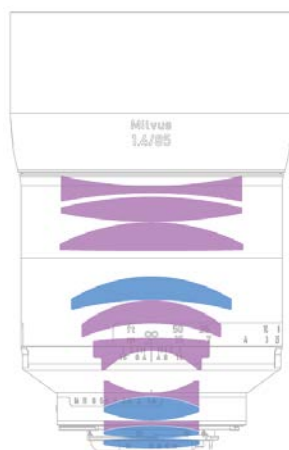





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Technische Daten/Technical Specifications



 Sonderglas / Special glass

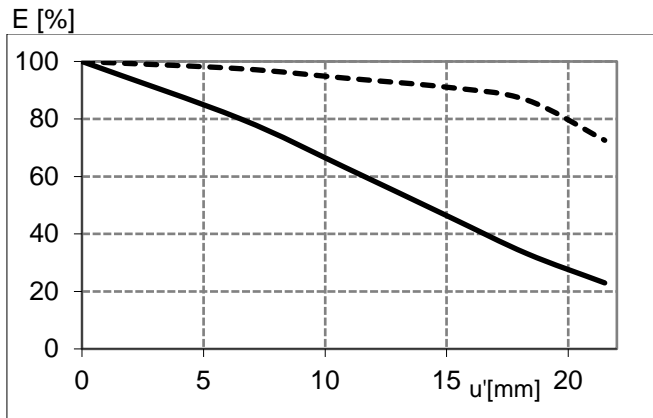
| | |
|---|--|
| Brennweite/Focal length | 85 mm |
| Blendenbereich/Aperture range | f/1.4 – f/16 |
| Linsen / Gruppen/Lens elements / Groups | 11 / 9 |
| Fokussierbereich/Focusing range | 0,80 m (2.62 ft) - ∞ |
| Arbeitsabstand/Free working distance | 0,65 m (2.13 ft) - ∞ |
| Bildwinkel*/Angular field* (diag. / horiz. / vert.) | 29° / 24° / 16° |
| Bildkreisdurchmesser/Diameter of image field | 43 mm (1.69") |
| Anlagemaß/Flange focal distance | ZF.2: 46,50 mm (1.83") ZE: 44,00 mm (1.73") |
| Objektfeld bei Naheinstellung* Coverage at close range (MOD)* | 303 mm x 201 mm (11.93" x 7,91") |
| Abbildungsmaßstab bei Naheinstellung Image ratio at MOD | 1 : 8.3 |
| Filterdurchmesser/Filter thread | M77 x 0.75 |
| Lage der Eintrittspupille (vor der Bildebene) Entrance pupil position (in front of image plane) | 45,9 mm (1.81") |
| Drehwinkel des Fokussierings (inf – MOD) Rotation angle of focusing ring (inf – MOD) | 270 ° |
| Durchmesser max./Diameter max. | ZF.2: 90,0 mm (3.54") ZE: 90,0 mm (3.54") |
| Durchmesser des Fokussierings Diameter of focusing ring | ZF.2: 88,7 mm (3.49") ZE: 88,7 mm (3.49") |
| Länge (ohne Objektivdeckel)/Length (without lens caps) | ZF.2: 110,0 mm (4.33") ZE: 113,0 mm (4.45") |
| Länge (mit Objektivdeckeln)/Length (with lens caps) | ZF.2: 119,0 mm (4.69") ZE: 121,0 mm (4.76") |
| Gewicht/Weight | ZF.2: 1.210 g (42.68 oz) ZE: 1.280 g (45.15 oz) |

* bezugnehmend auf das 24x36mm Format/referring to 24x36 mm format



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Relative Beleuchtungsstärke/Relative Illuminance

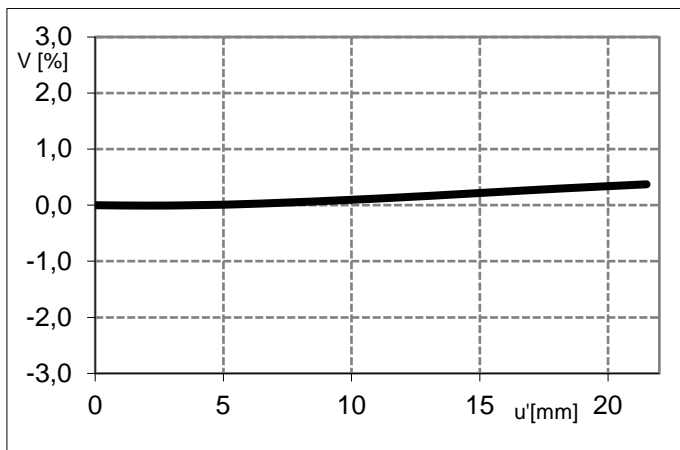


Die relative Beleuchtungsstärke zeigt die Abnahme der Bildhelligkeit von der Mitte des Bildes zu den Ecken. Angabe in Prozent.

The relative illumination shows in percent the decrease in image brightness from the image center to edge.

— Blendenzahl: $k = 1.4 / f\text{-number} = 1.4$
--- Blendenzahl: $k = 4 / f\text{-number} = 4$

Relative Verzeichnung/Relative Distortion



Die Relative Verzeichnung zeigt die Abweichung der aktuellen von der idealen Bildhöhe.

The relative distortion shows in percent the deviation of the actual from the ideal image height.

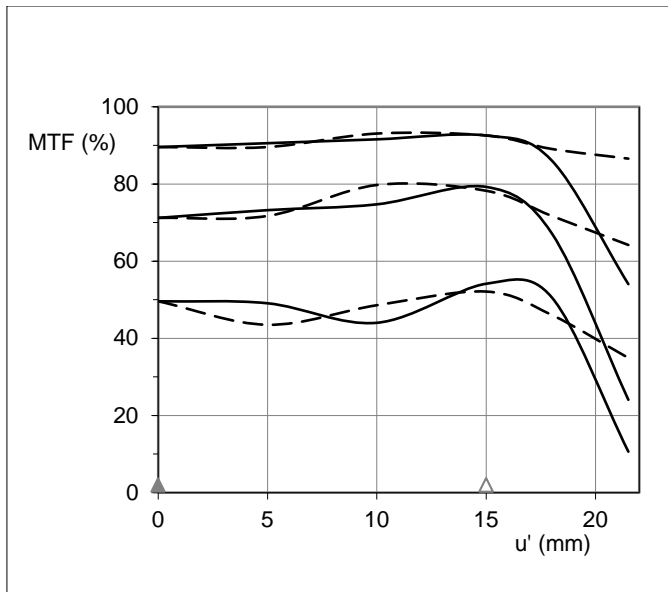
Angaben für unendlich.
Data for infinity.



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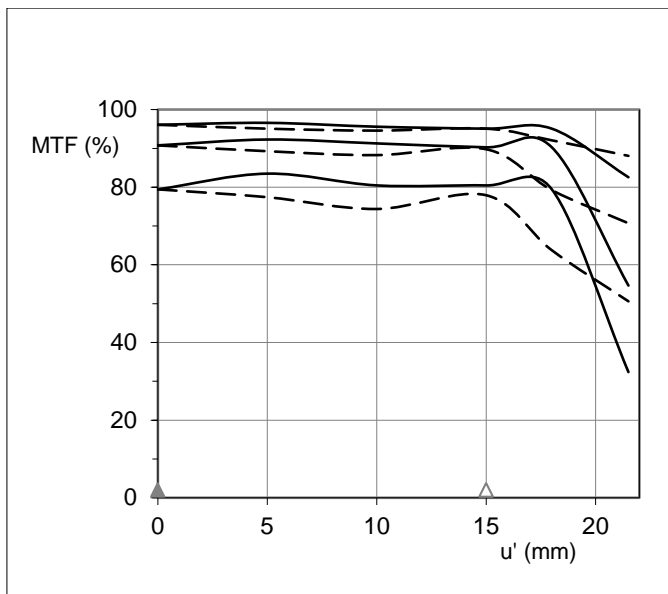
MTF Charts

Unendlich / Infinity



Blendenzahl: $k = 1.4 / f\text{-number} = 1.4$

— Sagittal
... Tangential



Blendenzahl: $k = 4 / f\text{-number} = 4$

— Sagittal
... Tangential

Modulationsübertragung MTF als Funktion der Bildhöhe (u') und Spaltorientierung. Weißes Licht. Ortsfrequenzen $R=10, 20$ und 40 Perioden/mm. // Modulation transfer MTF as a function of the image height (u') and slit orientation. White light. Spatial frequencies $R=10, 20$ and 40 cycles/mm.



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Schärfentiefe/Depth of Field (DOF)*

| Engraved Distance | f/1.4 | | f/2 | | f/2.8 | | f/4 | | f/5.6 | | f/8 | | f/11 | | f/16 | |
|-------------------|-------|------|------|------|-------|------|------|------|-------|------|------|------|------|------|------|------|
| | From | to | From | To | from | To | From | To | From | To | From | To | From | To | from | To |
| Meter | | | | | | | | | | | | | | | | |
| INF | 157 | inf. | 139 | inf. | 92 | inf. | 61 | inf. | 42 | inf. | 29 | inf. | 21 | inf. | 14.2 | inf. |
| 15 m | 13.7 | 16.6 | 13.6 | 17.9 | 12.9 | 19.1 | 12.1 | 21 m | 11.2 | 25 | 9.97 | 35 | 8.81 | 66 | 7.39 | inf. |
| 7 m | 6.71 | 7.31 | 6.68 | 7.56 | 6.53 | 7.76 | 6.32 | 8.09 | 6.05 | 8.58 | 5.70 | 9.43 | 5.31 | 10.8 | 4.77 | 14.2 |
| 4 m | 3.90 | 4.09 | 3.90 | 4.17 | 3.85 | 4.23 | 3.78 | 4.32 | 3.68 | 4.45 | 3.55 | 4.66 | 3.40 | 4.96 | 3.18 | 5.54 |
| 3 m | 2.95 | 3.05 | 2.94 | 3.09 | 2.92 | 3.12 | 2.88 | 3.17 | 2.82 | 3.24 | 2.75 | 3.35 | 2.66 | 3.49 | 2.53 | 3.76 |
| 2.5 m | 2.46 | 2.53 | 2.46 | 2.56 | 2.44 | 2.58 | 2.42 | 2.62 | 2.38 | 2.66 | 2.33 | 2.73 | 2.27 | 2.82 | 2.17 | 2.99 |
| 2 m | 1.97 | 2.02 | 1.98 | 2.04 | 1.97 | 2.05 | 1.95 | 2.07 | 1.93 | 2.10 | 1.89 | 2.14 | 1.85 | 2.19 | 1.79 | 2.29 |
| 1.7 m | 1.68 | 1.71 | 1.68 | 1.73 | 1.68 | 1.74 | 1.66 | 1.75 | 1.65 | 1.77 | 1.62 | 1.80 | 1.60 | 1.83 | 1.55 | 1.90 |
| 1.5 m | 1.48 | 1.51 | 1.49 | 1.52 | 1.48 | 1.53 | 1.47 | 1.54 | 1.46 | 1.55 | 1.44 | 1.57 | 1.42 | 1.60 | 1.39 | 1.65 |
| 1.2 m | 1.19 | 1.21 | 1.19 | 1.21 | 1.19 | 1.22 | 1.18 | 1.22 | 1.18 | 1.23 | 1.17 | 1.24 | 1.15 | 1.26 | 1.13 | 1.28 |
| 1 m | 0.99 | 1.00 | 1.00 | 1.00 | 0.99 | 1.01 | 0.99 | 1.01 | 0.99 | 1.02 | 0.98 | 1.03 | 0.97 | 1.04 | 0.96 | 1.05 |
| 0.9 m | 0.89 | 0.90 | 0.90 | 0.91 | 0.89 | 0.91 | 0.89 | 0.91 | 0.89 | 0.91 | 0.88 | 0.92 | 0.88 | 0.93 | 0.87 | 0.94 |

* Schärfentiefetabelle für das 24x36mm Format, Zerstreuungskreis 0.033mm (D/1500), gerundet auf 0.01m //
Depth-of-field table for sensor format 24x36mm, circle of confusion 0.033mm (D/1500), rounded to 0.01m