	8	9	8	6	8	8	10	10	7	6	5	4	4	6	6	6	5
Manoeuvrability	10	7	7	9	9	9	8	7	9	8	10	9	8	7	7	6	5	8	8	7	6
Handling	5	7	7	8	9	9	8	8	9	8	10	9	8	7	6	5	5	8	8	7	7
<b>Snow</b>	20																				
Braking	5	7	8	9	10	9	9	4	9	10	9	9	9	8	8	7	7	8	8	7	7
Acceleration	5	6	7	9	9	8	9	4	9	9	10	9	8	7	9	8	6	9	9	8	8
Manoeuvrability	5	6	8	8	8	9	10	6	10	10	10	10	7	9	9	7	4	9	9	8	7
Handling	5	8	8	9	9	9	9	6	8	8	10	10	7	9	10	8	7	10	10	8	8
<b>Wet asphalt</b>	15																				
Braking	5	7	8	6	6	7	6	7	6	7	6	6	5	6	6	7	9	6	6	6	6
Manoeuvrability	5	6	8	8	9	9	8	8	6	7	6	7	5	5	6	7	9	6	6	6	6
Handling	5	6	7	8	8	8	8	7	5	7	6	6	8	5	6	6	7	9	8	6	7
<b>Dry asphalt</b>	10																				
Braking	5	9	8	5	7	8	5	9	6	6	6	6	6	9	7	7	9	6	5	6	7
Handling	5	6	7	6	7	6	7	6	7	6	7	7	6	7	6	7	8	6	7	7	7
<b>Economy and comfort</b>	15																				
Directional stability	5	6	8	8	8	8	7	7	7	7	7	8	6	7	7	8	9	9	7	8	8
Noise	5	4	6	5	6	6	6	5	6	5	6	5	6	10	10	9	9	9	10	10	9
Rolling resistance	5	8	6	5	6	7	8	7	7	5	8	8	8	7	8	9	7	9	10	8	8
<b>OVERALL GRADE</b>	<b>100</b>	<b>6,6</b>	<b>7,3</b>	<b>7,7</b>	<b>8,2</b>	<b>8,2</b>	<b>7,8</b>	<b>6,3</b>	<b>7,8</b>	<b>7,4</b>	<b>8,6</b>	<b>8,5</b>	<b>6,9</b>	<b>7,2</b>	<b>7,0</b>	<b>6,6</b>	<b>6,4</b>	<b>7,6</b>	<b>7,5</b>	<b>7,2</b>	<b>6,8</b>



THE SNOW and ice tests were repeated in an indoor hall that offers laboratory conditions for testing tyres without the detrimental effects of changing weather. Natural snow is extremely important for tyre testing, even when testing inside.



### Nokian Hakkapeliitta 8

**Type:** Studded tyre  
**Size:** 205/55R16  
**Speed class:** T (190 km/h)  
**Number of studs:** 190  
**Load class:** 94  
**Rotation direction marked:** yes  
**Inner/outer edge marked:** no  
**Manufacturing date:** 2013 week 7  
**DOT/serial:** YLCP  
**E approval:** E4 (The Netherlands)  
**Country of manufacture:** Finland  
**More information:** [www.nokiantires.com](http://www.nokiantires.com)  
**Price:** €850 (average, incl. installation)

■ THE NOKIAN is an amazing tyre on ice. Due to the exceptionally high number of studs, grip, and handling are excellent on slippery roads. The differences between quality tyres are often small, but this time Nokian has really raised the bar. It is also excellent on snow, but the tests on asphalt indicate that ice grip has been the focus area of development. The Nokian steers quite sloppily on wet and dry asphalt, but it still remains logical during lane changes. Nokian is now the only choice for the best possible grip on ice.

#### FOR

- Exceptional grip on ice
- Handling under winter conditions

#### AGAINST

- Average characteristics on asphalt

**Overall grade:** 8.6



### Pirelli Ice Zero

**Type:** Studded tyre  
**Size:** 205/55R16  
**Speed class:** T (190 km/h)  
**Number of studs:** 130  
**Load class:** 91  
**Rotation direction marked:** yes  
**Inner/outer edge marked:** no  
**Manufacturing date:** 2012 week 46  
**DOT/serial:** XT BK J536  
**E approval:** E3 (Italy)  
**Country of manufacture:** Germany  
**More information:** [www.pirelli.com](http://www.pirelli.com)  
**Price:** €750 (average, incl. installation)

■ THE NEW PIRELLI jumped right to the very top of the test. Its best feature is the excellent grip on ice, and the tyre was the only one that could challenge the winner in this respect. The Pirelli handles quickly and precisely on both ice and snow, and it is easy to drive. The feel for the road is quite good even on asphalt, and the tyre steers very well when changing lanes; it does have a slight tendency to oversteer, however. The Pirelli is a solid overall package and an excellent choice for the Finnish winter. The only downside is the rather high level of stud noise.

#### FOR

- Grip on ice and snow
- Handling under winter conditions

#### AGAINST

- Noise

**Overall grade:** 8.5



### Continental Conticice Contact

**Type:** Studded tyre  
**Size:** 205/55R16  
**Speed class:** T (190 km/h)  
**Number of studs:** 130  
**Load class:** 94  
**Rotation direction marked:** no  
**Inner/outer edge marked:** yes  
**Manufacturing date:** 2013 week 7  
**DOT/serial:** CPOF NVVD  
**E approval:** E4 (The Netherlands)  
**Country of manufacture:** Germany  
**More information:** [www.continental.com](http://www.continental.com)  
**Price:** €800 (average, incl. installation)

■ THE CONTINENTAL is a fine studded tyre. It offers balanced characteristics: good grip and handling in winter weather, and reliable characteristics on asphalt. The tyre is calm to drive under all conditions, and it steers precisely even under extreme conditions, causing no surprises for the driver. The only downside of the tyre is the rather high rolling resistance. The Continental is one of the best choices for winter, and a functional package for any weather.

#### FOR

- Grip on ice and snow
- Handling under all conditions

#### AGAINST

- Rolling resistance

**Overall grade:** 8.2



### Gislaved Nord Frost 100

**Type:** Studded tyre  
**Size:** 205/55R16  
**Speed class:** T (190 km/h)  
**Number of studs:** 96  
**Load class:** 94  
**Rotation direction marked:** yes  
**Inner/outer edge marked:** no  
**Manufacturing date:** 2012 week 45  
**DOT/serial:** CPOF CNV8  
**E approval:** E4 (The Netherlands)  
**Country of manufacture:** Germany  
**More information:** [www.gislaved-tires.com](http://www.gislaved-tires.com)  
**Price:** €750 (average, incl. installation)

■ THE GISLAVED silently worked its way to the top. It did not especially shine in any tests, but it also did not let us down. The performance was exceptionally balanced, which is always a sign of a high-quality tyre. Its winter grip is good, even if it is not on par with the very best tyres. The tyre is calm and logical even on asphalt, and its braking distances were among the shortest for studded tyres. We can heartily recommend the Gislaved for the Finnish winter.

#### FOR

- Calm handling on ice and snow
- Grip and handling on wet asphalt

#### AGAINST

- 

**Overall grade:** 8.2



### Goodyear Ultra Grip Ice Arctic

**Type:** Studded tyre  
**Size:** 205/55R16  
**Speed class:** T (190 km/h)  
**Number of studs:** 130  
**Load class:** 94  
**Rotation direction marked:** yes  
**Inner/outer edge marked:** no  
**Manufacturing date:** 2013 week 6  
**DOT/serial:** A50F MY1R  
**E approval:** E13 (Luxembourg)  
**Country of manufacture:** Poland  
**More information:** [www.goodyear.com](http://www.goodyear.com)  
**Price:** €750 (average, incl. installation)

■ THE GOODYEAR works well on snow and it is easy to drive. It is also calm on icy roads, but when compared to the best tyres in our test, it lacks lateral grip and the tyre tends to let go too easily. On asphalt, the Goodyear is an average studded tyre. It steers slowly but logically, and the tyre will not surprise you even in the sharpest evasions. In dry weather, however, there is not enough grip for extreme conditions, and the rear tyres tend to lose grip easily. The Goodyear had the lowest rolling resistance of all the studded tyres in the test.

#### FOR

- Grip on snow
- Rolling resistance

#### AGAINST

- Grip on dry asphalt

**Overall grade:** 7.8





## Hankook Winter I\*Pike RS

**Type:** Studded tyre  
**Size:** 205/55R16  
**Speed class:** T (190 km/h)  
**Number of studs:** 128  
**Load class:** 91  
**Rotation direction marked:** yes  
**Inner/outer edge marked:** no  
**Manufacturing date:** 2012 week 22  
**DOT/serial:** T7RP VC H  
**E approval:** E4 (The Netherlands)  
**Country of manufacture:** Korea  
**More information:** [www.hankook-tire-eu.com](http://www.hankook-tire-eu.com)  
**Price:** €600 (average, incl. installation)

■ THE HANKOOK works well in slippery winter weather. It has reasonable grip, and the tyre is easy to drive due to its fast steering. Unfortunately, its behaviour can easily become too sharp under when quick reactions are required, and the grip may disappear quickly and suddenly especially on snow. Braking grip is weak on dry asphalt, but the tyre steers calmly during lane changes. Despite these small shortcomings, the Hankook is a solid choice that has no major drawbacks.

### FOR

- Grip on snow
- Handling on ice

### AGAINST

- Braking grip on wet asphalt

**Overall grade: 7.8**

★★★



## Bridgestone Blizzak Spike-01

**Type:** Studded tyre  
**Size:** 205/55R16  
**Speed class:** T (190 km/h)  
**Number of studs:** 130  
**Load class:** 94  
**Rotation direction marked:** yes  
**Inner/outer edge marked:** no  
**Manufacturing date:** 2013 week 2  
**DOT/serial:** EM 8K  
**E approval:** E4 (The Netherlands)  
**Country of manufacture:** Japan  
**More information:** [www.bridgestone.com](http://www.bridgestone.com)  
**Price:** €650 (average, incl. installation)

■ THE BRIDGESTONE works quite well on ice and snow. The grip was not quite on par with the best tyres, but there is still enough of it for both braking and normal driving. The tyre will not surprise you with sharp slides, either. On ice, however, the tyre lacks lateral grip, making control difficult during sudden evasions. Grip on wet asphalt is average, but manoeuvrability is good due to its calm behaviour. In dry weather, the Bridgestone lacks grip and it feels sloppy to drive. Overall, however, it shows good performance.

### FOR

- Grip and handling on snow

### AGAINST

- Grip and handling on dry surfaces
- Rolling resistance

**Overall grade: 7.7**

★★



## Michelin X-Ice North 3

**Type:** Studded tyre  
**Size:** 205/55R16  
**Speed class:** T (190 km/h)  
**Number of studs:** 96  
**Load class:** 94  
**Rotation direction marked:** yes  
**Inner/outer edge marked:** no  
**Manufacturing date:** 2013 week 6  
**DOT/serial:** 22WC 04jX  
**E approval:** E2 (France)  
**Country of manufacture:** Russia  
**More information:** [www.michelin.com](http://www.michelin.com)  
**Price:** €800 (average, incl. installation)

■ THE MICHELIN is calm to drive under all conditions, and it never surprises the driver. Unfortunately, its grip on ice is nowhere near the level of the best tyres in the test; the tyre keeps sliding and it has long braking distances. On snow, the Michelin was one of the best tyres. It is average on asphalt, but reacts too slowly and calmly when quick steering is required.

### FOR

- Calm handling

### AGAINST

- Grip and handling on dry road
- Rolling resistance

**Overall grade: 7.4**

★★



## BF Goodrich g-Force Stud

**Type:** Studded tyre  
**Size:** 205/55R16  
**Speed class:** Q (170 km/h)  
**Number of studs:** 114  
**Load class:** 94  
**Rotation direction marked:** yes  
**Inner/outer edge marked:** no  
**Manufacturing date:** 2012 week 42  
**DOT/serial:** 22TA 02TX  
**E approval:** E2 (France)  
**Country of manufacture:** Russia  
**More information:** [www.bfgoodrich.com](http://www.bfgoodrich.com)  
**Price:** €550 (average, incl. installation)

■ THE BF GOODRICH is a stable and quiet studded tyre that has good properties on roads with no ice or snow. Braking distances are short on both wet and dry asphalt, and handling is precise. Too much winter grip is missing, however. On ice, the studs on the BF Goodrich do not grip properly, and the tyre keeps sliding. Handling on snow is slightly better, but the grip is simply not there for better braking and manoeuvrability test results. You can survive with the tyre, however, and the BF Goodrich even works rather well on wet and temperate winter days.

### FOR

- Characteristics on asphalt
- Noise

### AGAINST

- Average grip on ice and snow

**Overall grade: 7.3**

★★



## Toyo Observe G3-Ice

**Type:** Studded tyre  
**Size:** 205/55R16  
**Speed class:** T (190 km/h)  
**Number of studs:** 97  
**Load class:** 91  
**Rotation direction marked:** yes  
**Inner/outer edge marked:** no  
**Manufacturing date:** 2013 week 9  
**DOT/serial:** CX8K  
**E approval:** E13 (Luxembourg)  
**Country of manufacture:** Japan  
**More information:** [www.toyotires.com](http://www.toyotires.com)  
**Price:** €600 (average, incl. installation)

■ THE TOYO grips well on snow, especially when braking or accelerating in a straight line. The tyre has a slightly weaker lateral grip, however, and the studs do not really work on icy roads. Although the Toyo lacks grip, it is calm to drive under icy conditions. It had the weakest grip on wet asphalt, and successful lane changes proved to be especially difficult, as the tyre lost grip very easily. The situation is slightly better on dry surfaces, but its sloppy behaviour is still a problem. The Toyo feels unstable on grooved roads.

### FOR

- Braking grip on snow

### AGAINST

- Characteristics on wet asphalt
- Handling on dry surfaces

**Overall grade: 6.9**

★



### Aurora Winter Route Master UW71

**Type:** Studded tyre  
**Size:** 205/55R16  
**Speed class:** T (190 km/h)  
**Number of studs:** 98  
**Load class:** 91  
**Rotation direction marked:** yes  
**Inner/outer edge marked:** no  
**Manufacturing date:** 2012 week 18  
**DOT/serial:** T7RP 25 A  
**E approval:** E4 (The Netherlands)  
**Country of manufacture:** Korea  
**More information:** [www.auroratires.com](#)  
**Price:** €500 (average, incl. installation)

■ THE AURORA has good braking grip on asphalt. That is the highest compliment that it will receive, however, as the tyre lacks grip under winter conditions. The Aurora is difficult to drive on ice, as the grip may disappear easily and without warning even at low speeds. On snow, the tyre is somewhat calmer, but it still lacks grip and the driving lines tend to widen around the corners. The Aurora had the highest noise level in our test, and it is difficult to recommend this tyre for the Nordic winter.

#### FOR

- Grip on asphalt

#### AGAINST

- Grip on ice and snow
- Noise

**Overall grade:** 6.6



### GT Champiro Ice Pro

**Type:** Retreaded studded tyre  
**Size:** 205/55R16  
**Speed class:** T (190 km/h)  
**Number of studs:** 130  
**Load class:** 94  
**Rotation direction marked:** yes  
**Inner/outer edge marked:** no  
**Manufacturing date:** 2012 week 26  
**DOT/serial:** 5WKD 00A  
**E approval:** E4 (The Netherlands)  
**Country of manufacture:** China  
**More information:** [www.gt-tires.com](#)  
**Price:** €450 (average, incl. installation)

■ THE GT CHAMPIRO was unsuccessful in our test. It had the lowest braking and acceleration grip of all the studded tyres, and handling was especially difficult on snow. The problem is that the grip runs out and sliding starts very sharply. The studs do help on ice, but the GT Champiro was the most difficult to control on snow. The only redeeming feature of the tyre was its good braking grip on dry asphalt. We cannot recommend the GT Champiro for the Finnish winter.

#### FOR

- Grip on wet asphalt

#### AGAINST

- Grip on ice and snow
- Handling on snow

**Overall grade:** 6.3



### Michelin X-Ice XI3

**Type:** Non-studded tyre  
**Size:** 205/55R16  
**Speed class:** H (210 km/h)  
**Load class:** 94  
**Rotation direction marked:** yes  
**Inner/outer edge marked:** no  
**Manufacturing date:** 2012 week 37  
**DOT/serial:** H1WC 033X  
**E approval:** E2 (France)  
**Country of manufacture:** Spain  
**More information:** [www.michelin.com](#)  
**Price:** €750 (average, incl. installation)

■ THE MICHELIN is easy to drive on all surfaces, and it works on both frozen winter roads and asphalt. Ice grip is reasonable but not among the best in the non-studded tyre category; this is especially true for braking, which was the largest downside for the tyre. On snow, the tyre grips brilliantly, and the logical steering and predictability make it a stable tyre to drive. This good behaviour continues on asphalt. Although the tyre does not have the best grip in the test, the calm handling helps under all conditions. The Michelin has low rolling resistance and it is calm and stable on grooved roads.

#### FOR

- Calm handling on all roads
- Directional stability

#### AGAINST

- Braking grip on snow

**Overall grade:** 7.6

★★



### Nokian Hakkapeliitta R2

**Type:** Non-studded tyre  
**Size:** 205/55R16  
**Speed class:** R (170 km/h)  
**Load class:** 94  
**Rotation direction marked:** yes  
**Inner/outer edge marked:** no  
**Manufacturing date:** 2013 week 7  
**DOT/serial:** YLCP  
**E approval:** E17 (Finland)  
**Country of manufacture:** Finland  
**More information:** [www.nokiantyres.com](#)  
**Price:** €800 (average, incl. installation)

■ THE NOKIAN is an excellent non-studded tyre on ice. It has good braking grip, and the tyre steers in a controlled manner when changing lanes on icy and snowy roads; you can even slide it around corners, which is especially difficult for non-studded tyres on slippery ice. On asphalt, the Nokian is quite sloppy to drive, and it has, at most, average braking grip; on dry asphalt, the grip is weak. The tyre behaves calmly, however, and will not surprise you with sudden losses of grip. The Nokian deserves special praise for its silent running and the lowest rolling resistance in our test.

#### FOR

- Grip and handling in winter weather
- Rolling resistance

#### AGAINST

- Characteristics on dry asphalt

**Overall grade:** 7.5

★★



### Bridgestone Blizzak WS70

**Type:** Non-studded tyre  
**Size:** 205/55R16  
**Speed class:** T (190 km/h)  
**Load class:** 94  
**Rotation direction marked:** yes  
**Inner/outer edge marked:** no  
**Manufacturing date:** 2012 week 34  
**DOT/serial:** H4 8K  
**E approval:** E4 (The Netherlands)  
**Country of manufacture:** Japan  
**More information:** [www.bridgestone.com](#)  
**Price:** €650 (average, incl. installation)

■ THE BRIDGESTONE has good grip on ice. It is also easy to drive on icy roads, but tends to lose grip from the front tyres during the quickest steering movements. On snow, the Bridgestone is reliable and stable to drive, and it has sufficient grip. The tyre's biggest weakness is its performance on dry asphalt. Braking distances are long and handling is uneasy, as the tyre tends to lose grip sharply under demanding conditions. The situation is better on dry surfaces, and the Bridgestone is a silent runner.

#### FOR

- Grip on ice and snow
- Noise

#### AGAINST

- Characteristics on wet asphalt

**Overall grade:** 7.2

★



## Pirelli Icecontrol

**Type:** Non-studded tyre  
**Size:** 205/55R16  
**Speed class:** T (190 km/h)  
**Load class:** 94  
**Rotation direction marked:** yes  
**Inner/outer edge marked:** no  
**Manufacturing date:** 2012 week 51  
**DOT/serial:** 51 BK L111  
**E approval:** E3 (Italy)  
**Country of manufacture:** China  
**More information:** [www.pirelli.com](http://www.pirelli.com)  
**Price:** €700 (average, incl. installation)

■ THE PIRELLI grips on ice and snow. It steers precisely, but the tyre is slightly too sharp under quick steering movements and the rear tyres lose grip easily. On asphalt, the Pirelli is a typical, soft non-studded tyre, offering average braking grip and steering slowly during lane changes. The behaviour is calm, however, and the tyre clears even the hardest evasion tests. The Pirelli is a silent tyre.

### FOR

- Grip on ice and snow
- Tyre noise

### AGAINST

- Grip on wet asphalt

**Overall grade: 7.2**



## Continental ContiViking Contact 5

**Type:** Non-studded tyre  
**Size:** 205/55R16  
**Speed class:** T (190 km/h)  
**Load class:** 94  
**Rotation direction marked:** yes  
**Inner/outer edge marked:** no  
**Manufacturing date:** 2012 week 38  
**DOT/serial:** CPOF NVC1  
**E approval:** E4 (The Netherlands)  
**Country of manufacture:** Germany  
**More information:** [www.continental.com](http://www.continental.com)  
**Price:** €800 (average, incl. installation)

■ THE CONTINENTAL is one of the best non-studded tyres on snowy roads, and it is easy and reliable to drive. The tyre also has reasonable grip on ice, but it behaves more uneasily than the best non-studded tyres, and tends to lose grip during sudden steering movements. On wet and dry asphalt it feels soft and sloppy to steer. The Continental is silent, but feels too unstable on grooved roads.

### FOR

- Grip and handling on snow
- Tyre noise

### AGAINST

- Characteristics on wet asphalt

**Overall grade: 7.0**



## Vredestein Nord-Trac 2

**Type:** Non-studded tyre  
**Size:** 205/55R16  
**Speed class:** T (190 km/h)  
**Load class:** 94  
**Rotation direction marked:** yes  
**Inner/outer edge marked:** no  
**Manufacturing date:** 2013 week 5  
**DOT/serial:** DVK8  
**E approval:** E4 (The Netherlands)  
**Country of manufacture:** The Netherlands  
**More information:** [www.vredestein.com](http://www.vredestein.com)  
**Price:** €650 (average, incl. installation)

■ THE VREDESTEIN did not shine in any of the tests. It has average grip on ice, and the tyre does not fare well against the higher ranked competitors on snow. A good steering feel and precise reactions help the driver, but the lack of grip makes the tyre behave uneasily thereby causing the rear tyres to lose grip. The Vredestein is reliable on wet and dry asphalt and it steers reasonably well during lane changes. The braking grip is also good.

### FOR

- Braking grip on wet surfaces

### AGAINST

- Grip on snow
- Sharp behaviour on ice and snow

**Overall grade: 6.8**



## Debica Frigo 2

**Type:** Non-studded tyre  
**Size:** 205/55R16  
**Speed class:** T (190 km/h)  
**Load class:** 91  
**Rotation direction marked:** yes  
**Inner/outer edge marked:** no  
**Manufacturing date:** 2012 week 43  
**DOT/serial:** H30F JELR  
**E approval:** E13 (Luxembourg)  
**Country of manufacture:** Slovenia  
**More information:** -  
**Price:** €450 (average, incl. installation)

■ THE DEBICA has modest grip on ice. The tyre slides constantly and the driving feels uneasy, as the grip is lost even at slow speeds. On snowy roads, the Debica works reasonably well. It can compete in terms of braking distances, and the tyre steers well even in extreme situations. The rear tyres lose grip easily, however. In wet and dry weather, the Debica was one of the best non-studded tyres, and it exhibited reasonably sturdy handling during evasion. The tyre also has low rolling resistance.

### FOR

- Rolling resistance

### AGAINST

- Grip on ice
- Handling on ice

**Overall grade: 6.6**



## Fulda Montero 3

**Type:** Non-studded tyre  
**Size:** 205/55R16  
**Speed class:** T (190 km/h)  
**Load class:** 91  
**Rotation direction marked:** yes  
**Inner/outer edge marked:** no  
**Manufacturing date:** 2012 week 42  
**DOT/serial:** DLOF KV1R  
**E approval:** E13 (Luxembourg)  
**Country of manufacture:** France  
**More information:** [www.fulda.com](http://www.fulda.com)  
**Price:** €500 (average, incl. installation)

■ THE FULDA had the weakest ice grip in the entire test. It simply does not have enough grip. Driving is especially difficult, and lane changes are practically impossible to perform properly. Grip is slightly improved on snow, but the tyre's difficult handling remains a problem. It loses grip suddenly and without warning. On asphalt, the opposite is true; the Fulda feels sturdy like a summer tyre and it has the shortest braking distances of the entire test. The Fulda is also stable on grooved roads.

### FOR

- Grip and handling on asphalt
- Directional stability

### AGAINST

- Winter characteristics

**Overall grade: 6.5**

