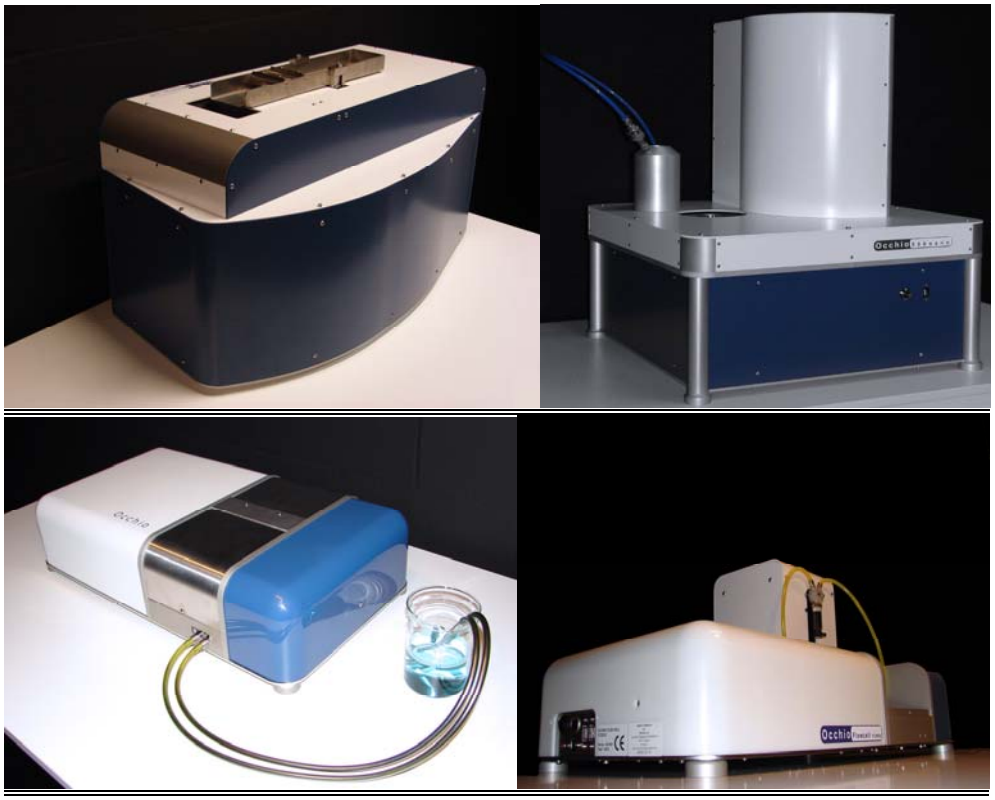
SIZE & SHAPE PARAMETERS DEFINITIONS FOR OCCHIO PRODUCTS



Imaging solutions in particle analysis
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Size parameters	**Description**
Inner diameter	The Inner Diameter is the diameter of the maximum inscribed circle (the maximum circle lying completely inside the particle).
Area diameter	The Area Diameter (also known as the Equivalent Disc Diameter (ED)) is the diameter of a circle having the same area as the particle.
Width	We define the Width and Length as the projection of the particle on the inertia ellipse minor and major axes, respectively. These are Feret diameters in the direction of the inertial ellipse axes.
Length	We define the Width and Length as the projection of the particle on the inertia ellipse minor and major axes, respectively. These are Feret diameters in the direction of the inertial ellipse axes.
Max distance	This is the maximum distance found within the particle
Shape parameters	
Luminance	The luminance is the mean greyscale level of the particle Value '0' corresponds to a black particle, when the value increase the particle is more and more clear.
O-Bluntness	The Bluntness Index is the expression of a "maturity in the abrasion process". It specifies how far we are from a perfectly rounded shape. The Roughness Index as defined here above expresses the amount of rough features but it does not give any idea of the shape of the asperities. In other words, nothing is said about the speed at which rough features would wear off in an abrasion process. This is exactly where the notion of Bluntness comes into play. Bluntness is based on a very accurate measure of local curvature and takes into account the fact that very acute asperities wear off almost instantaneously as compared to blunt ones. This had been observed for a long time by geologists working on natural stream sediments. From their observations and definitions, visual charts (such as Krumbein / Sloss) had been defined and largely diffused among scientists and engineers
O-Roughness (or Satellity in version before CALLISTO 33)	This is the Roughness index : Concavity is a familiar concept when dealing with surfaces. However, from an engineering point of view, it may be more useful to refer to the concept of roughness, because the natural evolution of a rough particle is to wear or to dissolve into a smoother and smaller particle. In that sense the importance of roughness is defined by the amount of material to be removed from the shape before getting a smooth surface. Obviously, this obliges to define a "smooth reference set" wholly inscribed within the shape. The unique approach developed within Callisto is to take as a smooth reference the set of all inscribed discs having a diameter equal or greater than G % (80 %) of the Sieving Diameter.
Elongation	The Elongation is defined as *1-AspectRatio with AspectRatio* being the ratio between the widthand the length of the particle. **Formula:** *El = 1-(*Width/Length)
Circularity	Circularity is defined as the ratio between the equivalent disc perimeter and the particle Perimeter. Values are in the range [0, 1]
Solidity	Solidity is the object area divided by the area enclosed by the convex hull. Intuitively the convex hull is defined to be the border created by an imaginary rubber band wrapped around the object. The convexity lies in the range [0.0, 1.0]. A convex shape (a) has convexity 1.0, while a concave shape (b) has a lower value, close to 0.

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