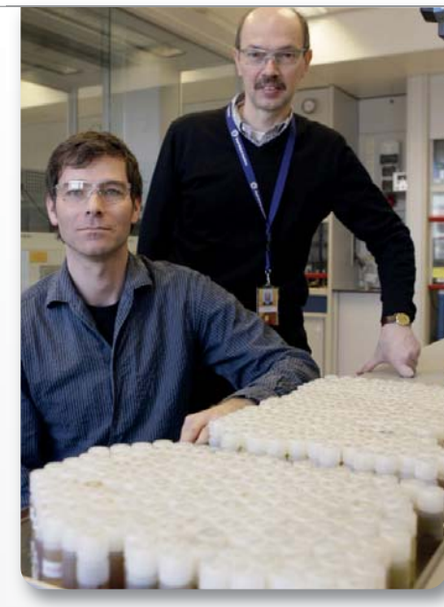
GLYCOLS

Boiling issue for brake fluids



Jos Morsink and Gerwin Ingenbleek from Shell Global Solutions, which conducted the brake fluid study.

Results of a technical study have highlighted the improved performance of higher grade DOT 4 brake fluids in mitigating the impact of increased water content during their service life.

The study, carried out by Shell Global Solutions, showed a significant proportion of vehicles tested as part of the exercise contained fluid in poor condition due to high water content.

The results also showed that DOT 4 grades were consistently able to maintain a higher 'wet' boiling point and so were less likely to see a drop in braking performance.

Over 400 samples of brake fluid were taken from 43 different models of vehicles at 17 franchised dealers and independent workshops in the Netherlands. Around 25% of those tested had sufficient water content to require an imminent change, and in around half of those the fluid needed immediate replacement.

Moisture ingress through seals and hoses reduces the braking efficiency of the fluid and can lead to the potentially dangerous 'vapour lock' condition. "Increased water content reduces the fluid's boiling point, eventually to the extent that under heavy braking the fluid may boil and create vapour in the brake lines," explains Jos Morsink from Shell Global Solutions who led the study.

"This is like having air in the system, making braking less effective and requiring more pedal pressure to slow or stop the vehicle, particularly on a steep incline."

Fresh fluids generally have a 'dry' boiling point of between 250°C and 290°C. Many car makers and brake system suppliers advise that the boiling point should not be allowed to fall below 155° C, while replacement should be considered once it falls below 175°C.

Analysis of the samples taken for the study showed that 27% had a boiling point below 175°C with 13% below 155°C. "DOT 4 fluids had consistently higher boiling points than DOT 3 types at similar levels of water content which validates the position that they offer better service life and safety margin in respect to vapour lock," says Morsink.

Fluid from vehicles serviced at independent workshops had on average the highest water content, with 34% having a boiling point of less than 155°C.

"This is probably a result of the fact that OEMs specify mandatory brake fluid change intervals for service schedules carried out by franchised dealers, which independent garages may not apply," he says.

Andy Golder, Shell Chemicals Global Product Manager for Brake Fluid, says the study provided valuable information on the in-service performance of different types of products. "First and foremost it's an important aspect of vehicle safety and maintenance regimes," he says.

"If our study is representative of the European vehicle fleet it suggests a lot of cars contain brake fluids that are in poor condition," he says.

"As a responsible producer of brake fluid we want to reinforce the message to customers and their end-users about the need for both regular fluid changes and the use of higher quality products."

For more information on Shell DONAX brake fluids please visit:

shell.com/chemicals/donax

Regular fluid changes, using high quality products, helps to maintain effective braking performance.