

# Sensofar's Confocal Microscope

Measuring surface roughness parameters and sheet texture for deformed and undeformed sheet

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## Working principle and schematic

Resolution of roughness measurements.

1. Light is fed into the illumination pinhole
2. Light is focused by microscope objective (MO)
3. Light is reflected from the surface
4. Light is fed into detector pinhole
5. Light intensity is measured with detector
6. If surface spot in focus: Reflected light intensity high
7. So: light intensity gives information about local height
8. Scanning in z- direction to find local height
9. For 3D surface measurement: Also scanning in x- and y- direction is required.

Software user interface.

Excitation and emission light pathways in a basic confocal microscope.

## Results and discussion

**Mill Finish surface**

**Height histogram**

**Roughness**

**Roughness parameters**

ISO 25178 / Height		
Sa	Arithmetic mean height	0.2588 $\mu\text{m}$
Sku	Kurtosis	3.28
Sp	Maximum peak Height	1.3346 $\mu\text{m}$
Sq	Root Mean Square Height	0.3281 $\mu\text{m}$
Ssk	Skewness	0.3867
Sv	Maximum pit depth	1.1903 $\mu\text{m}$
Sz	Maximum height	2.5149 $\mu\text{m}$

**Electrical discharge texturing (EDT) surface**

**Deformed sheet (on the roll)**

**After form removal**

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