

Cantilever Data	Value	Range*
Resonance Frequency	1200 kHz	800 - 1600 kHz
Force Constant	0.15 N/m	0.06 - 0.3 N/m
Length	7 μm	6 - 8 μm
Mean Width	2 μm	1.5 - 2.5 μm
Thickness	0.08 μm	0.06 - 0.1 μm

NanoWorld® Ultra-Short Cantilevers (USC) for High-Speed AFM (HS-AFM) combine very small AFM cantilevers capable of resonating in the MHz regime and a very sharp and wear resistant AFM tip.

The AFM cantilever of the USC series is rectangular and made of a quartz-like material. A gold layer is deposited on both sides of the AFM cantilever in order to enhance the reflectance of the laser beam, but the AFM tip remains uncoated.

The wear resistant AFM tip has been developed together with nanotools GmbH and sustains high velocity scans over long distances. It is made of High Density Carbon/Diamond Like Carbon (HDC/DLC) material which is hard and wear resistant. It has a height of 2.5 microns and a radius of curvature smaller than 10 nm. The aspect ratio is in the order of 5 : 1 and the tilt compensation is 8° ensuring more symmetric AFM images.

The silicon support chip is of standard dimensions (1.6 mm x 3.4 mm x 0.3 mm). Additionally, it has etched and lowered corners in order to avoid contact between the support chip and the sample when scanning. Moreover it features alignment grooves on the back side of the silicon support chip which ensure replacement of the AFM probes without major adjustment of the laser beam when used in conjunction with the alignment chip.

The type **USC-F1.2-k0.15** is mainly designed for High-Speed AFM applications in liquid but can also be used for applications in air (depending on the application).

Tip shape: Cone Shaped

Coating: Reflective Gold

Gold Reflex Coating

The gold reflex coating consists of a 20 nm thick gold layer deposited on both sides of the AFM cantilevers which enhances the reflectance of the laser beam. Furthermore it prevents light from interfering within the AFM cantilever. As the coating is almost stress-free the bending of the AFM cantilevers due to stress is less than 2 degrees.

The AFM tip remains uncoated.

Order Code	Quantity	Data Sheet
USC-F1.2-k0.15-10	10	Nominal values