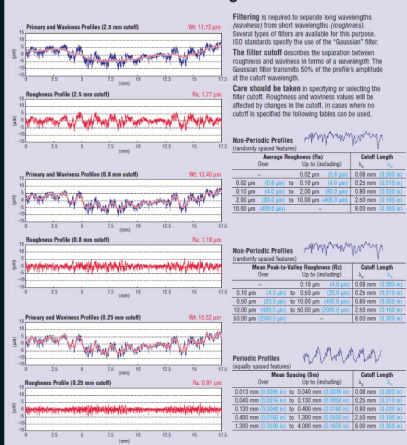


Surface Texture

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Filtering



Parameters

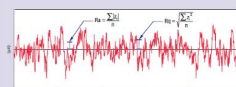
Several parameters have been developed to describe surface texture. These parameters allow for the specification, measurement and control of surfaces through numerical values. Parameters are available for the specification of Roughness (Ra, Waviness (W) and Primary Profile (P)) attributes.

Parameters are designated by an abbreviation whereby the first uppercase letter designates the profile (P, W or R) and the subsequent letters designate the calculation or description. For example, Ra indicates "Roughness Average" whereas Wt indicates "Waviness Total". Some of the most common parameters are described below. Refer to applicable standards or your instrument documentation for additional parameters and further mathematical definitions.

Averaging Parameters (Ra, Rq)

The average roughness, Ra, is the most commonly used parameter. Ra has also been referred to as AA-arithmetic average or CLA-centreline average. Ra is useful for describing changes in the magnitude of roughness. It is not as useful for distinguishing between different "shapes", for example due to different processes.

Closely related to Ra is the "root mean square (RMS)" roughness Rq. Rq describes the "standard deviation" of profile features and is often used in the mathematical modeling of surfaces.

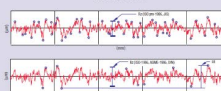


Peak to Valley Parameters*

Rp - highest peak
Rv - deepest valley
Rt - total peak to valley distance
Rz - average peak to valley distance
Ry - maximum peak to valley within any sampling length
Rpm - mean peak height
Rvm - mean valley depth

*Rt or "waviness total" is the most commonly used waviness parameter.

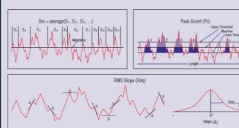
Rz Interpretations



Spacing and Slope Parameters

Spacing and slope parameters describe the horizontal attributes and are a useful complement to the vertical parameters. The average spacing of profile crossings (crossings is designated "mean" or "top" (mean spacing). The number of peaks per unit length can be characterized by "Rf" (peak count).

The rate slope "Rms" or "Rq" (slope Q) reports the standard deviation of all surface slopes. This can be a useful indicator of the "steepness" of surface features.

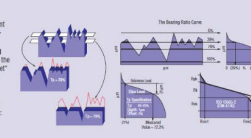


Bearing Ratio Analysis

Bearing ratio (Rp) describes the amount of "material" at a given depth as compared to the length of the profile. Typically bearing ratio is specified and measured at a designated depth from the highest peak. In many cases, an "offset" is provided to avoid erroneous values resulting from a surface peak.

Other parameters are available for describing the "shape" of the bearing ratio curve. These parameters include:

- Rk, Rpk, Rvk, Rmr1 and Rmr2
- Rk, Rpk, Rvk, Rmr1 and Rmr2

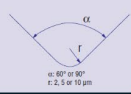


Tip Geometry



The stylus provides the interface between the instrument and the surface that is being measured. The geometry of the stylus tip interacts with the geometry of the surface as the measured profile is generated.

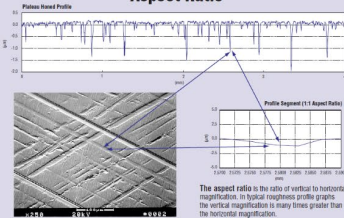
Typical stylus geometries are based on a cone with a spherical radius at the tip.



Surface Texture measurement, parameters and analysis methods are defined in the following national and international standards:

ISO 2274-1995	Instruments	ASME B46.1-1995	Surface Texture	ISO 8060-1998	Terminology
ISO 4328-1987	Methods	ASME N14.36-1996	Coating Indication	ISO 9801-1998	Instruments
ISO 4287-1995	Parameters			ISO 9810-1997	Waviness
ISO 11562-1987	Filtering			ISO 9801-1994	Designation
ISO 13660-1987	Planned Surfaces				

Aspect Ratio



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