

## Astronomical Glass Plates Made in Germany

For 60 years photographic glass plates for scientific and technical imaging have been produced in Wolfen (Germany), and during the past 30 years or so, glass plates with special emulsions for the astrophotography were also made here.

This tradition is now continuing under the trade mark **ORWO** (i.e. **OR**iginal **WO**lfen).

Based on their high sensitivity and simultaneously favourable Schwarzschild behaviour these plates give excellent results, especially for long-time exposures at the lowest radiation energies. The high signal-to-noise ratio and the medium and high spatial frequency ranges guarantee a maximum of astronomical applications.

The opti-float glass is of the best quality and has an anti-halation coating on the rear side.

### Types available

There are presently four types of plates for astrophotography and two types for production of copies with different spectral sensitivities available:

Plate type	Sensitization	Sensitivity range
<i>Plates for astrophotography</i>		
Astro Plate ZU	unsensitized	230 - 520 nm
Astro Plate ZP	panchromatic	230 - 680 nm
Raman/Astro Plate RO	orthochromatic	230 - 600 nm
Raman/Astro Plate RP	panchromatic	230 - 650 nm
<i>Plates for copying</i>		
Diapositive Plate DU	unsensitized	230 - 500 nm
Topo Plate TO	orthochromatic	230 - 600 nm

Type	Sensitivity <sup>1</sup>	base plus fog density (maximum)	contrast $\gamma$	granularity RMS	resolving power (lines/mm)
ZU	1 nJ/cm <sup>2</sup> at 420 nm	0,30	1,6	27	70
ZP	65 $\mu$ J/cm <sup>2</sup> at 660 nm	0,30	1,5	29	55
RO	4 $\mu$ J/cm <sup>2</sup> at 420 nm	0,18	1,1	23	65
RP	110 $\mu$ J/cm <sup>2</sup> at 600 nm	0,18	1,4	23	65
DU	40 nJ/cm <sup>2</sup> at 420 nm	0,08	1,4	20	85
TO	50 nJ/cm <sup>2</sup> at 420 nm	0,10	2,6	14	125

<sup>1</sup> when exposed to D = 0,6 above base plus fog density.

The ORWO plates are being offered in all usual sizes. One package contains 12 plates, respectively 6 plates for sizes equal to or larger than 24 cm x 24 cm.

### **Development**

The special developer A 71 S of the German producer Calbe Fotochemie GmbH (D-O-3310 Calbe, Germany) is recommended for the Z- and R- plates. Other developers with metole and hydroquinone can also be used. For the D- and T- plates, the contrast of the copies is very much influenced by the selected developer and the developing time.

### **Storage**

The guaranteed period is 12 months. The storage conditions should be cool (max 4°C) and dry (50 to 60% relative humidity).

### **Further information**

Users of astronomical plates who are interested in more information about the mentioned plates, are welcome to contact ORWO at the address indicated below.

*A. Ohnesorge  
Filmfabrik Wolfen GmbH  
D-O-4440 Wolfen  
Germany*

*Tel.: (03494) 63 61 37  
Fax.: (03494) 63 61 72  
Telex: 319 170 film d*