

SYSTEM DESIGN NOTE

NFM-AD-02-2201 NEWFIRM Warm Lens Optical Prescriptions

<u>Prepared by</u>	<u>Date</u>	<u>Approved by</u>	<u>Date</u>	<u>Rev.</u>	<u>Rev. Date</u>
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1. Introduction

This SDN tabulates the NEWFIRM lens prescriptions at 68 deg F = 20 deg C = 293 K.

These are to be used in the specification of optics for procurement, together with SDN 2202. These prescriptions are the result of applying appropriate CTE corrections, integrated over 65 K to 293 K, to the optics prescriptions optimized at 65 K. They do **not** represent a system optimized for imaging performance when warm.

For the moment, they are presented without manufacturing tolerances, while Ming Liang takes one more look at the tolerancing issues using the final prescriptions.

2. Basic Design Requirements

2.1 Table of warm lens prescriptions

All dimensions are in millimeters at 68 F = 20 C = 293 K.

Comment	Curvature	Radius	Thickness	Glass	Semi-Diameter	Conic
LENS 1	1.7064E-03	586.0252	70.0000	SILICA	203.22	-1.768273
	-7.3391E-04	-1362.5591			202.02	
LENS 2	2.5717E-03	388.8528	38.1205	CAF2_293	101.68	
	-3.0743E-03	-325.2791			99.30	
LENS 3	-4.4655E-03	-223.9376	15.0000	SILICA	83.15	
	-1.2887E-03	-775.9636			79.78	
LENS 4	2.0034E-03	499.1481	14.0000	SILICA	58.35	-16.999894
	4.4014E-03	227.2013			60.91	
LENS 5	4.1598E-03	240.3983	50.1586	CAF2_293	74.14	
	-5.4387E-03	-183.8672			77.58	
LENS 6	-6.8194E-03	-146.6403	18.0225	ZNSE_293	77.54	
	-5.8733E-03	-170.2633			83.74	
MIRROR	0.0000E+01	plane	0.0000		115.98	
LENS 7	-3.7715E-03	-265.1450	50.1586	CAF2_293	97.60	
	2.4582E-03	406.8086			95.80	
LENS 8	1.2611E-02	79.2980	16.0000	SILICA	75.35	-1.469949
	-3.3587E-03	-297.7380			81.26	

2.2 Use of these data in procurement specifications

The entries of interest for specifications on procurement drawings are the glass type, surface radius, conic term, and semi-diameter. The radius and conic specify the surface shape. The semi-diameter specifies the minimum clear working aperture within which the optic must meet requirements for shape, surface finish, freedom from scratch/dig, etc.

The thickness (= center thickness) is provided as a check. It must be consistent with the center thickness specified in SDN 2202, Physical Dimensions of Warm Optics Layout. All other physical dimensions, such as edge thickness and finished diameter, shall be obtained from SDN 2202.