

**CONFIDENTIAL**

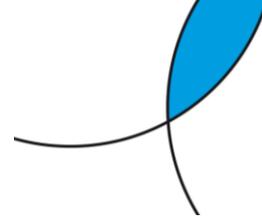
# Optotune TP-12-16

Zemax model

Dietikon, December 2016

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# Overview



Zemax 12 EE - 28343 - \\tsclient\G\11-RnD\16-Optical\01-Privat\05-Mini Projects\161214 - Optotune - Tunable Prism TP-12-16\Zemax\Optotune\_TP-12-16.ZMX

File Editors System Analysis Tools Reports Macros Extensions Window Help

New Ope Sav Sas Upd Gen File Way Lay L3d Ray Opd Foc Spt Mff Fps Enc Opt Harm Tol Gla Len Sys Pre Chk

Lens Data Editor: Config 1/5

Surf. Type	Comment	Radius	Thickness	Glass	Semi-Diameter	Conic	Par 0 (unused)	Decenter X	Decenter Y	Tilt About X	Tilt About Y	Tilt About Z	Order
OBJ	Standard	Infinity	Infinity		0.0000000	0.0000000							
STO	Standard	Infinity	1.0000000		4.0000000	U							
2*	Standard	Infinity	2.0000000	BK7	6.0000000	U							
3*	Standard	Infinity	8.0000000	OL1129_VIS_NIR	6.0000000	U							
4	Coordinat...	Element Tilt	0.0000000		0.0000000			0.0000000	0.0000000	-20.0000000	0.0000000	0.0000000	0
5*	Standard	Infinity	2.0000000	BK7	6.0000000	U							
6*	Standard	Infinity	-2.0000000		6.0000000	U							
7	Coordinat...	Element Tilt	2.0000000		0.0000000			0.0000000	0.0000000	20.0000000	0.0000000	0.0000000	1
8	Standard	Thickness compensator	2.0000000		6.0000000	U							
9	Standard		5.0000000		4.0525655								
IMA	Standard		Infinity		10.0000000	U							

2: 3D Layout

3: Shaded Model

Multi-Configuration Editor

Active	1/5	Config 1*	Config 2	Config 3	Config 4	Config 5
1: PRAM	4/3	-20.0000000	-10.0000000	0.0000000	10.0000000	20.0000000
2: PRAM	4/4	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
3: THIC	3	8.0000000	8.0000000	8.0000000	8.0000000	8.0000000

Tilt about X

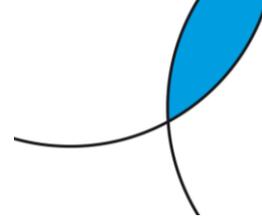
Tilt about Y

Possibility of fluid thickness adjustment in case of tilt pivot point not being located in the center of the 2<sup>nd</sup> glass window's first surface (depending on Gimbal mount)

5 configurations for 5 different tilt angles (covering full range from -20 to +20 degrees)

EFFL: 1e+010    WFNO: 10000    ENPD: 8    TOTR: 20

# Optical fluid



- Dispersion and thermal data of optical fluid OL1129
- Dispersion data was fit with Sellmeier 1 formula

**Class Catalog**

Catalog: OPTOTUNE\_LENSMAT [v]

Glass: OL1224\_VIS  
OL1129\_VIS\_NIR  
OL1114\_VIS  
OL1024\_UV\_VIS\_NIR  
OL0901\_UV\_VIS\_NIR

Rename: OL1129\_VIS\_NIR

Formula: Sellmeier 1

Status: Standard

Nd: 1.382272 Vd: 64.7999

Ignore Thermal Expansion

Exclude Substitution

Meta Material (Negative Index)

Melt Freq: ? Comment:

Rel Cost: ? CR: ? FR: ? SR: ? AR: ? PR: ?

Save Catalog    Insert Glass    Sort By ->    Name: [v]

Save Catalog As    Cut Glass    Glass Report    Catalog Report

Reload Catalog    Copy Glass    Transmission    Compute Nd/Vd

Exit    Paste Glass    Fit Index Data    Fit Melt Data

K1: 8.88417343E-001    D0: -9.7711E-004

L1: 8.49958325E-003    D1: 1.9699E-007

K2: 4.45886098E-004    D2: 5.2700E-010

L2: 1.49250194E-001    E0: -1.0584E-006

K3: 5.08780697E+004    E1: 1.5137E-009

L3: 1.84523836E+007    Ltk: 2.5973E-001

TCE: 0

Temp: 25

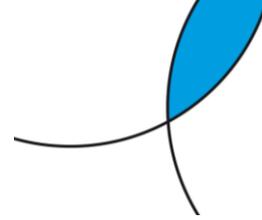
p: 1

dPgF: 0

Minimum Wavelength: 0.40000000

Maximum Wavelength: 1.60000000

# Study of temperature changes



- Use the Zemax menu System\General\Environment to check the effect of changes in the environmental temperature on the refractive index and prism performance.
- Temperature induced fluid volume changes are compensated by the bellows structure outside of the optical path.

