

Tensile and Flexural Strengths of Zeiss Products

Tensile strength is the greatest longitudinal stress a substance can bear without tearing apart.

To measure the tensile strength of a product, a sample is taken and stretched with a machine such as the Instron. This machine simply clamps each end of the sample, then, turning it on, it stretches the sample until it breaks. The stress (=the amount of force on the material divided by the cross sectional area) applied to the material to break the sample is the tensile strength. Tensile strength is based on the lens material, not the lens type. The higher the number, the better.

Flexural strength of a material is its ability to resist deformation under load.

Flexural strength measures how far a material can be bent before it starts to break. For materials that do not break, the load at yield, typically measured at 5% deformation/strain of the outer surface, is reported as the flexural strength or the flexural yield. The test beam is under compressive stress at the concave surface and tensile stress at the convex surface. The higher the number, the better.

Material	Tensile Strength		Flexural Strength		Zeiss Products
	[psi]	[MPa]	[psi]	[MPa]	
CR39	5,220	36	not available	not available	<ul style="list-style-type: none"> • Gradal Top 1.5 • Gradal Top 1.5 w/o hard coating • Gradal RD • Zeiss Business • Gradal Brevity 1.5
Polycarbonate	9,500	65.5	13,499	93	<ul style="list-style-type: none"> • Gradal Top 1.59 Polycarbonate
MR 7	15,080	104	23,055	159	<ul style="list-style-type: none"> • Gradal Top 1.67 • Gradal Top 1.67 Transitions Gray • Gradal Brevity 1.67 • Zeiss Experience 1.67
MR 8	14,355	99	20,445	141	<ul style="list-style-type: none"> • Gradal Individual 1.6 • Gradal Short i 1.6 • Gradal Top 1.6

*Both Tensile and Flexural strength are stated in pounds per square inch (psi) and megapascals (MPa).
Values depending on material, not manufacturers or lens style*

Material	Tensile Strength		Flexural Strength		Competitor Products
	[psi]	[MPa]	[psi]	[MPa]	
MR 10	15500	107	24650	170	<ul style="list-style-type: none"> • Seiko 1.67