Characterization methods for ceramic materials

Norlab offers a whole range of testing and analysis instruments for ceramic materials.

The properties of ceramic components are decisively dependent on the quality of the starting powders: in addition to the particle size distribution and shape, the important parameters are the BET surface area and density. Further the type and performance of the molding process is essential: e.g. in the case of a wet process (suspension route), the slurry properties influence the properties of the green body in addition to the real process parameters. The essential quality features here are the stability of the suspension against sedimentation and agglomeration, whereby the zeta potential plays an important role in electrostatically or sterically stabilized systems.

DataPhysics contact angle measurement devices can be used for studying new surface characteristics, surface control before applying the coating as well as for understanding the wetting properties of powders involved in the ceramics making process.



Parameter	Method	Instrument
BET surface area and pore analysis	Gas adsorption	3P micro series 3P meso series 3P sync series 3P surface DX
Compatibility with biofluids	Dynamic contact angle measurement	Dynamic contact angle measuring devices and tensiometers
Density	Gas pycnometry	<u>3P densi 100</u>
Dispersion stability	Analysis of the transmission and backscattering behaviour	MultiScan MS 20 dispersion stability analysis system
New surface characteristics	Optical contact angle measurement	Optical contact angle systems
Particle dispersibility studies	<u>Non-invasive NMR liquid relaxation</u> <u>technology</u>	MagnoMeter XRS
Particle shape	Image analysis	<u>BeVision D2</u> <u>Bettersizer S3 Plus</u>
Particle size, concentrated dispersions	Acoustic spectrometry	<u>DT-1202</u> <u>DT-100</u>
Particle size, nanometer range	Dynamic light scattering	BeNano series
Particle size, powders	Laser diffraction	<u>Bettersizer S3 Plus</u> <u>Bettersizer S3</u> <u>Bettersizer 2600</u> <u>Bettersizer ST</u>
Pore volume and size distribution	Mercury intrusion porosimetry	Contract analysis <u>Please ask for a quote</u>
Solids concentration of suspensions	<u>Non-invasive NMR liquid relaxation</u> <u>technology</u>	MagnoMeter XRS
Surface control before applying the coating	Optical contact angle measurement	Optical contact angle systems

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Parameter	Method	Instrument
Tap density	Tapping volumetry	<u>BeDensi T Series</u>
Water uptake and release	Dynamic vapor sorption (DSV)	<u>3P graviSorb series</u>
Wettability of solid surfaces	Dynamic contact angle measurement	Dynamic contact angle measuring devices and tensiometers
Wetted surface area of suspensions	Non-invasive NMR liquid relaxation technology	MagnoMeter XRS
Zeta potential, concentrated dispersions	Electroacoustic spectrometry	DT-1202 DT-310 DT-300

