

如何將 Zemax 中的 Glass Catalog 轉入 OSLO 中

OSLO 的 Glass Catalog 格式(資料取自 OSLO Help)

1	Glass name (string; padded with spaces to 10 characters)
2	Index at d wavelength
3	Abbé number (d, F, and C wavelengths)
4	Density in gm./cm. ³ (zero if not available)
5	dn/dT at 20° C, e wavelength, in units of 10 ⁻⁶ /°K (zero if not available)
6	Thermal expansion coefficient in units of 10 ⁻⁷ /°K (zero if not available)
7	Bulk transmittance (25 mm. thickness, 400 nm. wavelength) (listed as 1.0 if not available)
8	Cost (relative to BK7 for Schott, relative to BSL7 for Ohara, relative to BSC7 for Hoya, zero if not available)
9	Knoop hardness (zero if not available)
10	Chemical code (integer) - first digits of CR, FR, SR, AR, and PR (zero if not available)
11	Bubble group (string) ("?" if not available)
12	Availability code (one character) ('?' if not available)
13	Dispersion model code (integer): 1 = Laurent series (old Schott) 2 = Sellmeier series (new Schott) 3 = Conrady
14	if (Dispersion model == Laurent)
	a. # coefficients in dispersion model (integer; value = 6)
	b. A ₀
	c. A ₁
	d. A ₂
	e. A ₃
	f. A ₄
	g. A ₅
	else if (Dispersion model == Sellmeier)

	h.	# coefficents in dispersion model (integer; value = 6)
	i.	b_0
	j.	b_1
	k.	b_2
	l.	c_0
	m.	c_1
	n.	c_2
	else if (Dispersion model == Conrady)	
	o.	# coefficients in dispersion model (integer; value = 3)
	p.	a
	q.	b
	r.	c
15	index vs. temperature model code (integer) 0 = none 1 = Sellmeier 2 = single dn/dT value (not currently supported by OSLO)	
16	if (n vs. T model == none)	
	a.	# coefficients in n vs. T model (integer; value = 0)
	else if (n vs. T model == Sellmeier)	
	b.	# coefficients in n vs. T model (integer; value = 6)
	c.	d_0
	d.	d_1
	e.	d_2
	f.	e_0
	g.	e_1
	h.	l_{TK}
	else if (n vs. T model == single dn/dT value)	
	i.	# coefficients in n vs. T model (integer; value = 1)
	j.	dn/dT value
17	transmittance model code (integer) 0 = none	

	1 = 5 mm transmittance
18	# coefficients in transmittance model (integer; number of wavelength – transmittance value pairs for model type 1)
19	Wavelength – 5 mm transmittance value data pairs

以最常見的 Schott[Laurent]公式及 Conrady 公式為例，分別說明其系數：

ACRYLIC 1.491668 55.31 0.00 0.0 60 1.000 0.00 0 0 ? ? 1 6 2.16330492e+000
 1.36580764e-002 2.56700975e-002 -2.80976174e-003 2.84227900e-004 -9.02124935e-006
 1 6 -2.59e-004 0.00e+000 0.00e+000 0.00e+000 0.00e+000 0.00e+000 0 0

Conrady 公式：

QUARTZ 1.458528 68.83 0.00 0.0 0 1.000 0.00 0 0 ? ? 3 3 1.43726772e+000
 1.24916220e-002 8.54691503e-009 0 0 0 0

Zemax 中的 Glass Catalog 格式

(資料為自行推導,有未明確的部分)

以 Lexan-HF1130 為例說明：

NM LEXAN-HF1130 1 0 1.586614 27.011298 0

‘依次為 Glass Name,所使用的公式序號 1 為 Schott,5 為 Conrady

玻璃牌號 0 為不指定、

Nd , Vd ,Unknown(default value is 0)

ED 0.000000 0.000000 1.000000 0.000000 0

‘Extendend Data,依次為 TCE,Unknown(default value is 0),

p [the material density in grams per cubic centimeter],

dPgff[the deviation of the reltive partial dispersion from the normal line]

Unknown(0)

CD 2.418790320E+000 1.991969080E-004 3.536897730E-002 -1.538070930E-003

4.321907180E-004 -2.221693200E-005 0.000000000E+000 0.000000000E+000

‘Coefficients Data

當公式使用 Schott 時，分別記錄為 A0~A5,其余補零(兩個數字)

如果公式為 Conrady 時，則僅有前三個數字，其余補零!

TD 0.000000E+000 0.000000E+000 0.000000E+000 0.000000E+000 0.000000E+000

0.000000E+000 2.000000E+001

‘Thermal Data

依次為 D0,D1,D2,E0,E1,Ltk,Temp(標準溫度)

OD -1.0000 -1.0000 -1.0000 -1.0000 -1.0000 -1.0000

‘Other Data 依次為 Rel Cost,CR,FR,SR,AR,PR,如果沒有即為-1.

LD 3.0000E-001 8.0000E-001

'WavelengthData 依次記錄為材質所適用的最小波長(Min Wave)及最大波長(Max Wave)。

IT 8.50000E-001 9.64000E-001 2.00000E+000

'Internal Transmission Data,These data are Lamda,Transmission and Thickness.

Actually it's not needed to add these data into OSLO catalog.

Algorithm for Catalog Converting

Step 1. Select a AGF file and load zemax catalog into memory!

Step 1.1 Load file into a StringList

Step 1.2 Obtain the properties from the strings.

Step 1.3 Store every glass in Class Glass(Defined by programmer!)

Step 1.4 Iterate it until end of the string.

Step 2. Convert Zemax Glass to OSLO Glass one by one!

Step 3. Write these glasses into a new text file which have a same filename as original Zemax AGF file,but the extension will be changed to GLC.

In step 1.2,I should define a string function that can be used to get all informations from a string what splitted by blanks.

This programe should be written in C++ and be protected by HardWare-Lock.

Struct of Glass:

```
typedef struct
{
    //First Line  -- Fundamental Data
    AnsiString GlassName;
    float Nd,Vd;
    float Density,DnDt;
    int Formula;//1.Schott,5.為 Conrady 目前隻處理這兩種公式的材質
    //Second Line -- Extend Data
    float TCE,p,dPgf;
    //Third Line  -- Coefficients Data
    float A[8];//有 8 個系數,如果沒有值的系數需要設為零
    //Forth Line  -- Thermal Data
    float D0,D1,D2,E0,E1,Ltk,Temp;
    //Fifth Line  -- Other Data
    float RelCost,CR,FR,SR,AR,PR;
    //Sixth Line  -- WaveLength Data
    float MinWave,MaxWave;
```

```
//對於 Internal Transimition 資料不予記錄  
} Glass;
```

This struct is used to store the Glass data what obtain from a AGF file.