Mamiya 645 45mm f/2.8 Lens Review

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Introduction

Mamiya 645 45mm f/2.8 is one of three (four if you consider Mamiya 645 28mm f/4.5 D ASPH AF, which is available only as an auto-focus variant) wide angle primes that the company currently offers for its 645 medium format system. The lens was originally manufactured as a 'C', fully manual focus lens, later replaced by an 'N' variant, which offered improved coating. Currently Mamiya manufactures only the newer, 'N' manual focus variant of the lens along with the AF version. New copies of the manual version are priced at ~US$450, while good quality samples go for US$200 on used markets like eBay. The version of the lens reviewed here is the older, 'C' manual focus variant.

The optical construction of the lens consists of 9 elements in 7 groups. Build quality of the lens is superb, which is typical of the older, 'C' type Mamiya lenses. The barrel is all metal and both aperture as well as focus rings are fully rubberized. The lens is pretty bulky and heavy for a standard prime, measuring 70 x 69mm (2.75 x 2.71in) and weighing 475g (16.8oz). Of course you need to keep in mind that this is a medium format lens and as such it's more or less average in size and weight. The minimum focusing distance is 45cm (1.5ft) and the minimum supported aperture is f/22 (the aperture ring moves in one full f-stop increments). The lens accepts 67mm screw-in type filters.

When testing the lens on Canon EOS system, I relied on a generic Mamiya 645 to Canon adapter. When used on the native medium format body, the lens has the equivalent field of view of a 28mm prime for a 35mm system. When adapted to a full frame camera, the field of view is equivalent to that of a 45mm prime and when used on an APS-C body its field of view is similar to that of a 72mm medium telephoto.

Summary	
Lens Composition	9 elements in 7 groups
Angular Field	~76 degrees (35mm EFL: 28mm)
Minimum Focus	45cm/1.5ft
Focusing Action	MF
f-stop Scale	f/2.8-f/22, manual
Filter Size	67mm
Lens Hood	N/A
Weight	475g/16.8oz
Dimensions	70x69mm/2.75x2.71"
Lens Case	N/A

Field Tests

The lens showed rather mixed performance in the field. Image quality in the center remained quite decent across the apertures on both APS-C as well as FF cameras. However, borders were visibly softer at wider apertures and seemed to retain softness even once stopped down, which is not quite typical for most lenses.

ISO 400, 1/100, f/2.8, 45mm (Canon 5D)

When shot with wide open aperture, the lens produced pretty uniformly lit OOF highlights. There was an occasional harshly lit edge, but the effect was not too distracting. Contrast transitions in the OOF background and foreground areas were not particularly pleasant, retaining a little bit of harshness, but there was no visible double-edging around OOF objects.

Vignetting @ f/2.8 - full frame vs 1.6x crop (200mm)

Mamiya 645 45mm f/2.8 showed minor degree of vignetting with wide open aperture on a full frame body, which pretty much disappears by f/4. On an APS-C body vignetting is practically not visible even with the widest aperture.

Color reproduction was pretty decent, with images carrying adequate amount of contrast across the apertures. But the lens exhibited some color fringing, mostly around borders (check the chair on the left side of the image crop below). There did not seem to be any noticeable axial CA and flare seemed quite well under control.

ISO 100, 1/2000, f/2.8, 45mm (100% crop)

View the embedded image gallery online at:
http://slrlensreview.com/web/reviews/misc/mamiya/mamiya-wide-angle-645/471-mamiya-645-45mm-f28-lens-review#sigProGalleria45c0d66bd3

Lab Tests

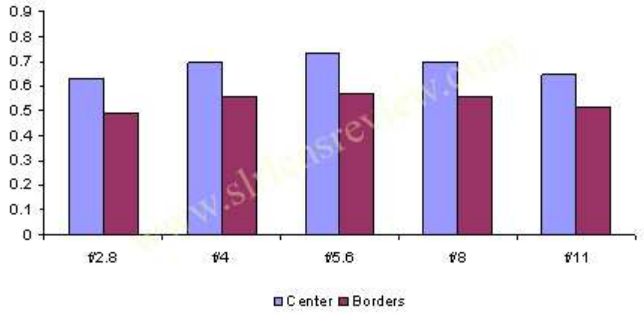
Mamiya 645: At this time I do not have plans to conduct tests with any medium format cameras.

Canon APS-C: Mamiya 645 45mm f/2.8 failed to impress in the lab. Center performance was decent throughout the tested aperture range - not the highest among standard angle primes, but quite good. However, border image quality was pretty average, even on a mediocre side. And unfortunately, it remains mediocre throughout all aperture settings. The overall performance across the frame remains kind of on about the same level, so there's really no peak to speak about. The lens would produce outstanding 11in and decent 19in prints, which is absolutely unimpressive for a standard angle prime. Conclusion? Unimpressive kind of sums it all up for this lens - with this performance, the lens would fall somewhere in the bottom half of all standard angle primes tested so far (I'm referring to primes for 35mm systems here).

Height(in)		f/2.8	f/4	f/5.6	f/8	f/11
4	Center	473	519	549	525	485
	Border	367	420	427	420	385
5	Center	379	415	439	420	388
	Border	294	336	342	336	308
8	Center	237	259	275	262	242
	Border	184	210	214	210	193
11	Center	172	189	200	191	176
	Border	134	153	155	153	140
16	Center	118	130	137	131	121
	Border	92	105	107	105	96
19	Center	100	109	116	110	102
	Border	77	88	90	88	81
24	Center	79	86	92	87	81
	Border	61	70	71	70	64

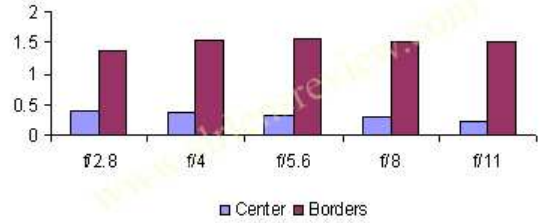
Reference Scale	
150+	Excellent
110+	Good
80+	Fair
60+	Subpar
<60	Poor

MTF50 (Line Width/Inch on the Print) @ 45mm



Normalized raw MTF50 @ 45mm

Chromatic aberration on an APS-C body was sort of a mixed bag. Center CA remained quite manageable and at ~0.4px across the aperture range is would not pose much problem. However, border CA was significantly higher, averaging ~1.4px across the aperture and these levels is considered pretty high for a standard angle prime lens.



Chromatic Aberration (APS-C) @ 45mm

Here are 100% crops taken with an APS-C Canon Digital Rebel XTi comparing image borders at f/2.8 and f/8.

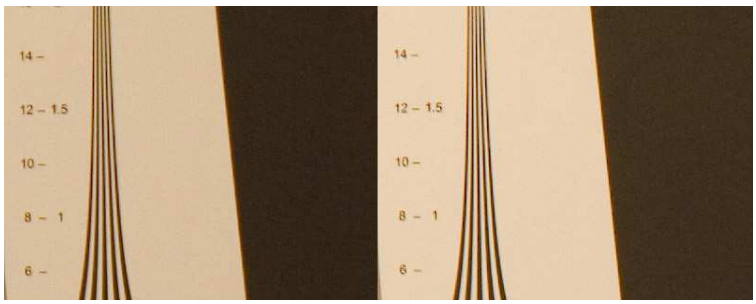
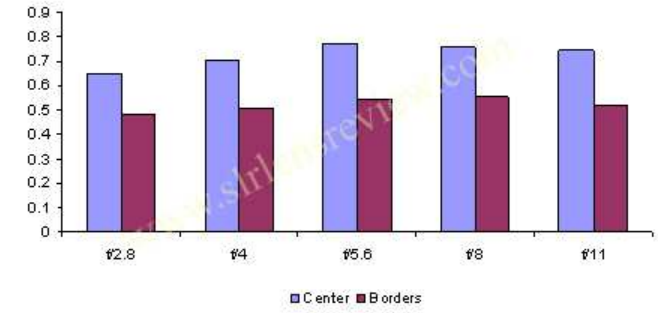


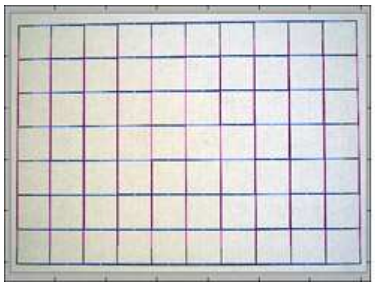
Image borders @ 45mm (100% crop): f/2.8 vs f/8

Canon FF: Performance on a full frame body was not any better. Center image quality remained pretty decent throughout the aperture range (even slightly better around f/5.6-f/8, but just a little bit). And regretfully, border image quality also remained pretty mediocre at all aperture settings, which is not surprising considering unimpressive performance with an APS-C camera. Conclusion? There's not much to add here, since the lens shows absolutely no potential. Considering that on a 35mm FF system the lens is no longer a wide angle, but a standard prime, results are quite unexciting, even disappointing.

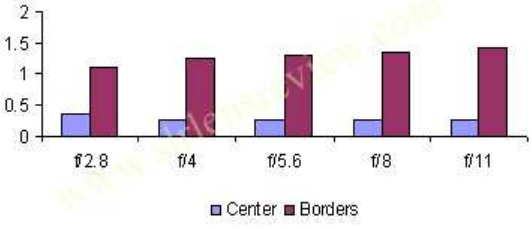


Normalized raw MTF50 @ 45mm

Mamiya 645 45mm f/2.8 showed a moderate level of barrel distortion. At 0.907% distortion might become visible in general photography.


Distortion (FF) @ 45mm

Chromatic aberration on a full frame Canon 5D was pretty low in the center, where it averaged ~0.4px across the aperture range. Border CA was higher, averaging ~1.05px across the aperture range - not disastrous, but not what would you expect from a standard prime lens.



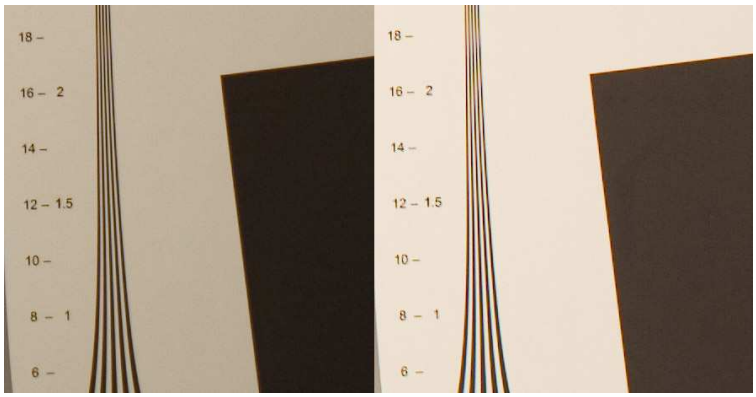


Image borders @ 45mm (100% crop): f/2.8 vs f/8

Alternatives

In addition to the 45mm f/2.8 wide angle, Mamiya used to offer two other wide angle models for its 645 system. These are **Mamiya 645 35mm f/3.5** and **Mamiya 645 55mm f/2.8**, both of which can be found in three variations - older manual C type, newer manual N type and an AF type. If you're trying to find good glass for your Mamiya 645 system, then you should consider Hasselblad's range of wide angle lenses, including 40mm f/4 CF and 50mm f/2.8 F (and their variations), both of which manufactured by Carl Zeiss. Also consider Pentax 645 lenses, including Pentax 645 smc A 35mm f/3.5 and Pentax 645 smc A 45mm f/2.8 (or their auto-focus FA alternatives).

Recommendation

If Mamiya 645 45mm f/2.8 was a lens for 35mm systems, it would have had 'DUD' written all over it (figuratively speaking). The lens shows decent performance in the center, but border quality is just plain inadequate for a prime. Even with stopped down apertures, border quality never reaches good levels. Add to that a pretty pronounced chromatic aberration as well as moderate level of distortion, and you kind of run out of any good reason for adapting it to your 35mm system. After all, there are better standard angle primes available on the market, both native as well as alternative... However, if you plan to use the lens on a native system, or perhaps combine it with a tilt/shift adapter, then the story is completely different. Here you're on your own since the review does not cover tests on a medium format Mamiya cameras or in tilted/shifted modes.