

Methanol wettability acc. to Corning glass

of hydrophobic AEROSIL® and AEROXIDE® products

PA 0420 E contains

PA 0422 Methanol wet. CG (30 % MeOH)

PA 0424 Methanol wet. CG (35 % MeOH)

PA 0430 Sediment (CG, 30 Vol.-% MeOH)

PA 0431 Sediment (CG, 35 Vol.-% MeOH)

1. Purpose

Fumed oxides which surfaces have been modified with non-hydrolyzable organic molecules, cannot be wetted by water. However, these hydrophobic colloidal silicas and other fumed oxides can be wetted using a Methanol/Water mixture. The content of Methanol in such mixture - in weight-% - is a measure for the degree of hydrophobicity and uniformity of treatment of the modified fumed oxide.

2. Apparatus and Reagents

Analytical balance (accuracy of reading 0.0001 g)
Centrifugal tube (15 ml), transparent with screw top and volume scale, graduations 0.5 ml and 0.1 ml for first 1ml, e.g. company Falcon
Shaking turbula - Mixer, e.g. company Web, Switzerland
Centrifuge with oscillating sample body, e.g. company Hettich
Piston pipette, 10 ml, e.g. company Nichiro or Eppendorf
Volumetric flask 1l
Brown glass bottles, in case of storage <2 month it is also possible to use plastic bottles
Reagents
Methanol (MeOH), Reagent grade
Demineralsed water

3. Sampling and sample preparation

A good mixing of the sample should be ensured. The preparation of the sample takes place according to ISO 9277.

4. Procedure

Into at least 6 transparent centrifugal tubes (each 15ml) 0.2 g (± 0.005 g) of hydrophobic colloidal silica powder are weighed first. 8.0 ml of a certain methanol/water mixture (of 10 per cent by volume to 90 per cent by volume Methanol) are added to each weighed portion with a piston pipette (10 ml). Using this order allows good control of the sample portion and less potential deviation due to sample sticking to the walls of the centrifuge tubes. The tubes are closed and shaken for 30 seconds in a shaking mixer turbula. The samples are subsequently centrifuged at 2500 min^{-1} for 5 minutes in a laboratory centrifuge.

Calculation

$$\frac{\text{Sediment in Milliliter}}{\text{max Sediment}} \times 100 = \% \text{ Sediment}$$

Evaluation

The sediment volumes are read out, converted to a percentage as per equation **Fehler! Verweisquelle konnte nicht gefunden werden.** and applied on a graph against the Methanol content (per cent in volume).

The sediment volume fully-wetted corresponds to 100% with a 100% wettability.