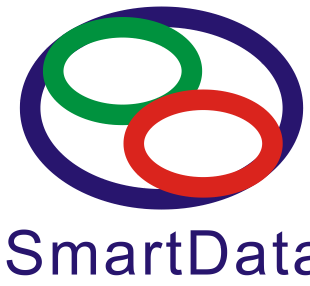
Glass Engineer System 2010 - User help

GE-SYSTEM

User manual

by SmartData Software Co.,LTD.

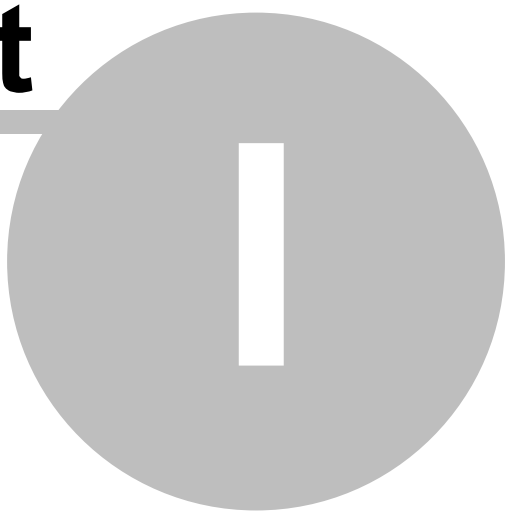
Glass Engineer System is a professional software to help glass engineer and researcher to develop new product and improve the old product.



Glass Engineer System 2010 - User help

Table of Contents

Part

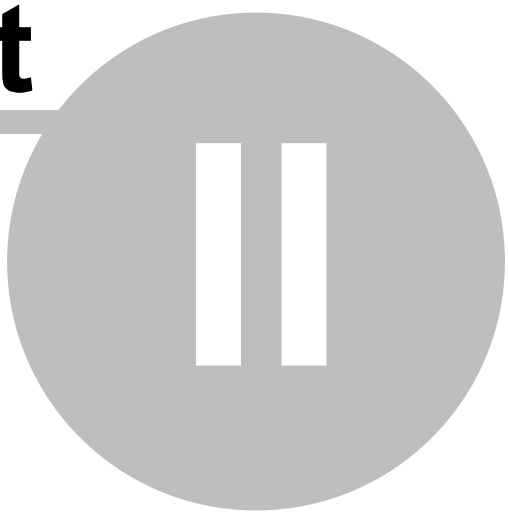


1 Welcome to Glass Engineer System

Glass Engineer System is a professional software to help glass engineer and researcher to develop new product and improve the old product.

In the Enterprise version you can save detail data of your design,and use the viscosity VFT for object to design the components of glass,and predict the laser properties of laser glass.

Part



2 Introduction

The topics in this section provide some basic information about Glass Engineer System, what it is for and what you can do with it.

Glass Engineer System(GE-SYSTEM)

this software to help the glass engineer to fast and nicety to predict the glass properties and optimization design the components of glass.

GE-SYSTEM version 1.0 released in 1994, was the first glass engineer software in PC.

To use the GE-SYSTEM is very simple and fast.

2.1 About Glass Engineer System

Glass Engineer System is a professional software to help glass engineer and researcher to develop new product and improve the old product.

2.2 Why Glass Engineer System

Why Glass Engineer System

Predict the properties of glass , optimization design the components of glass and manage the components of glass.over 150 properties include optical,mechanical,electrical,chemical,thermal,laser and high temperature of melting

Save time
Glass Engineer System helps you to predict the properties and design components of glass quicker.

Save money
Optimization components design helps you huge reduce the test times for melting, and improve the glass product property ,and reduce the melting temperature.

2.2.1 Property

Over 150 properties include optical,mechanical,electrical,chemical,thermal,laser and high temperature of melting

2.2.1.1 Optical

Refractive index at 20 oC(nD)
Mean Dispersion at 20 oC(nF-nC)
Temperature coefficient of Refractive index at ,20-100 oC

Thermal optical coefficient ,20-100 oC
Molar refraction
Stress Optical Coefficient -C1
Stress Optical Coefficient -C2
Nonlinear refractive index
Thermo Optical Constant
Birefringence
Abbe's Number
Reflectance
Transmission
Total Reflectance
Total Transmission
X-Ray mass absorption coefficient(0.06nm)
(D)Refractive index at 20 oC(nD)
(D)Mean Dispersion at 20 oC(nF-nC)
(D)Abbe's Number
(D)Reflectance
(D)Transmission
(D)Total Reflectance
(D)Total Transmission

2.2.1.2 Mechanical

Young's modulus(E) 20 oC
Shear modulus(G),20 oC
Molar volume
Density at 20 oC
Poisson's ratio(μ)
Molecular Weight
Bulk modulus(K) ,20 oC
Mohs hardness
Tensile strength
Compressive strength
Shear modulus of glass 20oC (Fluegel)
Density at room temperature(Fluegel)
Vickers Hardness
(D)Density at 20 oC

2.2.1.3 Thermal

Expansion Coefficient at 20-400 oC
Thermal Conductivity
Linear Thermal Expansion Coefficient 210oC
Thermal conductivity of glass at room temperature

2.2.1.4 Electrical

Dielectric Constant at 20oC 4.5E+8Hz
High temperature electrical resistivity 1000(log10)
High temperature electrical resistivity 1200(log10)
High temperature electrical resistivity 1400(log10)

2.2.1.5 Chemical

Acid Resistance
Hydrolytic durability Water Durability log(0.01M HCl)
Extracted Na2O equivalent
Hydrolytic class

2.2.1.6 Melting

Melt temperature
Refine temperature
Surface tension 900
Surface tension 1200
Surface tension 1300
Surface tension 1400
Surface tension 1400 oC (Kucuk)
Liquidus Temperature
Water solubility silicate glass melts 1200oC, 1 atm H2O pressure
Density of silicate glass melts 1000
Density of silicate glass melts 1200
Density of silicate glass melts 1400
(method A)
Working Range Index (WRI in oC)
Relative Machine Speed (RMS)
Devitrification Index (DI in oC)
Gob Temperature (G in oC)
VFT constants(method A):
A
B
T0
(method B)
(F)Working Range Index (WRI in oC)
(F)Relative Machine Speed (RMS)
(F)Devitrification Index (DI in oC)
(F)Gob Temperature (G in oC)
A(F)
B(F)
T0(F)

Fix Temperature point for viscosity:

Viscosity lg(n)
1
1.5
1.7
2

2.5
3
4
5
6
7
7.477
7.6
8.176
9
10
11
12
12.5
13
13.3
14
14.5
14.6

Viscosity for fix temperature point:

Temperature
100
200
300
400
500
600
700
800
900
1000
1100
1150
1200
1250
1300

1350
1400
1450
1500
1550
1600
1650
1700
1750
1800
1900
2000
2200
2500

2.2.1.7 Laser

Here are the Laser properties of Silicate and Fluorin-Phosphorus glass:

Silicate:
σ
τr
τ
∆λeff
Density
Refractive index (nd)
Abbe's Number
Nonlinear refractive index (n2)

Fluorin-Phosphorus:
Refractive index(nD)
∆λ
∆λeff
σ
τ

2.2.2 Glass System

the glass system include :
Li2O-SiO2
Na2O-SiO2
K2O-SiO2
Rb2O(Ce2O)-SiO2
R2O-RmOn-SiO2
16R2O.yB2O3.xAl2O3.(84-x-y)SiO2
(32-y)R2O.yB2O3.xAl2O3.(68-x-y)SiO2
(20-y)Na2O.yB2O3.xAl2O3.(80-x-y)SiO2

12R2O.18RO.70SiO2
12R2O.18RO.10Al2O3.60SiO2
12R2O.18RO.10B2O3.60SiO2
12R2O.18RO.10B2O3. 10Al2O3.50SiO2
Na2O-Ga2O3-SiO2
Na2O-BaO-SiO2
Na2O-RO-SiO2
RO-P2O5
RO-BaO-P2O5
BaO-B2O3-Al2O3-P2O5
Li2O-CaO-Al2O3-SiO2
Na2O-(K2O)-RmOn-SiO2
Li2O-Al2O3-SiO2
Na2O-TiO2-SiO2
Al2O3-MgO-RmOn-SiO2
Na2O-SiO2-RO(R2O3)
SrO-K2O-SiO2
B2O3-R2O
Na2O(ZnO)-P2O5
RO-Al2O3-P2O5
SiO2-Al2O3-PbO-RO-R2O-(B2O3)
SiO2-Al2O3-PbO-B2O3-RO-R2O
SiO2-Al2O3-K2O-Na2O-CaO
SiO2-Al2O3-B2O3-PbO-R2O-RO
SiO2-Al2O3-RO-R2O-B2O3(R2O>15wt%)
LiF-RF2-Al(PO3)3
BeF2-CaF2-AlF3-RF
RF2-AlF3-Al(PO3)3
BeF2-RF2-AlF3-LaF3-ThF4
RF-RF2-AlF3-Al(PO3)3(NaPO3)
LiF-NaF-Al(PO3)3
AlF3-RF2-NaF-Ba(PO3)2
KF-RF2-BeF2-AlF3
RF-RF2-AlF3- NaPO3
RF-RF2-AlF3-R(PO3)n
RF-RF2-AlF3- Al(PO3)3
BeF2-AlF3-RF-R2F
Al(PO3)3-RF
AlF3-RF2-Ba(PO3)2

2.2.3 Components

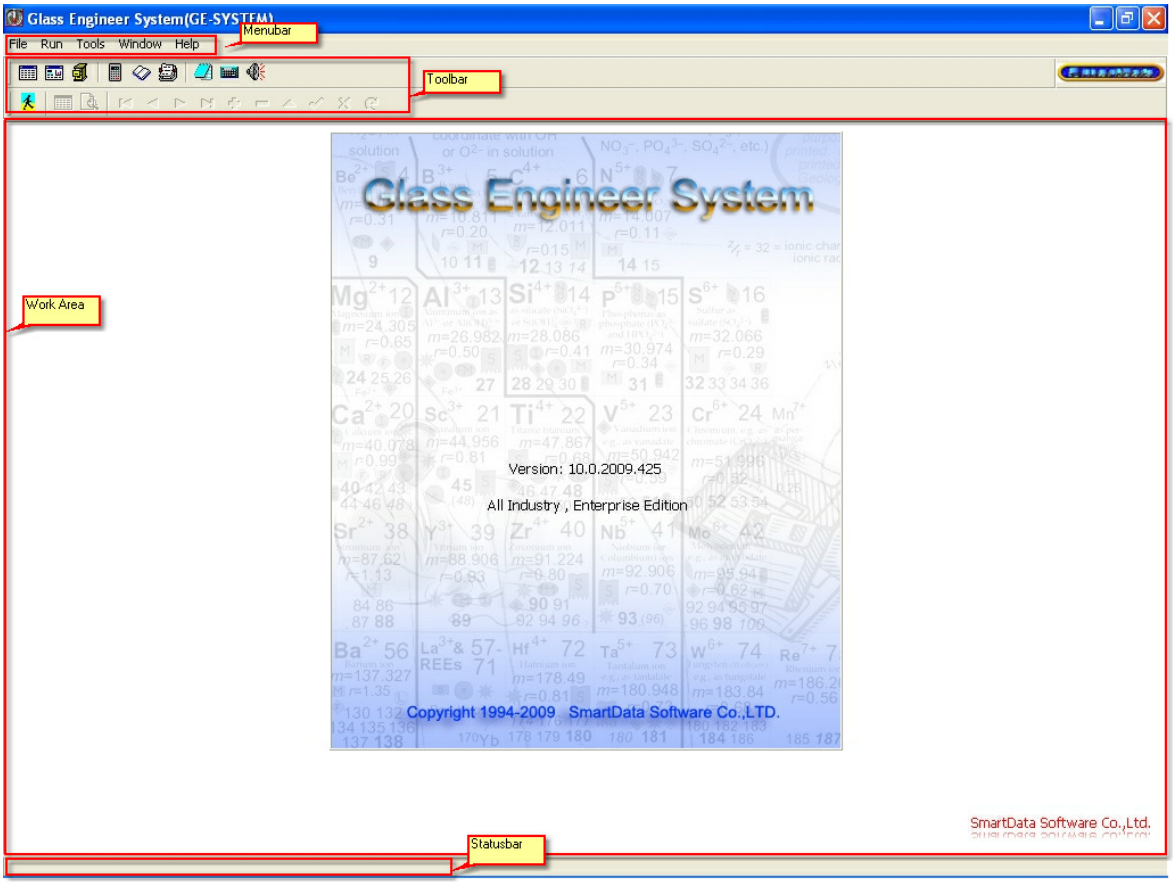
The listed below components to be calculate in the glass:
Tl2O,As2O3,Sb2O3,Nd2O3,Sm2O3,Gd2O3,Dy2O3,Er2O3,Yb2O3,Lu2O3,
Pr6O11,CeO2,SnO2,ZrO2,HfO2,ThO2,Nb2O5,Ta2O5,WO3,MoO3, MnO,Fe2O3,CoO,NiO,CuO,
Na2SiF6,K2SiF6,MgF2,CaF2,SrF2, BaF2,CdF2,PbF2,AlF3,YF3,LaF3,NdF3,ZrF4,ThF4,Al(PO3)3, Ba(PO3)
2,NaPO3,LiPO3,Li2O,Na2O,K2O,Rb2O,Cs2O,LiF,NaF,
KF,RbF,BeO,MgO,CaO,SrO,BaO,Y2O3,In2O3,La2O3,Bi2O3,ZnO,Al2O3,Ga2O3,TiO2,CdO,PbO,B2O3,
SiO2,GeO2,TeO2,P2O5,BeF2,
SO3,F,Cl,UO2,Cr2O3,Ag2O,Bi2O3,Br,CoO,I,Pr2O3,,ReO2,RhO2,RuO2,Se,Sm2O3

2.3 For Upgraders from Glass Engineer System 5

For the GE-SYSTEM Version 5 and ago,we can provide the upgrader utility to convert data to the current version.

2.4 The User Interface

The Glass Engineer System window is divided into three main areas: The Menubar,the Toolbar, and the Work area.



2.4.1 Menubar

The Menubar

Glass Engineer System's functions are accessed primarily through the Menubar Toolbar .

2.4.2 Toolbars

In this area, there are many button ,press these button to execute the function.

2.4.3 Work Area

In this area,many function's interface be showed.

2.4.4 Statusbar

In the statusbar,GE-SYSTEM display the operation message in it.

2.4.5 keyboard Shortcuts

Keyboard shortcuts:

In GE-SYSTEM, many functions are already configured with keyboard shortcuts,

Shortcut	Function
F1	online help
F2	molecular weight
F3	Lightweight
F5	Property calculator
F6	Optimize Design
F7	Glass Components
Ctrl+X	Exit the GE-SYSTEM
Esc	Exit the function
Ctrl+I	Initlize the Design Object
Ctrl+Alt+N	lanch windows Notepad.exe
Ctrl+Alt+C	lanch windows calc.exe
Ctrl+E	Execute
Ctrl+P	Print Preview
Ctrl+C	Copy to clipboard
Ctrl+S	Save to ...
Ctrl+A	About Glass Engineer System

2.4.6 Getting help

There are a number of different sources of help in Glass Engineer System. In addition to this help file you can also access tutorials, and SmartData Software support.

To get started, your main source of information should be this help file. We have designed it to provide all the information you will need for using and learning Glass Engineer System.

Before contacting support, please make sure that you really can't find the information you need here or on the user forum. Thanks!

Displaying the help

· The quickest way to display the help is to press F1.

Contacting SmartData Software support

· Direct email support is available from the SmartData Software team at support@glassengineersystem.com.

Getting a printed user manual

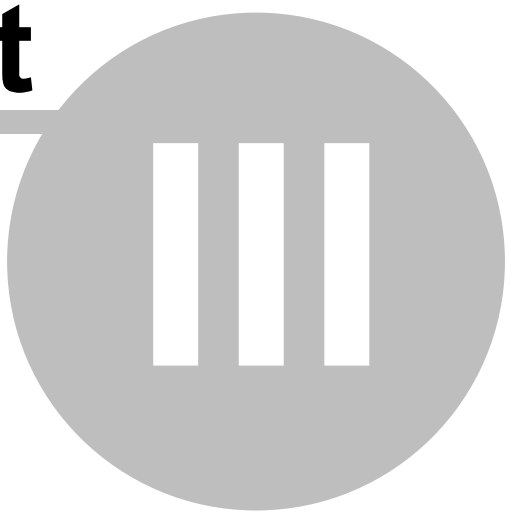
You can download a formatted PDF version of the entire documentation designed for printing from our download page at:

http://www.glassengineersystem.com/wp-content/uploads/GE-System-2010-User-Manual.pdf

2.4.7 How to buy Glass Engineer System

You can buy Glass Engineer System directly online worldwide with all major credit cards. As soon as your transaction is completed you will be able to get the software package by express .
Direct order link and SmartData Software homepage:
Order link:
http://www.glassengineersystem.com/order-online
SmartData Software homepage:
http://www.glassengineersystem.com/

Part



3 Quick Start Tutorials

For first to use software, please run the demo to help you to get the base knowledge.

3.1 Use Demos

Open the install directory to run geswindemo.exe to learn how to use this software.

Part IV

4 Basic Working Procedure

From application degree and industry the software divide the for the different release,the count of the properties also are different.

4.1 Calculate molecular weight

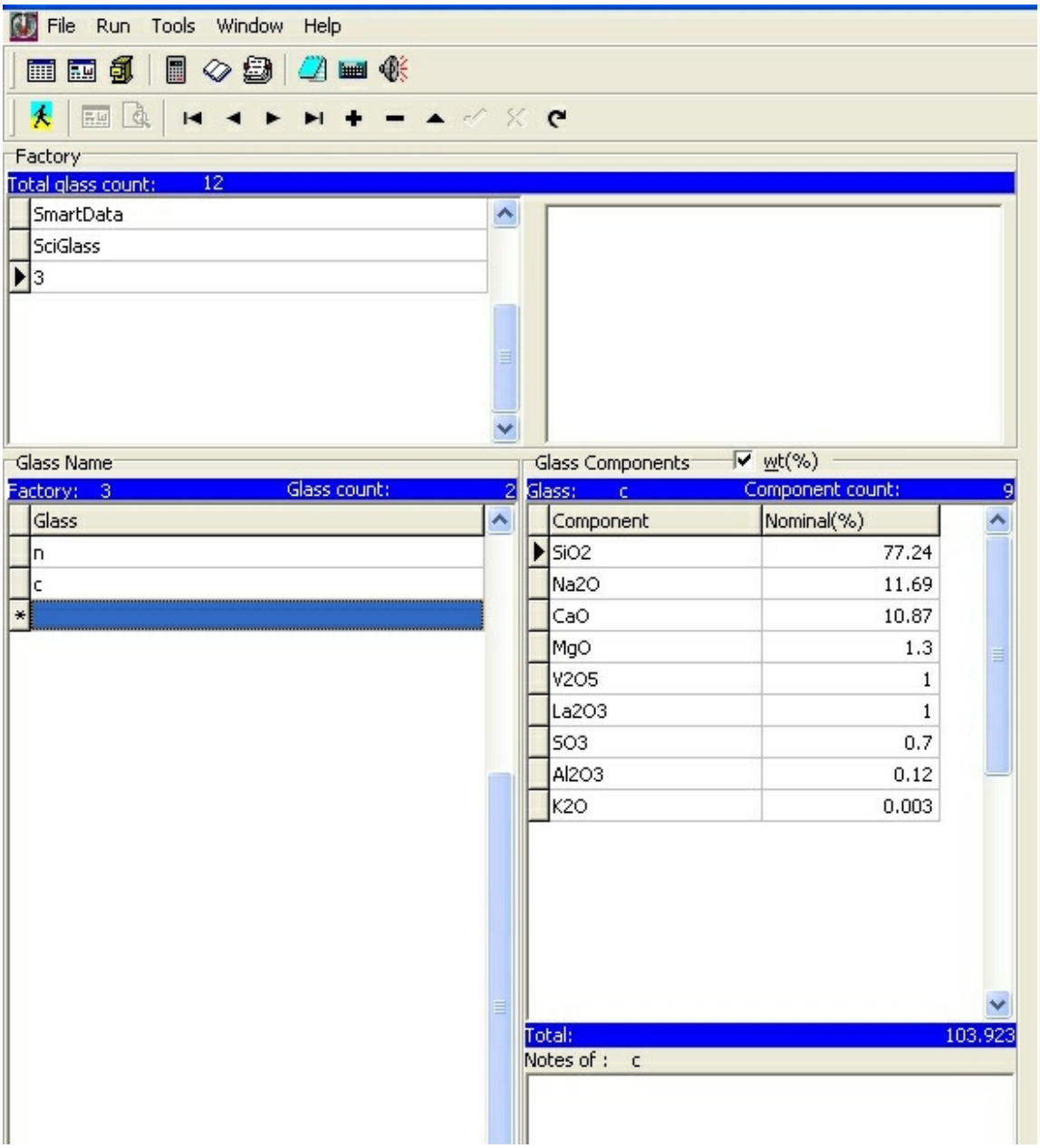
Though input molecular formula to get the molecular weight.

4.2 Light weight process calculator

To calculate the volume /weight ratio of container glass

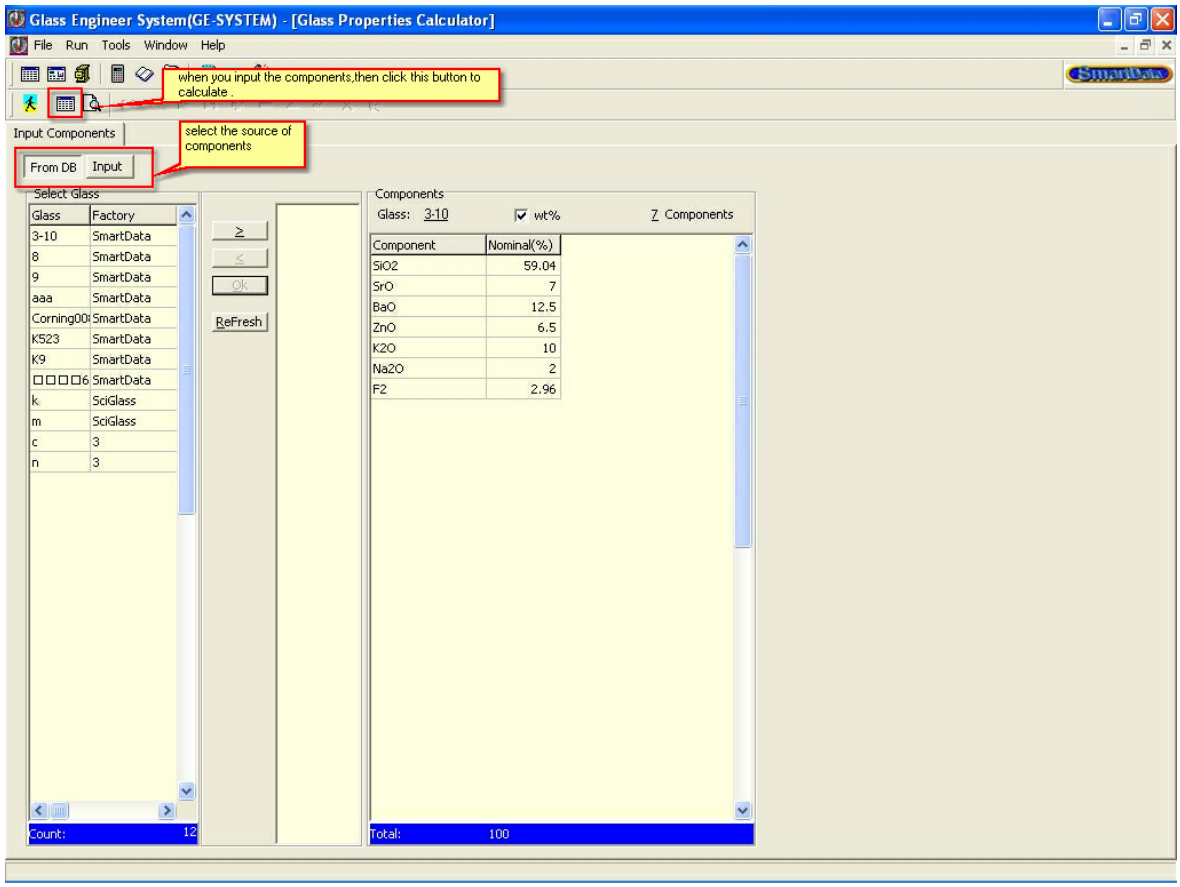
4.3 Maintenance Component data

The component data are three parts:Factory,Glass and Components,the relationship of them are:Factory have one or more Glass,and the Glass have one or more components,the components has two type percent:mol% and wt%.
if there are components int the database,you can directly select them to predict the glass properties, else you need input the components in the "Property calculator" interface "Input".

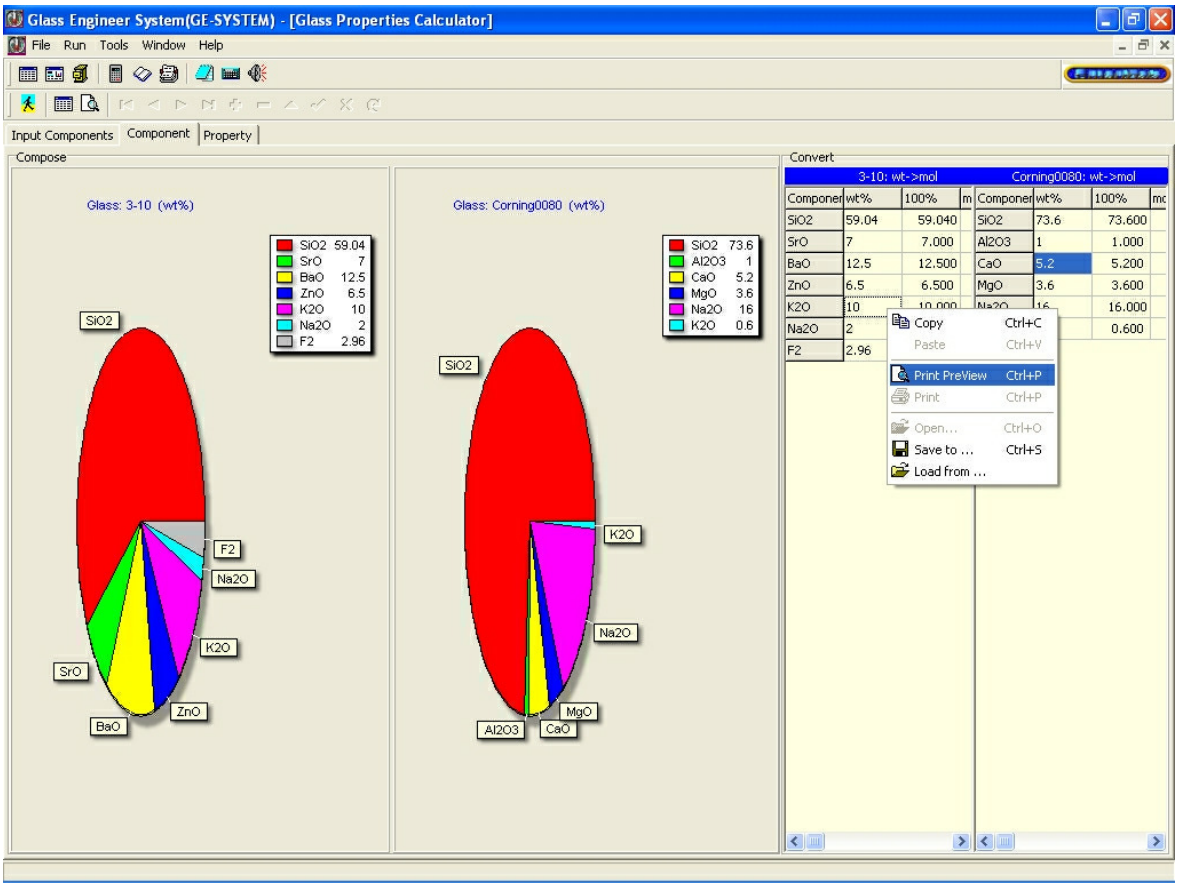


4.4 Property calculate

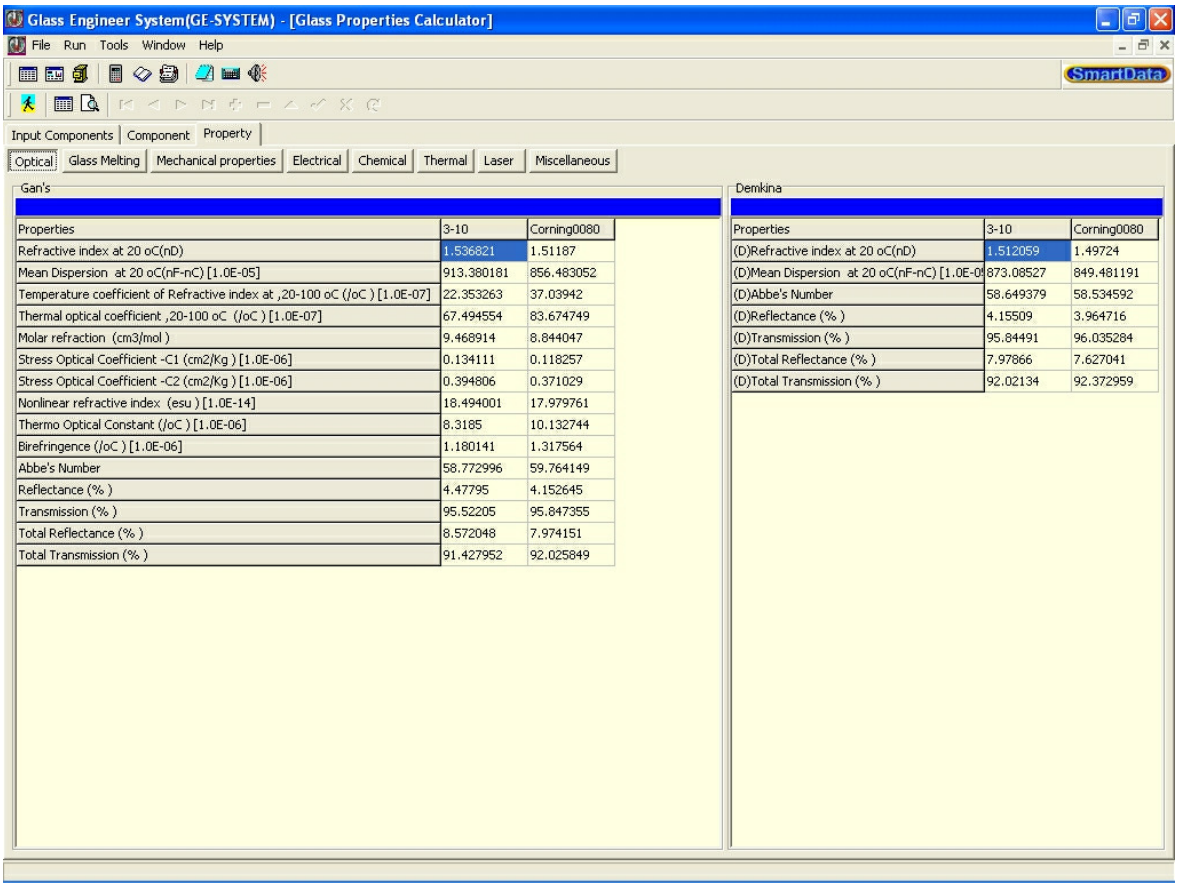
In this part ,you can learn to predict the properties of glass.
only need you to input the components of glass,all another we do them for you.



after you calculate the properties,we show the components and properties:



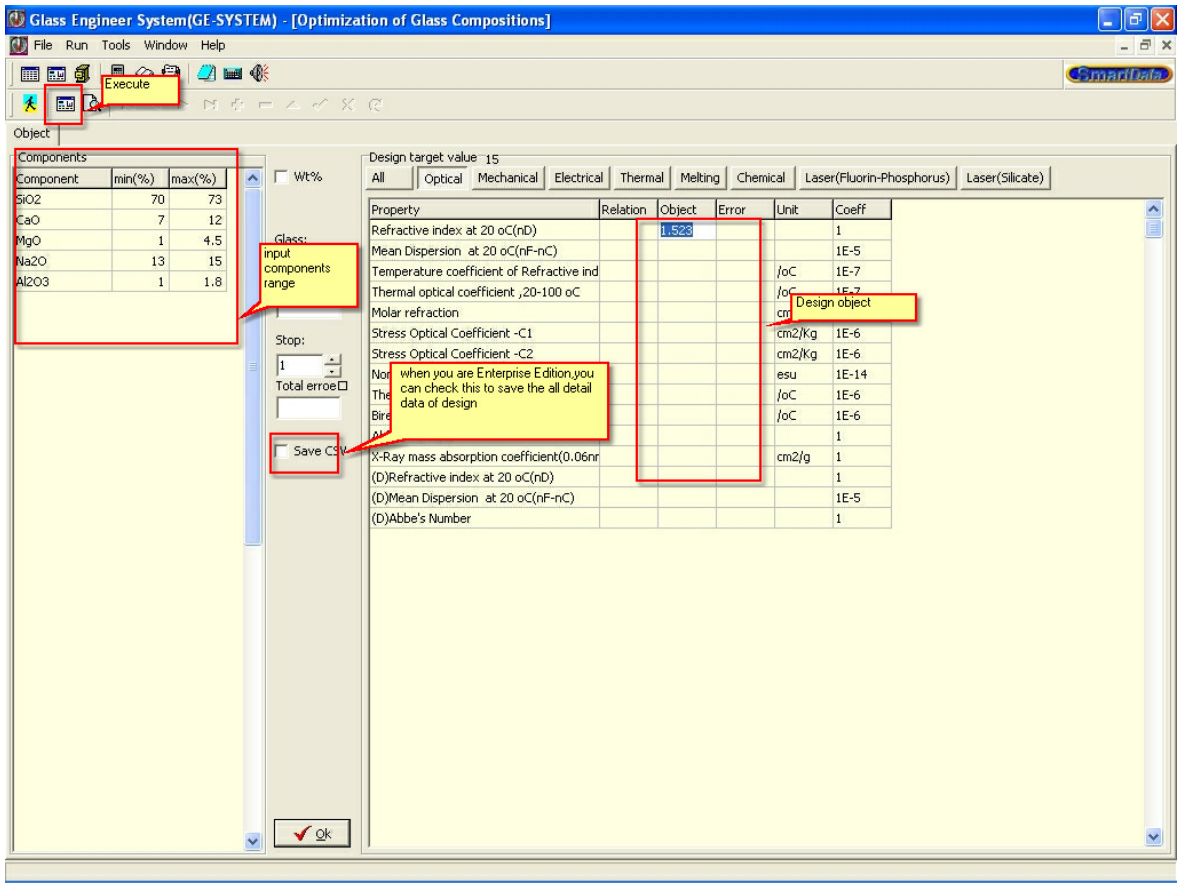
the properties be divided by tebs into multpages:



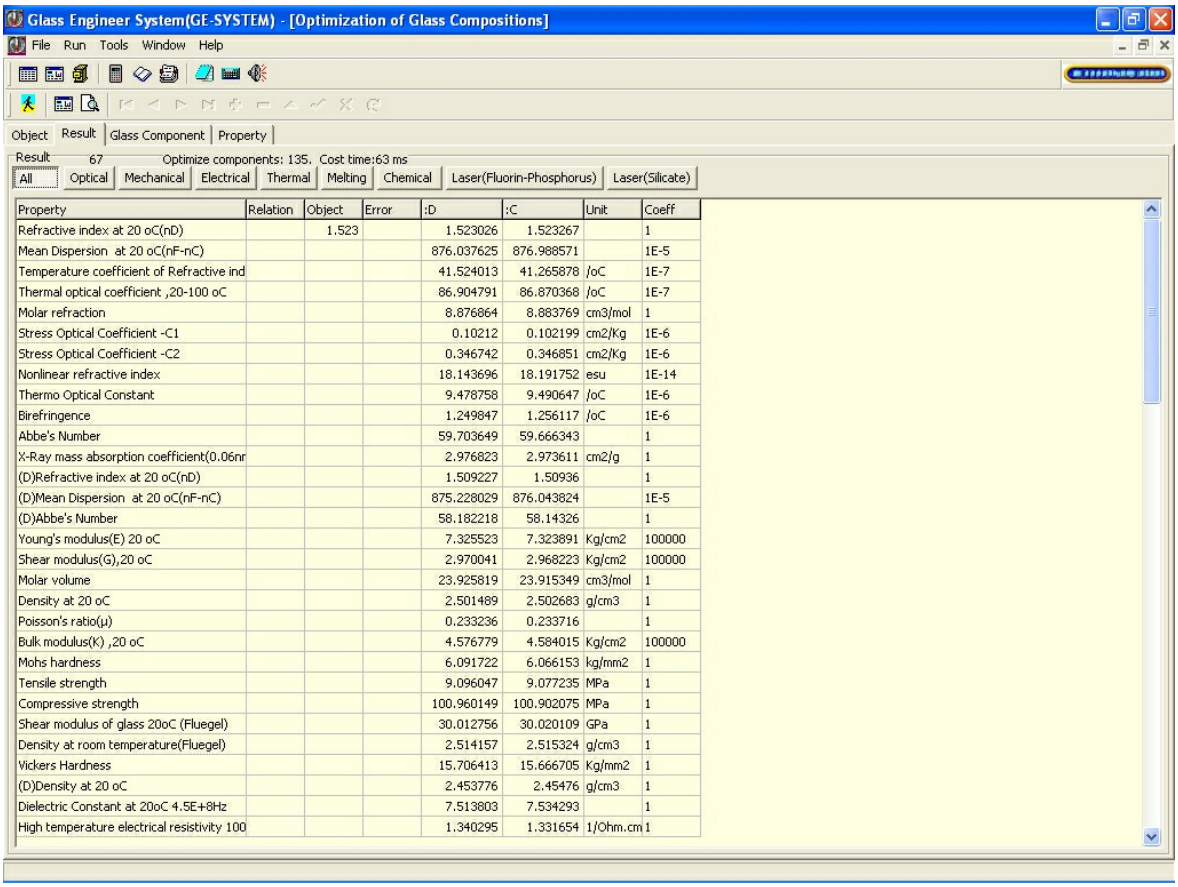
4.5 Optimization Components design of glass

In this part,most of it are same to property calculate.
First, you need input the rang of components,then input the desired object value and its error(optional), third you can press button "Execute" to run.

when you are Enterprise Edition,you can check the "Save CSV" check box to save the all detail data of design.
The optimization method is orthogonal design.



after you press "Execute" button,you can see the result of design:



Property	Relation	Object	Error	:D	:C	Unit	Coeff
Refractive index at 20 oC(nD)		1.523		1.523026	1.523267		1
Mean Dispersion at 20 oC(nF-nC)				876.037625	876.988571		1E-5
Temperature coefficient of Refractive ind				41.524013	41.265878	/oC	1E-7
Thermal optical coefficient ,20-100 oC				86.904791	86.870368	/oC	1E-7
Molar refraction				8.876864	8.883769	cm3/mol	1
Stress Optical Coefficient -C1				0.10212	0.102199	cm2/Kg	1E-6
Stress Optical Coefficient -C2				0.346742	0.346851	cm2/Kg	1E-6
Nonlinear refractive index				18.143696	18.191752	esu	1E-14
Thermo Optical Constant				9.478758	9.490647	/oC	1E-6
Birefringence				1.249847	1.256117	/oC	1E-6
Abbe's Number				59.703649	59.666343		1
X-Ray mass absorption coefficient(0.06nr				2.976823	2.973611	cm2/g	1
(D)Refractive index at 20 oC(nD)				1.509227	1.50936		1
(D)Mean Dispersion at 20 oC(nF-nC)				875.228029	876.043824		1E-5
(D)Abbe's Number				58.182218	58.14326		1
Young's modulus(E) 20 oC				7.325523	7.323891	Kg/cm2	100000
Shear modulus(G),20 oC				2.970041	2.968223	Kg/cm2	100000
Molar volume				23.925819	23.915349	cm3/mol	1
Density at 20 oC				2.501489	2.502683	g/cm3	1
Poisson's ratio(μ)				0.233236	0.233716		1
Bulk modulus(K) ,20 oC				4.576779	4.584015	Kg/cm2	100000
Mohs hardness				6.091722	6.066153	kg/mm2	1
Tensile strength				9.096047	9.077235	MPa	1
Compressive strength				100.960149	100.902075	MPa	1
Shear modulus of glass 20oC (Fluegel)				30.012756	30.020109	GPa	1
Density at room temperature(Fluegel)				2.514157	2.515324	g/cm3	1
Vickers Hardness				15.706413	15.666705	Kg/mm2	1
(D)Density at 20 oC				2.453776	2.45476	g/cm3	1
Dielectric Constant at 20oC 4.5E+8Hz				7.513803	7.534293		1
High temperature electrical resistivity 100				1.340295	1.331654	1/Ohm.cm	1

Part V

5 More Advanced Procedures

In GE-SYSTEM,along with continuously acquaint with to the software, you will more and more discover many application techniques and function. All properties of the design interface, you can input your expect value for different purpose,and you can save the all detail data of design.for example, if you want to adjust the viscosity VFT,you can intput A, B, T0 for object,and what these value are you want,you can input it in the Viscosity Curve form.etc..

Part VI

6 Print and Export

You can use pop menu of mouse right key to execute "Copy" and "Print Preview","Copy" is copy to windows clipboard,include text and image.
For the text contents or image,you can paste into windows office documents,for Preview, you can see the data or image in the form,and you can export into some formats documents ,include .xml,html,.xls,.rtf,.csv,.bmp,jpeg,.tiff....

Part VII

7 License,Ordering and Support

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GE-SYSTEM License Agreement

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7.2 Ordering Information

Ordering Information

Please visit our home page to view the latest offers. To contact us visit http://www.glassengineersystem.com contact.htm or send us an email to sales@glassengineersystem.com. If you are interested in purchasing a site license for your company, then please send us an email to sales@glassengineersystem.com with the quantity of desired workstations and we will send you a quote.

Educational prices for schools, universities , colleges, and academic body are available. Please ask for a quote.

7.3 Technical Support

Technical Support

To confirm that you have the most recent version of GE-SYSTEM please view theGE-SYSTEM home page at http://www.glassengineersystem.com/faq in the section Frequently Asked Questions.

The best way to report problems is to send an email to support@glassengineersystem.com.

When reporting problems, please include the following information:
1. Is the problem reproducible? If so, how?
2. Which version of Windows are you running (Windows 98, Windows XP, etc.)?
3. Which version of GE-SYSTEM are you running (to view which version of GE-SYSTEM you are using, choose "About Glass Engineer System "in the Help menu, Please include all the entire "Product information " in your problem report.
4. If a dialog box with an error message was displayed, please include the full text of the dialog box, including the text in the title bar or the screenshot .

Part VIII

8 Contact us

The company is located on:

No.Room 208, 39 Jiayuanli,Huli zone,Xiamen City,Fujian province,China.

time zones:GMT+8

PostCode:361006

Tel.:+86-592-6031511

Fax.:+86-592-5753611

8.1 About us

About Us
SmartData Software Co.,LTD. is an innovative software company and market leader in the development of glass components optimization application software for the Glass Industry. We develop and distribute GE-SYSTEM Software and Information security Software Solutions.

8.2 Sales

Sales

The following information is for the English language version of GE-SYSTEM. There are English, Chinese language versions of GE-SYSTEM as well. If you are looking for a version in one of these languages, please ask one of our sales representatives to forward your order, feedback or questions to our partner responsible for this area.

The sales departments can be reached at both of our headquarters located in China. Please visit our web site at http://www.glassengineersystem.com/contact-us to contact us or send us an email at sales@glassengineersystem.com.