

# WORKS OF SCIENCE FRICTION

Ferodo's R&D work has paid dividends with an impressive start to the season. Sergio Bonfanti, its general manager, tells **Sara Goodsell** that there's more to come



**ABOVE** The DS3.12 compound was created for GT racing



**I**f the last few weeks are anything to go by, then Ferodo Racing is literally winning.

Not only has it gained podium finishes in GT3 and GT4 with the Corvette C7 GT3-R of Callaway Competition at the ADAC GT Masters and the Mercedes AMG cars at Zandvoort circuit respectively, but now it is onto a winner with TCR: Halder Motorsport's Hondas set the pace at Navarra Circuit in the opening events of TCR Spain's inaugural season.

So, it's no surprise that Sergio Bonfanti, Ferodo Racing's general manager, encouragingly muses that: "things are starting to happen at great speed."

This is partly to do with its big project of the last three years in the brake pad formulation of the DS3.12, a heavy duty circuit compound created for top-level GT racing, but now also the introduction of its new DS4.12 formulation, also for GT racing.

The basic difference between the DS4.12 and the DS3.12 starts at the friction level. "With the DS4.12, the friction starts at a higher level and has a flatter torque curve which means the ABS is not upsetting the car from the very beginning," explains Bonfanti.

The drivers using the DS4.12 on the GT cars enjoy the fact they have to spend less time on the brakes and gain something out of that. The DS3.12, which had a lot of success last year, starts at a lower level but it spikes quicker so that the friction level rises much faster than the DS4.12.

Bonfanti continues: "The flatter torque is on the

**“Higher initial bite to take away 70-80 km per hour in the first second of braking”**

DS4.12 – as soon as the driver is starting the brake application, the brakes are at a certain level of temperature which we believe should be between 350°C and 400°C. While you are keeping your foot on the brake pedal the car decelerates, so the speed is going down, but at the same time the brakes are aiming to transform the energy into heat and therefore the temperature is rising.”

Balancing the friction level, depending on the type of car and the settings of the ABS systems, presents another set of variables.

Bonfanti explains: "The trick is to play with as high a friction level as possible, ►







without having the ABS interfering too much. If the ABS is upsetting the car at the rear, the result is that the car oversteers. If it interferes too much on the front, then the effect is that it understeers and the driver can't take the car out of the braking area with the level of speed he needs in order to be competitive."

### Higher friction

Due to the ABS system, the GT cars typically have to go with higher friction at the front of the car and a lower, flatter friction level at the rear. But Bonfanti says Ferodo is working with some manufacturers to achieve the same friction level across the four wheels, using its popular DS3.12 compound to give the car

more of an advantage.

"We have achieved with some manufacturers that we can use the same friction levels on the rear," he says, "which is quite unusual from the history of GT cars. But with some work on the balance of the brakes we managed to give something extra to some cars by having a higher friction level on the four wheels."

The development of new formulations for brake pads isn't confined to GT racing. Ferodo has also been developing new material compounds for the TCR series.

When it comes to TCR cars, the braking requirements are very different. The majority of them race only for half an hour at a time and have a sequential



**TOP** Three years of painstaking research underpin the success of the DS3.12 product line

**RIGHT** It's been a successful start to the season for Ferodo-supplied teams







**ABOVE** Ferodo's prototype TCR formulation helped the Halder Hondas to a hat-trick of wins in Spain's inaugural TCR event

gearbox but no ABS. The prototype being tested by Ferodo "has a higher initial bite to take away 70/80 km per hour in the first second of braking," says Bonfanti.

The TCR pads will be launched soon. Judging by the success of the prototype compounds, they are likely to prove a popular addition to Ferodo's range.

### Sintered metal

R&D doesn't stop with TCR and GT racing. Ferodo is also currently working on a sintered metal formulation – where the metals are fused together at extremely high temperatures during manufacture, rather than using a resin – for rallying and use in 24-hour races.

Bonfanti says: "We've already had the next results for this formulation, so are fine-tuning it. The good wear characteristics and shear strength offered are good points in favour of this technology, but at the moment

**“Our target is to make sure you don't do any change on the brakes in the full 24 hours”**

they have to be weighed against higher production costs.

"The intention is to use the technology not only for rallying but also for 24-hour races, which we are currently involved in. It's just a case of improving it and improving it again. Our target is to make sure you don't do any change on the brakes in the full 24 hours."

Endurance racing and rallying aren't the only other series Ferodo has its sights set on. The Ferrari Challenge – which uses a carbon ceramic disc – is an area of interest Bonfanti describes as, "intriguing", admitting that the company is watching very closely at the moment.

However, as Ferodo delves into the

brake technologies of tomorrow, there is one commitment it is adamant on making today, around sustainability. It is something Bonfanti says the company thinks about every day and why it is about to implement a reduction on plastic waste by 98% in its after-market motorcycle range.

It is also the reason Bonfanti says Ferodo's staff will continue working from home following the Pandemic. He concludes: "It is the smart working way which is much more effective and more sustainable because if people are working from home, it means less pollution, less waste. I think that is the way to go." It looks like there's another winning formula from Ferodo. **RT**