

ON YOUR MARKS

Tyre performance is of the utmost importance on roads, but how can drivers and operators get the same confidence on mud and snow, or when there is ice on the surface? John Challen investigates how quality assurance labelling for winter tyres has evolved

Selecting the right tyres for a vehicle or fleet can be a daunting task these days, not least due to the number of products from a growing list of OEMs on the market, but also their suitability for different weather conditions. Historically, when it came to winter tyres, an M+S (mud + snow) marking was one of the potential deal-makers – a label was placed on the side by the manufacturer of the actual rubber, letting customers know it was fit for purpose. There were potential issues with this situation, such as regional variations, a lack of official recognition of the quality and the fact that any benchmark defined by the OEM was only adopted on drive axle tyres.

Fast forward to 2012, when all of that changed with the arrival of UNECE (Economic Commission for Europe of the United Nations) regulation 117. This new standard included testing protocol for the winter tyre marking

known as ‘three-peak mountain with snowflake’ (3PMSF), pictured above, an independent certification of performance in the snow.

Rob Blurton, Michelin senior technical field engineer in the UK and Ireland, explains: “With M+S, the tyre manufacturer decides whether the tyre deserves a symbol.

“With the introduction of regulation 117, the standard applied to all axles. Various countries around the world, rather than relying on M+S, started to look more closely at 3PMSF. As a result, there were requests for steer tyres and trailer tyres to be compliant.” (Michelin’s 3PMSF-compliant X Multi Energy drive regional tyre is shown on p11, at left).

Falken Tyre Europe product planning supervisor Robert Czarnecki says that a tyre wearing both markings confirms that it can be considered a real winter tyre. And he points out that having both will be required by law for winter tyres from October 2024.



THE 3PMSF PROCESS

To earn the 3PMSF badge of honour, tyres must undergo a specific test defined within UNECE Regulation 117, with exact requirements relating to the type of snow, the ambient temperature and the type of vehicle. To pass the test, new tyres are put up against a standard reference test tyre, which they must outperform (from a braking standpoint) by at least 25%.

As the two markings signify performance on different surfaces, there is still a need for both M+S and 3PMSF to exist, but the latter’s importance continues to grow. “M+S is related to what we called ‘enhanced mobility in difficult conditions’, while 3PMSF is a snow test, which means there are M+S tyres that don’t have a 3PMSF rating,” says Blurton.

And Czarnecki chimes in: “There is no redundancy in having both. For example, even an all-weather tyre is able to pass the tyre manufacturer’s M+S certification testing. 3PMSF certification provides the proof that a tyre will perform in heavy snow conditions. It is a step up in performance compared to the levels required for the M+S marking.”





HISTORICAL ISSUES

Within the original guidelines for M+S tyres are specifications for the size of the lugs and blocks of the tyres, these requirements date back nearly 40 years. "The technology has changed in that time, which means that virtually all the tyres on the road could be classed as M+S because of the new technology within them," observes Eric Muller, director of products and innovation for commercial vehicle tyres, Goodyear (its Ultra Grip Max tyre is shown above).

"Many countries enforce 3PMSF on vehicles when driving in winter, because it ensures that the roads are kept free-flowing," he adds. "In Germany, you need them on your vehicle in winter, and if you don't have them, and your actions cause the road to get blocked, then you have to pay for the traffic jam." Muller says the situation is simple for Goodyear because all of the company's tyres carry the 3PMSF badge.

The feeling from the Goodyear man is that, contrary to Falken, and despite continuing to put M+S on the side of the tyres, generalisation of 3PMSF could make M+S obsolete. "If you

consider that there is so much regulation behind every product now, if M+S had a future it would have to be backed up by a test. But, to my knowledge, no such test is on its way."

In addition, he says that the OEM's construction tyre line has such a high mud capability that it almost becomes a hybrid 'M+S with 3PMSF' or similar.

Talking of construction sites - things have changed, just as have the tyres themselves. As Muller puts it, tyres "don't need the same capabilities to work in mud like they did before", partly because construction sites build roads first, so there is less mud for

vehicles to encounter. Also, the pace of construction has increased. "With the concrete pumps that are used, 4,000 tonnes of concrete can be processed in a day - using a 20-tonne truck, that's 200 trucks a day, which means a constant flow of trucks that need to be in and out as quickly as possible," he says, emphasising the need for proper roads to maximise vehicle efficiency.

SOPHISTICATED SNOW TYRES

New technology has helped push the boundaries of 3PMSF-compliant products. "What creates the grip is the mobility of the design, and we include more blades to ensure we get the extra grip in the snow," says Muller. "We try to create this mobility, but at the same time the mobility costs us in rolling resistance. The energy created is the enemy of reducing rolling resistance, but customers want both - so we try to be intelligent with the tyre compound so that we can improve mobility with compounds that also improve rolling resistance.

"We use some advanced blades, 3D printing and, instead of carbon black, we use a silica that is like a sophisticated sand. It has a format like a snowflake, so it has many more places to grip the rest of the compound mix. It is more expensive, but it brings the benefits in rolling resistance."

Falken also relies on compound creation to help meet the requirements of both M+S and 3PMSF, such as in its BI 856 regional drive tyre, pictured left, which carries both markings.

"When Falken develops a winter tyre, its features typically include a softer rubber compound with a higher amount of silica, tread with deep grooves and a special sipe pattern for performance in the snow," says Czarnecki. "Due to these features, the tyre will perform better than the designated reference tyre and so can feature the M+S mark." 

