

Ticona materials for low-emission diesel vehicles

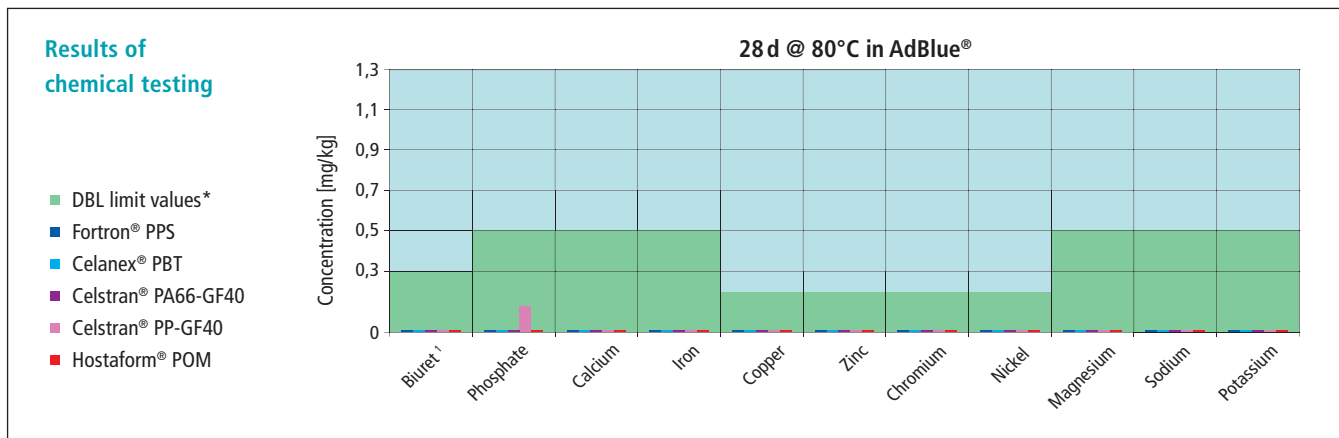
Successful in long-term contact with AdBlue®

- + Fortron® PPS, Celstran® LFT PP and PA, and Hostaform® POM pass storage tests
- + No measurable contamination of the AdBlue®
- + Suitable for direct contact with AdBlue® in pumps, valves, sensors and timing cases



Chemical resistance is one of the most important criteria for polymers in exhaust treatment systems of diesel vehicles that use AdBlue® technology. Direct contact with the urea solution presents special challenges for the materials used. Long-term contact with AdBlue® can wash out the stabilizers or process additives of plastics, leading to contamination of the AdBlue®. The catalyst might be destroyed as a result.

Extensive testing confirms that Fortron® PPS, Celstran® LFT with PP and PA matrix, and Hostaform® POM all offer the requisite purity and can be used in these systems.



Even after storage for 28 days at a temperature of 80 °C, values are maintained within the prescribed limits. Almost all the tested materials are below the detection limit. The AdBlue® retains its required purity and composition according to DIN 70070. * Mercedes-Benz Supply Specification. ¹ Weight-%

Less emissions with AdBlue®

AdBlue® is a highly pure aqueous urea solution used as an NOx reduction agent in SCR technology (selective catalytic reduction). The ammonia generated by the AdBlue® reduces dangerous nitrogen oxides – which contribute to the greenhouse effect – into harmless nitrogen.

Contrary to systems that use NOx storage catalysts, the use of SCR in vehicles eliminates the need to switch to the so-called ‘rich-burn mode’ to regenerate the storage. This can lead to lower diesel consumption.

In modern diesel vehicles, AdBlue® is injected from an extra tank. The quality requirements for AdBlue® are specified in DIN 70070 and the associated test methods are specified in DIN V 70071. Exceeding these limit values can cause irreparable damage to the catalytic system.

Change in the composition of AdBlue® during aging

AdBlue® decomposes slowly into ammonia and carbon dioxide. With increasing temperature, this decomposition occurs at faster and faster rates. Above 70°C, the formation of biuret (urea dimer) also occurs.

Sustainability with Ticona plastics

In this new development, German manufacturers such as Mercedes and Volkswagen are leading the pack. But not all materials can withstand AdBlue® over the long term. Automakers can continue to rely on lightweight plastics that contribute to weight reduction and therefore to reduced fuel consumption, however. The mechanical and chemical properties of selected Ticona plastics were thoroughly tested after storage in AdBlue® at different temperatures (60 and 80°C). The result: Ticona plastics Fortron® PPS, Hostaform® POM and long-fiber-reinforced Celstran® with PP and PA matrix are suitable for applications in direct contact with AdBlue® such as sensors, pumps, valves and timing cases.

Suitable Ticona plastics:

- Fortron® PPS
- Hostaform® POM
- Celstran® LFT PP
- Celstran® LFT PA

Typical applications:

- Sensors
- Pumps
- Valves
- Timing cases



Photo: Thomas Magnete GmbH