

# Plan-Neofluar objectives

## The line of versatile multi-immersion systems

**ZEISS**

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### Product information

**Plan-Neofluar objectives excel in versatility and are characterized by a number of outstanding features. The line of Plan-Neofluar objectives comprises:**

- Immersion systems for oil, glycerin and water, to be used with or without coverglasses
- High-aperture immersion systems for oil with and without coverglasses, for water with correction for coverglasses, and for water without coverglasses
- Dry systems with correction for coverglasses
- Corresponding versions for phase-contrast microscopy
- Special equipment for differential-interference-contrast microscopy (DIC)

**All systems have these features in common:**

The high brilliance and contrast which are characteristic of fluorite systems. Extraordinarily high numerical aperture for every magnification, resulting in high light gain and superior resolution. A chromatic correction which almost corresponds to that of Apochromat objectives. All Plan-Neofluar objectives are best suited for photomicrography and for the use with wide-field systems.



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Like all Zeiss objectives, Plan-Neofluar objectives have resilient mounts which ensure optimum specimen protection. The immersion systems can be "locked" in topmost position so that droplets of the immersion medium will not wet the specimen when changing between dry and immersion systems on the turret.

### Multi-immersion systems

They are suited for immersions of all refractive indices from standard immersion oil to water, with and without coverglasses.

No correction is necessary for the Plan-Neofluar objective 16/0.5 Imm

The objectives Plan-Neofluar 25/0.8 Imm Korr and 40/0.9 Imm Korr come with correction mounts which are engraved with symbols for:

oil with and without coverglass	<b>Oil</b> #
glycerin with coverglass	<b>Glyc</b> #
glycerin without coverglass	<b>Glyc</b> //
water with coverglass	<b>W</b> #
water without coverglass	<b>W</b> //

The superior correction of the objectives is fully maintained for these media. Besides standard immersion media pure paraffin oil or silicone oil can also be used, which have both very low intrinsic fluorescence. Other media or mixtures may be used as well, provided they do not attack front lens and metal mount.

### Special notes

If with immersion systems as from 16x magnification one changes from higher to lower magnifications, the specimen need not be cleaned.

As high UV-transmission and minimum intrinsic fluorescence are characteristic of Plan-Neofluar objectives, they are particularly suited for investigations with fluorescence excitation. The high numerical apertures mean considerable light gain and, for large object fields, high resolution and remarkable detail recognition.

One and the same objective can be used for immersion media of different refractive indices and for specimens with and without coverglasses.

It must be remembered in this connection that the indicated working distances are valid only if the correction mount is correctly adjusted, and the coverglass thickness  $D = 0.17$  mm.

For refractive indices of the immersion media and coverglass thicknesses other than the indicated nominal values the correction mount must be adjusted either to the interpolated value or visually, to maximum image quality. Whenever the correction mount is turned, re-focusing is necessary.

Working distance a **with** coverglass: distance between objective mount and coverglass surface when focusing to a specimen feature directly beneath the coverglass.

Working distance a **without** coverglass: distance between objective mount and specimen surface.

Immersion systems are engraved "Imm", and the symbols visible in the illustration on page 1 serve to adjust the correction mount.

### Immersion media, coverglass thicknesses, working distances

Objective, Phase-contrast objective	Cat. No.	Immersion medium	Covergl.thick- ness D (mm)	Working distance a (mm)
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#### Universal immersion systems

Plan-Neofluar 16/0.5 Imm	46 15 25	oil	D = 0.17 a = 0.15	D = 0 a = 0.32
16/0.5 Imm Ph 2	46 15 26	glycerin water	D = 0.17 a = 0.14 D = 0.17 a = 0.12	D = 0 a = 0.31 D = 0 a = 0.27
Plan-Neofluar 25/0.8 Imm Korr	46 16 25	oil	D = 0.17 a = 0.13	D = 0 a = 0.30
25/0.8 Imm Korr Ph 2	46 16 26	glycerin water	D = 0.17 a = 0.13 D = 0.17 a = 0.14	D = 0 a = 0.30 D = 0 a = 0.32
Plan-Neofluar 40/0.9 Imm Korr	46 17 25	oil	D = 0.17 a = 0.13	D = 0 a = 0.30
40/0.9 Imm Korr Ph 3	46 17 26	glycerin water	D = 0.17 a = 0.13 D = 0.17 a = 0.13	D = 0 a = 0.30 D = 0 a = 0.30

#### High-power immersion systems

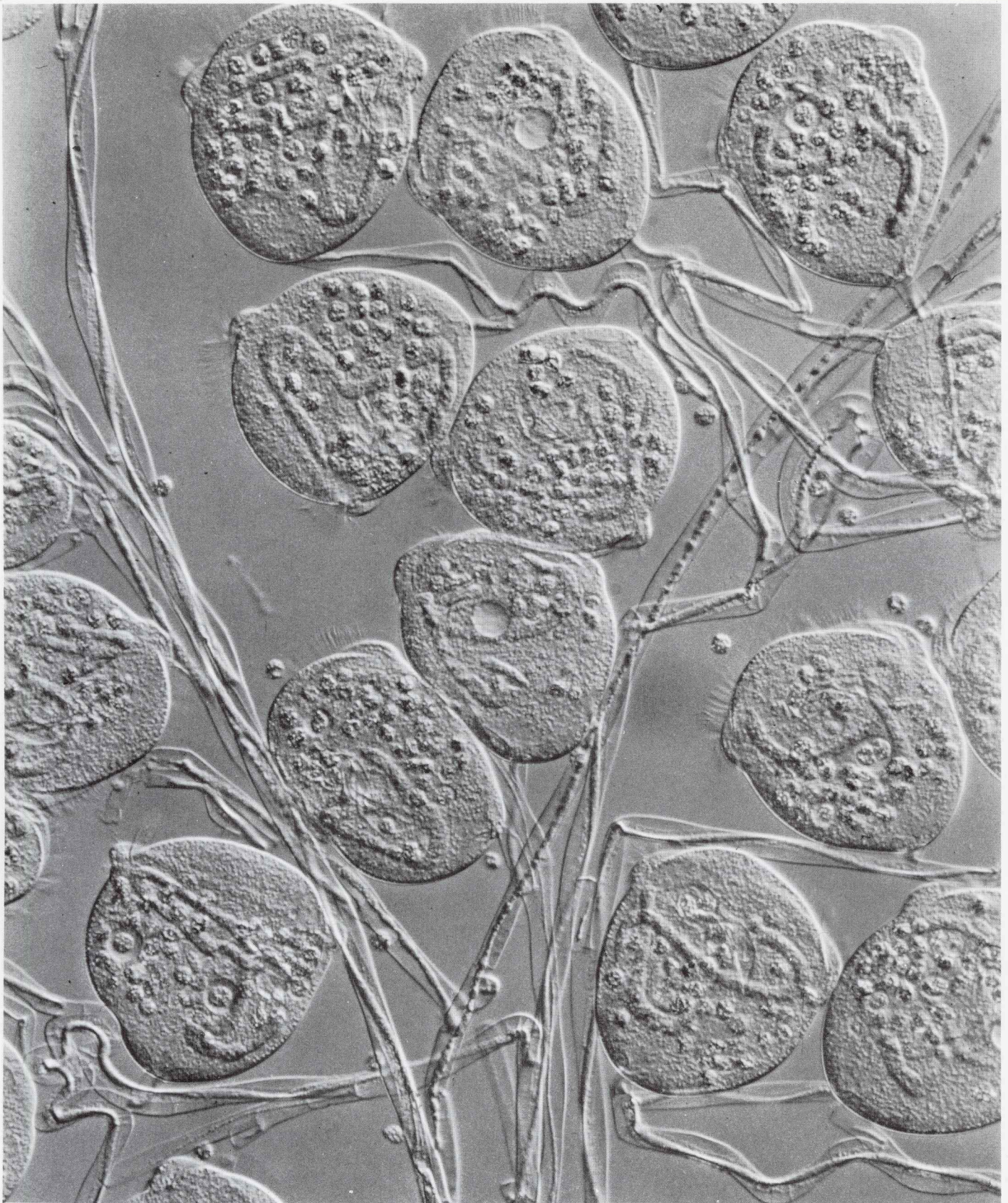
Plan-Neofluar 63/1.20 W Korr (D = 0.12...0.22)	46 18 32	water	D = 0.21 a = 0.15 D = 0.17 a = 0.12 D = 0.12 a = 0.10	
(The thicker the coverglass the longer the working distance)				
Plan-Neofluar 63/1.20 W without covergl. (D = 0)	46 18 25	water	D = 0 a = 0.12	
63/1.20 W without covergl. (D = 0)	46 18 26			
Plan-Neofluar 63/1.25 oil	46 18 36	oil	D = 0.17 a = 0.11	D = 0 a = 0.28
63/1.25 oil Ph 3	46 18 37			

#### High-power dry systems

Plan-Neofluar 63/0.90 Korr (D = 0.11...0.23)	46 08 12	-	D = 0.23 a = 0.06 D = 0.17 a = 0.09	
63/0.90 Korr Ph 3 (D = 0.11...0.23)	46 08 13	-	D = 0.11 a = 0.12	

#### Special DIC equipment

DIC-slider for Plan-Neofluar 16/0.5 Imm	47 45 55			
DIC-slider for Plan-Neofluar 25/0.8 Imm Korr	47 45 60			



Ciliata colony, *Carchesium* spec.  
live specimen  
Standard WL microscope,  
Plan-Neofluar objective 25/0.8 Imm Korr  
DIC, lambda-plate  
Water immersion with coverglass

Kodak Ektachrome 50 color-slide film  
Magnification of the original 63x  
Re-enlarged to approx. 480x  
Specimen and photomicrograph by  
J.F. Bornhardt, Carl Zeiss, Oberkochen