

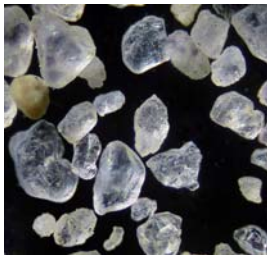
Sand

Size- and Shape measurement with the CAMSIZER

Sand is a universally applicable material and an essential raw material in a vast range of industrial areas. In Germany, 303 million tons of sand and gravel have been used in 2002, i. e. statistically, every inhabitant has used more than 10 kg of sand per day. This is about three times more than crude oil.



What is Sand?

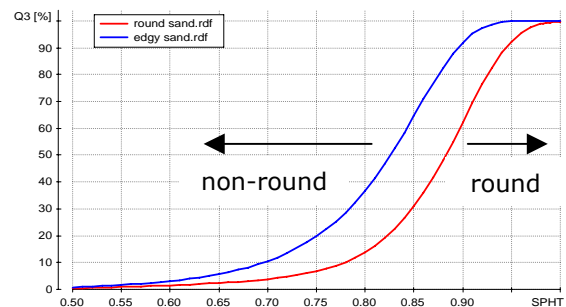


Sand is loose rock material of a grain size between 63 μm and 2 mm. Coarser material than 2 mm is called gravel. Sand and gravel can be composed of different materials, but quartz is the major component. Other minerals are feldspar, carbonates, mica and many more. For some industrial applications, sand has to be as pure as possible.

Quality Assurance

Depending on the application, quality assurance of sand has to focus on various parameters.

Building material: in this area sand and gravel are used as aggregates, e. g. in concrete, mortar and plaster. The particle size of the aggregates affects mechanical behaviour and stability of the end product as well as the outer appearance. Therefore, the analysis of particle size and shape is very important. The CAMSIZER is able to detect the size and roundness of particles reliably. The graph on the right shows a measurement of round/spherical and rather square/non-spherical particles.



Filter sand: Sand is used as filter material in well sinking, drinking water abstraction and water treatment to filter small particles from the liquid. To reach a maximum filter effect, the particle size of the sand has to lie in a certain size range.

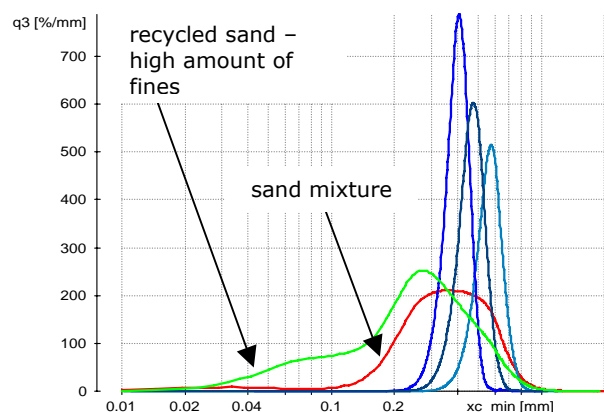
Blasting abrasive: Depending on the grain size, it is applied to different materials

Fine sand: Sandblasting for glass, leather or sculptures

Medium grained: rock material, buildings, bridges and cleaning of concrete surfaces

Coarse particles: metal parts and laminations as well as heavy machinery and large cast parts

Sand molds: Foundries use sand molds

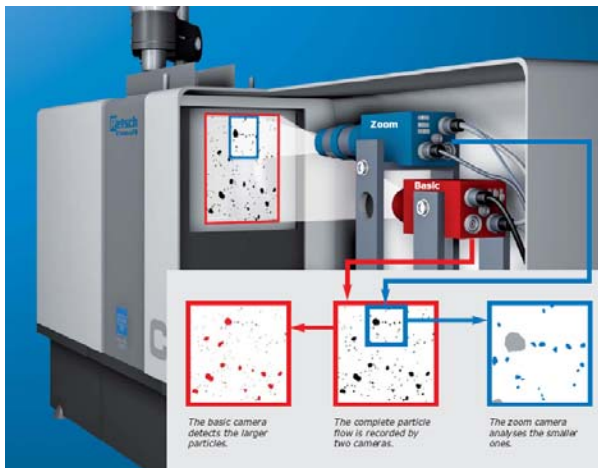


for their casting. After usage the sand is recycled. Recycled sand contains combustion residues and other materials which account for a great proportion of fine particles in the material. This has a negative effect on the quality of the molds and therefore a certain amount of "fresh" sand has to be added to the recycled one. The CAMSIZER is able to determine the optimal mixing ratio (see graph above).

Benefits at a glance

- Particle size and shape measurement
- Reproducible results, high resolution
- Identical results at different sites
- Short measuring times
- Easy to use, maintenance-free
- Suitable for laboratory and production environments
- Automated display of results in clearly arranged measurement protocol

Measuring Principle



The patented measuring setup of the CAMSIZER – two digital cameras as an adaptive measuring unit – improves and optimises particle analysis by digital image processing. Therefore, it is possible to measure a wide range of particles from 30 µm to 30 mm with extreme accuracy, **without having to switch measuring ranges or make adjustments**. The sample is fed in from the feed channel so that all particles fall through the measurement field. During the measurement procedure the two digital cameras (CCD) perform different tasks. The basic camera (CCD-B) records large

particles, the zoom camera (CCD-Z) records the small ones. The contact-free optical measurement is carried out in real time and simultaneously obtains all the required information about particle size and particle shape. A modularly configurable online version of the instrument has been developed to allow automated measurements to be conducted continuously.

For further information please visit our website www.retsch-technology.com or contact us personally:

Retsch Technology GmbH

Rheinische Str. 43
42781 Haan
Germany

Phone: +49 (0) 21 29 / 55 61 – 0
E-Mail: technology@retsch.com

Our International Sales Managers will be happy to help you with any inquiry you may have:

Mr Gert Beckmann

Phone: +49 (0) 21 29 / 55 61 – 196
E-Mail: G.Beckmann@retsch.com

Mr Joerg Westermann

Phone: +49 (0) 21 29 / 55 61 – 173
E-Mail: J.Westermann@retsch.com