

Determination of pH-value

of AEROSIL®, AEROPERL® and AEROXIDE® products PA 0200, PA 0210 or ACM-102

1. Purpose and Application

AEROSIL® is a highly dispersed colloidal silica powder which is produced by a "high-temperature hydrolysis process" and thus has a very high grade of purity. The gaseous hydrogen chloride can be separated from the stream of SiO₂. The pH-value is a measure for the degree of deacidification of AEROSIL® and indicates physical-, chemical- and application specific properties of hydrophilic and hydrophobic AEROSIL® products. This method can be applied to hydrophilic and hydrophobic AEROXIDE® products and Special Oxides as well.

2. Apparatus and Reagents

Analytical balance, accurate to +/- 0,01g
Beaker, e.g. plastic 250 -400 ml
Magnetic stirrer
Combined pH electrode, e.g. Mettler-Toledo
pH-meter with automatic temperature correction, e.g. Mettler Seven Multi
Dispensette, 100 ml
distilled or demineralised water, pH > 5.5
Methanol, Reagent Grade
Buffer solution pH 4, pH 7 and higher if required

3. Sampling

Before the sample is taken out of the sample box provided, a good mixing of the sample should be ensured.

4. Description

4.1 Calibration

The pH meter is calibrated with the buffer solutions prior to the pH-measurement according to the valid inspection equipment monitoring. Calibration must be carried out only once if several measurements are taken consecutively according to the manual of the used equipment.

4.2 Procedure

4.2.1 Hydrophilic AEROSIL® and AEROXIDE®

In a beaker, 4,00 g hydrophilic colloidal powder are wetted with 96 g (= 96 ml) water using a dispensette and stirred for 5 minutes with a magnetic stirrer (number of revolutions approx. 400-1000 rpm) whilst the pH electrode is immersed. After switching off the stirrer, the reading for the pH-value is taken after one minute.

4.2.2 Hydrophobic AEROSIL® and AEROXIDE®

In a beaker, 4,00 g hydrophobic colloidal powder are wetted with 48 g (= 61 ml) Methanol, then the formed suspension diluted with 48 g (= 48 ml) water and stirred for 5 minutes with a magnetic stirrer (number of revolutions approx. 600-1000 rpm) whilst the pH electrode is immersed. (Stir speed should be high enough to move the whole suspension.) After switching off the stirrer, the reading for the pH-value is taken after one minute.

5. Reference

This method is in accordance with ISO 787-9.