

DATA BULLETIN

Determining the nitrogen content of diesel exhaust fluid

Diesel exhaust fluid (DEF), commonly referred to as AdBlue in Europe, Australia and New Zealand, and standardized as ISO 22241 is an aqueous urea solution which is used in catalytic converters of diesel engines in order to lower the NO_x concentration in diesel exhaust emissions. For quality control purposes, the nitrogen content can be analyzed using the rapid MAX N exceed.

DEF is an aqueous urea solution made with 32.5% high-purity urea (AUS 32) and 67.5% deionized water. 500 mg of AdBlue were filled into reusable standard stainless steel crucibles without further sample preparation. Two series of 6 samples were analyzed on the rapid MAX N exceed using the standard method "beer" and argon as carrier gas. For daily factor determination an ammonium nitrate solution was used. This solution was prepared by dissolving 40 gram NH_4NO_3 in 100 ml deionized water and has a nitrogen content of 14%.

INSTRUMENT:

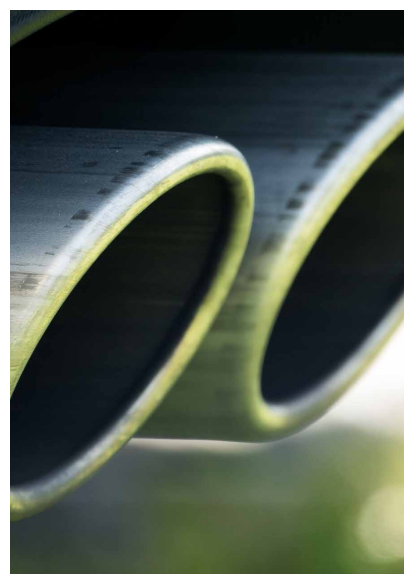
rapid MAX N exceed

DETAILS:

carrier gas: argon

sample: 500 mg AdBlue

SAMPLE	N [%] - DAY 1	N [%] - DAY 2
AdBlue ($N_{\text{theory}} = 15.16\%$)	15.215	15.206
	15.210	15.171
	15.266	15.080
	15.201	15.194
	15.168	15.117
	15.187	15.237
mean nitrogen content	15.208	15.168
SD absolute	0.033	0.059
SD relative	0.218	0.387



The results show that the nitrogen content of AdBlue can be determined with a very high precision and accuracy. The results of the different analyses are identical and in full agreement with the theoretical value within the experimental errors at a 99% confidence interval.

Argon as carrier gas is a cost friendly alternative to helium. Even lower standard deviations are to be expected upon helium usage.

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