

Standard Curve

Software Manual

Revision 2

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By

CHEMIASOFT TEAM

www.chemiasoft.com

Note: There might be some differences between this manual and the software due to continuous development. For the latest version of this manual please refer to online version.

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About

Standard Curve is defined as the easiest way to graph calibration curve from standard solutions and identify unknown samples in laboratory. There is no need to use MS Excel to make calculations and pain full process. **Standard Curve** made it easy for you.

Calibration is at the heart of chemical analysis, and is the process by which the response of an instrument (in metrology called "indication of the measuring instrument") is related to the value of the concentration of the analyte.

A typical example in analytical chemistry is the calibration of a GC (gas chromatography) analysis. The heights of GC peaks are measured as a function of the concentration of the analyte in a series of standard solutions ("calibration solutions") and a linear equation fitted to the data.

Standard Curve is robust industrial productivity software. It has been developed in real laboratory world. Width **Standard Curve**, laboratory routine work becomes easy. In addition, all data will be saved in local computer database and it can be backed up at anytime.

Start using **Standard Curve** today and make your life easy.

Features

- Easy to use and straight forward.
- Support MS Access database.
- Create unlimited number of batches. Every batch includes calibration curve and unknown samples.
- Graph and run calibration curve from standard solutions and identify unknowns.
- Several types of trend line fitting include (Linear, Quadratic, Logarithmic base 10, Exponential, Power and Natural Logarithmic).
- Support both Ordinary Least Square (OLS) and Weighted Least Square (WLS) calibration methods.
- Accept single or multiple measurement values (like absorbance, peak area or peak height) and calculate average and RSD.
- Include or exclude standards from calibration curve.
- Graph calibration points and trend line.
- Display calibration result in table (like fitting equation, standard errors for equation parameters, coefficient of determination and standard regression error (also called residual standard deviation).
- Calculate concentration of unknown samples based on calibration curve.
- Support several multiplication factors to finalize calculation in origin samples. For example (Dilution factor, total volume and initial sample weight).
- Calculate method detection limits (MDL) as per ISO-11843-2, Hubaux & Vos and SEMI standard method.
- Set quantification limits and final reporting limits.
- Generate professional batch report, includes standards, calibration curve and unknowns.
- Export report as PDF, MS Excel, Image and Email and other formats.
- Print and export graph as PDF and image.
- Search batches using several inputs like batch ID, analyte, analysis, method, creation date and modification date.
- Delete and restore batches

Getting Started

1. After installation of the software complete, run **Standard Curve** from desktop icon or from start menu. Once the software start, it will connect to local default database and the main software screen will appear



- 2. Once the main screen appeared, it will show "**Database Connected**". If there is any problem with database then refer to Database section.
- 3. Now press **Open** button on the main toolbar and search dialog will appear.
- 4. Leave all fields empty and press **Search** button. List of all available batches will appear.

ententi						
Batch	Search Batch Detail		Created On	Last Update	ed On	
P	Batch ID		Creation date range	Last up	date range	
en Batch	Analysis		From 11/28/2014	From 11/2	28/2014 🔍	
	Analyte					
	Method		To 12/28/2014	To 12/2	28/2014	
	Batch ID	Analysis	Analyte	Method	Created On	L
	EXAMPLE_BATCH	Total Perroleum H	lydrocarbons TPH	Total Perroleum H	Hydroca 12/28/2014	1
						<u>></u>
	Cancel		Search		Coen	

- 5. Double click on **EXAMPLE_BATCH** to open.
- 6. After selected batch open, main batch screen will appear. Batch name will show at title bar of the software between two brackets [EXAMPLE_BATCH].

🐺 Chemiasoft - Standard Curve [f	XAMPLE_B	АТСН]				
File Batch Help						
Open Batch New Batch Delete Batch	Save As	Edit Batch	Report	Refresh	Close Batch	
🚺 Details 🔤 Calibration Standards	Unknown	Samples				
Batch Batch ID EXAMPLE_BATCH						
Created On 12/28/2014						
Created By USER						
Batch Status Completed, Approved						
Last Updated 12/28/2014						
Analysis Total Perroleum Hydro	carbons					
Analyte Name TPH						
Method Name Total Perroleum Hydro	carbons by G	C-FID				
Reference EPA						
Instrument GC-FID-01						
Conc. Unit mg/L						
Response Unit Peak Area						
Final Conc. Unit mg/Kg						
Calibration						
Fitting Type Linear						
Calibration Date 12/28/2014						
Calibrated By Jhon						
Analysis						
Analysis Date 12/28/2014						
Analyzed By Lewis						

Batch screen contains three tabs (**Details**, **Calibration Standards** and **Unknown Samples**). The Details tab contains information about the batch. Now switch to Calibration Standards tab.

File Batch Help Open Batch New Batch Delete Batch Save As Edit Batch Report Refresh Close Batch Image: Collocation Standards Image: Concentration (mg/L) Response (Peak Area) RSD % Calc. Image: Collocation Standard 1 Image: Concentration (mg/L) Response (Peak Area) RSD % Calc. Image: Collocation Standard 1 Image: Concentration (mg/L) Response (Peak Area) RSD % Calc. Image: Collocation Standard 1 Image: Concentration (mg/L) Response (Peak Area) RSD % Calc. Image: Collocation Standard 1 Image: Concentration (mg/L) Response (Peak Area) RSD % Calc. Image: Collocation Standard 2 Image: Concentration (mg/L) Response (Peak Area) RSD % Calc. Image: Collocation Standard 2 Image: Concentration (mg/L) Response (Peak Area) RSD % Calc. Image: Collocation Standard 3 Image: Concentration (mg/L) Response (Peak Area) RSD % Calc. Image: Collocation Standard 3 Image: Concentration (mg/L) Response (Peak Area) RSD % Calc. Image: Concentration (mg/L) Image: Co	Conc. (mg/L) Fr 51 -6 54 1.1 772 4.2 326 1.3 378 -1	ror Erro .049 24.19 574 3.143 272 4.273 826 0.730 .622 0.324	r % • • • • • • • • • • • • • • • • • •
Open Batch New Batch Delete Batch Save As Edit Batch Report Refresh Close Batch Image: Collboration Standard	Conc. (mg/L) Er 51 -6 54 1.1 772 4.2 326 1.3 378 -1	ror Erro .049 24.19 574 3.143 272 4.273 826 0.730 .622 0.324	r % A
Image: Calibration Standard Image: Concentration (mg/L) Response (Peak Area) RSD % Calc. Image: Cal No. Standard Name Concentration (mg/L) Response (Peak Area) RSD % Calc. Image: Cal No. Standard 1 25 1200.000 0.000 18.98 Image: Cal No. Standard 1 25 1200.000 0.000 18.98 Image: Cal No. Standard 1 25 1200.000 0.000 18.98 Image: Cal No. Standard 2 50 2500.000 0.000 104.2 Image: Cal No. Standard 3 100 4600.000 0.000 104.2 Image: Cal No. Standard 4 250 Standard S 0.000 0.000 104.2 Image: Cal No. Standard 5 500 Standard S 0.000	Conc. (mg/L) Er 51 -6 '4 1.1 '72 4.1 326 1.4 378 -1	ror Erro .049 24.11 574 3.14; 272 4.27; 826 0.73; .622 0.32*	r % 7
Cal No. Standard Name Concentration (mg/L) Response (Peak Area) RSD % Calc. ✓ 1 Standard 1 25 1200.000 0.000 18.95 ✓ 2 Standard 2 50 2500.000 0.000 104.2 ✓ 3 Standard 4 250 Standard S 0.000 104.2 ✓ 4 Standard 4 250 Standard S 0.000 104.2 ✓ 4 Standard 5 500 Standard S 0.000 104.2 ✓ 5 Standard 5 500 Standard S 0.000 0.000 104.2 ✓ 5 Standard 5 500 Standard S 0.000	Conc. (mg/L) Fr 51 -6 74 1,1 772 4,2 326 1,3 378 -1	ror Erro .049 24.19 574 3.14; 272 4.27; 826 0.730; .622 0.32*	r % 96 7 2 0 1 4
Cal No. Standard Name Concentration (mg/L) Response (Peak Area) RSD % Calc. 1 1 Standard 1 25 1200.000 0.000 18.95 2 Standard 2 50 2500.000 0.000 16.95 3 Standard 3 100 4600.000 0.000 104.2 4 Standard 4 250 StandardS 0.000 104.2 4 Standard 5 500 StandardS 0.000 104.2 5 Standard 5 500 StandardS 0.000 104.2 5 Standard 5 500 StandardS 0.000 0.000 104.2 6 20,000 Image: Standard Curve Im	Conc. (mg/L) Fr 51 -6 74 1.1 272 4.3 326 1.3 378 -1	ror Erro .049 24.11 .574 3.14 .272 4.27 .826 0.730 .622 0.324	r %
1 Standard 1 25 1200.000 0.000 18.95 2 Standard 2 50 2500.000 0.000 51.57 3 Standard 3 100 4600.000 0.000 104.2 4 Standard 4 250 Standard 5 0.000 104.2 5 Standard 5 500 Standard 5 0.000 164.2 5 Standard 5 500 Standard 5 0.000 164.2 6 6 12 100 4600.000 0.000 104.2 5 Standard 5 500 Standard 5 100 16.00 0.000 16.2 6 12,000 Standard Curve Fitting Type Equation A B R Square Number of Points 14,000 14,000 14,000 14,000 14.0	-6 '4 1.' '72 4 326 1.' 378	.049 24.19 574 3.14: 272 4.27: 826 0.730 .622 0.32-	96 7 [] 2 0
2 Standard 2 50 2500.000 0.000 \$1.57 3 3 \$100 4600.000 0.000 104.2 4 \$standard 4 250 Standards 0.000 104.2 5 \$standard 5 \$500 Standards 0.000 104.2 5 \$standard 4 250 Standards 0.000 104.2 5 \$standard 5 \$500 Standards 0.000 104.2 6 C Image: Standard 5 Standard 5 <t< th=""><th>74 1.1 272 4.1 326 1.1 378 -1</th><th>574 3.14 272 4.27 826 0.730 .622 0.324</th><th>7</th></t<>	74 1.1 272 4.1 326 1.1 378 -1	574 3.14 272 4.27 826 0.730 .622 0.324	7
✓ 3 Standard 3 100 4600.000 0.000 104.2 ✓ 4 Standard 4 250 Standard S 0.000 0.000 0.000 104.2 ✓ 4 Standard 4 250 Standard S 0.000 0.000 0.000 104.2 ✓ 5 Standard 5 500 Standard S 0.000 0.000 0.000 0.000 104.2 ● ● Standard 5 500 Standard S Fitting Type Equation ■ 18,000 ● ● Standard Curve ● Equation A B R Square Number of Points Number of Points 0.000 </th <th>272 4.: 326 1.: 378 -1</th> <th>272 4.272 826 0.730 .622 0.324</th> <th>2 D</th>	272 4.: 326 1.: 378 -1	272 4.272 826 0.730 .622 0.324	2 D
A Standard 4 250 Standards OTADIES 5 Standard 5 500 Standards OTADIES Fitting Type Equation A B R Square Number of Points	326 1.3 378 -1	826 0.730 .622 0.324	D
S Standard 5 500 Standard Curve Standard Curve Standard Curve Standard Curve R 20,000 18,000 14,000 14,000 14,000 R Square Number of Points	378 -1	.622 0.324	1
Control Standard Curve Fitting Type Equation A 18,000 B 16,000 R Square 14,000 Number of Points			1
Standard Curve 5,000 6,000 4,000 2,000 6,000	Linear Y = A + X*B 444.80987055(39.8496763754 0.9995905871(5 33496.2446062 Oratio)162 Std. Err. 118.8 1045 Std. Err. 0.465 57821 2566 n Resu	124962508291 1622349344166

- 7. On **Calibration Standards** tab screen become three parts, **Standards** table at the top which list all calibration standard solutions, **Standard curve** area at the left bottom shows the calibration curve. On the bottom right area there is **Calibration Result** table which contains fitting type, equations and other details related to calibration.
- 8. On **Standards** table, the first column "**Cal**" shows tick mark when the standard included in the calibration.
- 9. On the Standards table, double click on the standard 2 row. The dialog will appear as follow.

Edit Standard	
Standard Name	Standard 1
Level	1
Concentration	30 mg/L
Response(s) Peak Area	1230
	For mutiple values enter each value in separate line or separated by comma ','
Weight	0.002222222222223
Remark	cadmium chloride
	✓ Include in calibration
Cancel	📀 ок

On **Edit Standard** dialog, there are several input fields include **standard name**, **level**, **remark**, **concentration** and **responses**. The concentration must be single value, but responses can accept several values by separate them with comma or enter each value in new line. The software will calculate average of all entered response(s) and calculate relative standard deviation (RSD).

Weight value required when using weighted calibration (WLS) and manual entry of weight factor.

"**Include in calibration points**" to include or exclude standard from calibration curve. Uncheck the box to exclude from calibration and press **OK** to see the effect. Equation will be recalculated. All samples also will be recalculated base on new fitting.

10. Switch to **Unknown Samples** tab, table contains all samples in the batch with their responses and calculated concentrations

🔜 Chemiasoft - Standard C	urve [EXAMPLE_BATCH]					
File Batch Help						
Open Batch New Batch Delete	Batch Save As Edit Batch	Report	Refresh Close Ba	atch		
🕕 Details 🔤 Calibration Star	ndards 🛄 Unknown Samples					
🖸 🖨 📎 🔳						
No. Sample Name	Response (Peak Area)	RSD %	Calc. Conc. (mg/L)	Total Vol (L)	Original Sample Wt (Kg)	Dilutia 📥
1 Blank	445.000	0.000	0.055	0.1	0.05	2
2 Quality Control 50 mg/L	2432.000	0.000	49.911	1	1	1
3 Sample 1	3500.500	3.575	76,709	0.1	0.1	2
🕨 4 Sample 2	6317.500	9.4	147.416	1	1	1
						>

Double click on any sample by left mouse click, Edit Sample dialog will show up

📪 Edit Sample	
Sample Detail	
Sample Name	Sample 2
Number	4
Analyte Factors	
Analyte Response	
Responses	s 5898
	0/3/
For mutiple values en	ter each value in separate line or separated by comma ','
Sample Remark	
Remark	<
Cancel	OK
Cancor	

The dialog contains sample input details, like (**sample name**, **order number** and **responses**) similar to the standards dialog. In addition, it contains **Factors** tab, click on factors tab to see the details.

🐺 Edit Sample	
Sample Detail	
Sample Name Sample 2	
Number 4	
Analyte Factors	
Dilution Factor	
Dilution Factor	
Multiply Factor	
Total Vol (L) 0.1	
Divide Factor	
Original Sample Wt (Kg) 0.1	
Cancel	ОК

Different factors are appeared. **Dilution Factor**, how many times sample is diluted. **Total volume**, the total sample solution in liter. **Origin Sample Weight** the amount of the sample in sample preparation process in kilograms.

The factors are very essential in lab calculations. In this example, calculated concentration from calibration curve in mg/L will be multiplied by dilution factor and then multiplied by total volume of the sample solution. The result will be divided by origin sample weight (Kg) in this example 100 g = 0.1 Kg. The final calculated value will be in mg/kg, which is the concentration of the analyte in origin sample. (i.e. the reported concentration).

Click OK or Cancel button to hide Edit Sample dialog.

11. On the toolbar click on Edit Batch button. Edit batch dialog will appear

Edit Bat	ch				X	
General	Calibration	n Samples	Reporting	Format	Note	
Batch						
	Batch ID	ID EXAMPLE_BATCH				
	Analysis	Total Perrole	eum Hydroca	rbons		
Anal	yte Name	TPH				
Meth	nod Name	Total Perrole	um Hydroca	rbons by	GC-FID	
F	eference	EPA				
In	strument	GC-FID-01				
Calibra	Calibration Date Sunday , December 28, 2014 🔽					
Calib	orated By	Jhon				
Anal	ysis Date	Sunday ,	December	28, 2014	~	
An	alyzed By	Lewis				
0	Ionc, Unit	mg/L				
Resp	onse Unit	Peak Area				
Bat	Batch Status Completed, Approved					
Ø	Cancel				О К	

Edit Batch dialog contains all information about the batch and calibration. At the top there are several tabs, you can switch between tabs and discover the details. Make some changes and press **OK** button to see the effect.

That is all for now. Please refer to the **Table of Content** (page 2) and find out more details. If you can't find answer of your question, please contact us by sending an email to support@chemiasoft.com

Database

Standard Curve software is database software. It is supporting **MS Access** database. Future versions will be developed to support other types of databases Like MySQL.

The default database is located in:

C:\Program Files\Chemiasoft\Standard Curve\Database\database.mdb

To change database properties go to menu **File >> Database Properties**. **Data Link Properties** dialog will show up. Change database properties or location then press **OK**.

🗟 Data Link Properties 🛛 🔀
Provider Connection Advanced All
Specify the following to connect to Access data:
1. Select or enter a database name:
\Chemiasoft\Standard Curve\Database\database.mdb
2. Enter information to log on to the database:
User name: Admin
Password:
Blank password 🔄 Allow saving password
Test Connection
OK Cancel Help

Batches

In **Standard Curve** software, every collection of calibration standards and unknowns called a "**batch**".

Create New Batch

To create new batch, from toolbar click **New Batch** button, enter a unique name of the batch and press **OK**.

New Batch	
Enter new batch ID:	
Cancel	ОК

If the batch name is unique, the name will be reserved in the database. It is preferred to have unique naming system of all batches in lab. For example, use batch name derived from date of analysis like if a batch analyzed on Jan, 8, 2015 will be named as (e.g. B20150108-A), B means batch and A means first trial of analysis performed. **Be careful** batch name is permanent and can not be changed after created.

Once you press OK, Edit Batch Dialog will appear.

Edit Bat	ch					×
General	Calibration	Samples	Reporting	Format	Note	
Batch						
	Batch ID	XAMPLE_B	ATCH			
	Analysis 1	otal Perrole	eum Hydroca	rbons		
Anal	yte Name 🛛	PH				
Meth	nod Name 🛛	'otal Perrole	um Hydroca	rbons by	GC-FID	
F	leference E	PA				
Ir	strument	iC-FID-01				
Calibra	tion Date	Sunday ,	, December	28, 2014	*	
Calit	orated By 🛛	hon				
Ana	lysis Date	Sunday ,	, December	28, 2014	*	
An	alyzed By	ewis				
0	Conc. Unit	ng/L				
Resp	onse Unit 🛛	eak Area				
Bat	ch Status 🤇	Completed,	Approved			
					_	
Ø	Cancel					⊘ ок

Fill batch information and press **OK**.

Edit Batch Options

To edit batch options click on **Edit Batch** button. Edit Batch dialog will appear

Edit Batch					
General	Calibratio	n Samples Reporting Format Note			
Daten					
	Batch ID	EXAMPLE_BATCH			
	Analysis	Total Perroleum Hydrocarbons			
Ana	lyte Name	TPH			
Met	hod Name	Total Perroleum Hydrocarbons by GC-FID			
F	Reference	EPA			
Ir	nstrument	GC-FID-01	I		
Calibra	ation Date	Sunday , December 28, 2014 🛛 🐱			
Cali	brated By	Jhon			
Ana	lysis Date	Sunday , December 28, 2014 🛛 💌			
An	alyzed By	Lewis			
(Conc. Unit	mg/L			
Response Unit		Peak Area			
Batch Status		Completed, Approved			
Ø	Cancel] 🖉 ок			

Edit Batch dialog contains several tabs and below is the details of each:

General Tab	
Item	Description
Batch ID	Unique batch ID in the database. This field is "read only". It can't be
	changed after it has been created.
Analysis	Analysis name which is performed in the lab (e.g. Hydrocarbons,
	Chloride, Sulfateetc).
Analyte Name	Name of the analyte to be analyzed
Method Name	The laboratory method name or standard operation procedure (SOP)
Reference	Reference method number (e.g. EPA, ASTM, ISOetc)
Instrument	Instrument name or ID used to perform analysis and read analyte
	responses (e.g. UV-VIS, HPLC, GC, ICPetc)
Standard Solvent	Solvent name used to dilute standard solutions.
Sample Solution	Solvent name used to dilute sample solutions.
Calibration Date	Date of the calibration run of the standards
Calibrated By	Name of the analyst perform the calibration process
Analysis Date	Date of performing sample analysis
Analyzed By	Name of the person perform sample analysis
Solns. Conc. Unit	Concentration of the solutions used in the analysis including both
	calibration solutions and samples solutions.
Response Unit	Response name from the instrument used to perform the analysis (e.g.
	Peak Area, Peak height, Absorbance, intensityetc).
Batch Status	Status of the batch (e.g. Under process, under review, rejected,
	approvedetc).

Edit Bat	ch Option:	5			
General	Calibration	Samples	Reporting Form	nat Note	
Cirena L	ine Ficcing Ty ar		garithmic base 10		
O Natu	ıral Logarithm	iic 🔘 Po	wer	🔘 Quadratic	
Linear a	nd Quadratic	Fitting Cu	rve Options		
Ford	e to origin		Include of	rigin	
Weighte	ed Least Squa	are (WLS)-			
Vei Wei	ghted least so	quare	🗹 Auto calc	ulate weight factor	
Calibrat	ion Method D	etection Li	mit - MDL (Only fo	r Linear fitting)	
🔽 Calc	ulate method	detection	limit (MDL)		
Numbe	er of preparal	tions (K va	lue) 1	(default = 1)	
		MDL fa	tor 2	(default = 2)	
MDL C	onfidence In	terval t-Sta	atistic (default = 9	5%)	
099	.95% (99.5%	097.5%	085%	
099	.9% (99%	95%	080%	
099	.87% (98%	090%	075%	
Calibrat	ion Concentr	ation Rang	e		
Calc	Calculate concentrations within calibration concentration range only				
Min Calibration Quantification Conc 0 mg/L					
Max Calibration Quantification Conc 2500 mg/l					
Linder M	Under Min = 'Not Detected' Above Max = 'Over Range'				
Under M	III = NOC Dec	ected, AD	ove max = Over F	kange	
	Cancel			🛛 🐼 ок	

Calibration Tab	
Item	Description
Trend Line Fitting Type	Fitting type, there are six options available (Linear, Power, Natural Logarithmic, Logarithmic base 10, exponential and Quadratic)
Fitting Curve Options	Force To Origin , make fitting line pass through origin point (0,0) this option available only for quadratic and linear type. Include Origin , include origin point (0,0) to the calibration points.
Weighted Least Square (WLS)	Select Weight Least Square (WLS) option to enable weighted calibration. When this option is not selected, Ordinary Least Square (OLS) will be used in calculations.
Method Detection Limit	Calculate method detection limit (MDL) for batch calibration. Enable this option when batch is conducted for MDL study. MDL is calculated according to ISO 11843-2 "Methodology in the linear calibration case", also called "Hubaux Vos MDL". Refer to those methods online for more details on how to calculate MDL. Set K value , MDL factor and Confidence Interval as per method requirement.
Calibration Concentration Range	 Two options are available here: When Report within Calibration Range is checked then only samples solutions concentration within calibration range will be reported. If sample solution below calibration range, it will be reported as "Under Range" or "Over Range" if exceed calibration range concentration. The concentration range will be identified automatically by identify the maximum and minimum concentration in the calibration standards. When uncheck Report within Calibration Range then you have to enter quantification concentration range. Enter maximum and minimum calibration quantification

Calibration Tab	
ltem	Description
	concentration to be determined base on the equation.
	Note: Calibration range is different from Final reported range
	(shown in Report tab). Calibration range is defined as the
	analyte concentrations in solutions used during running
	instrument and take reading (responses). Final reported range
	is defined as the concentration of analyte in origin sample.
	Reported concentration is calculated from solution concentration.

Edit Batch						
General	Calibration	Samples	Reporting	Format	Note	
Final Ca Use Multip Multi Mult	Final Calculation Options Use dilution factor (D.F.) (Multiply Factor) Multiply Concentration By Solution Total (Vol/Wt) Use mutiply factor column. Multiply Factor Title					
Divide Divide	Concentratic Use divide fac ide Factor Tit	on By Origin tor column le Origina	n Sample (Vo I Sample Wt	l/Wt) (Kg)		
Multip	ly Concentral Jse custom fa	tion By Cus actor colum	tom Factor- n.			
Cust	om Factor Tit	le Custom	Factor			
	Cancel					С ок

Samples Tab	
Item	Description
Use dilution factor	Check this option to include dilution factor column in samples table. This part is very essential when you have high concentrated samples and you want to make dilution before injected to the instrument.
	Dilution factor is calculated using equation: $DF = \frac{Final Volume (mL)}{L^{1/2} + L^{1/2} + L^{1/2}}$
	Initial Volume (mL)
	For example if you take 5 mL from solution and diluted to 100 mL with solvent then dilution factor will be:
	$DF = \frac{100 (mL)}{5 (mL)} = 20$
Multiply Factor	Check this option to include multiply factor column in samples table. This will multiplied calculated concentration by this factor. Mostly used when sample required preparation before analysis, like digestion in trace metal analysis.
	For example enter "Total Volume (L)" in the title field.
Divide Factor	Check this option will include divide factor column in samples table. This will divide calculated concentration by this factor. Mostly used when sample required preparation before analysis, like digestion in trace metal analysis.
	For example enter "Sample Weight (Kg)" in the title field.

Samples Tab	
ltem	Description
Custom Factor	Check this option to include custom multiply factor column in samples table. This will multiplied calculated concentration by this factor.
	This factor is considered as extra option. Use it if you want to make correction factor of the calculated concentration. For example conversion factor from Liter to milliliteretc.

Edit Bat	tch Ontion	s				X
General	Calibration	Samples	Reporting	Format	Note	
Final Co Report	oncentration f Concentratio	Reporting l on Unit mg	Jnit J/Kg			
Minimur M If cocn	n Reporting C lin. Reporting entration belo	Concentrati Conc. 5 ow Min Rep	ion porting Conc.	m then rep	ıg/Kg ort as	
Maximum Reporting Concentration Max. Reporting Conc. 5000 mg/Kg If cocnentration above Max Reporting Conc. then report as						
Overm	ax					
0	Cancel					О к

Reporting Tab	
Item	Description
Reporting	The final concentration unit after performing all calculations.
Concentration Unit	
Min. Reporting Conc.	The minimum reporting concentration of the original sample.
If concentration below	Enter the text to be reported if the final calculated concentration
Min. Reporting Conc.	below Min. Reporting Conc.
Then report as	
Max. Reporting Conc.	The maximum reporting concentration of the original sample.
If concentration above	Enter the text to be reported if the final calculated concentration
Max. Reporting Conc.	above Max. Reporting Conc.
Then report as	

Edit Bat	tch Option:	5				
General	Calibration	Samples	Reporting	Format	Note	
Result	Display Forma	t				
		1	Response	0.000		*
			RSD	0.0		*
	Calcu	lated Conc	entration	0.000		~
			Error	0.000		~
			Error %	0.000		~
	Samples	Final Cond	entration	0		~
0	Cancel					ж

Format Tab

In this tab, set details of digital value format to display result in standards and samples tables as per your needs. The following format specifiers are supported in the format result:

Specifier	Represents
0	Digit place holder. If the value being formatted has a digit in the position where the '0' appears in the format result, then that digit is copied to the output result. Otherwise, a '0' is stored in that position in the output string.
#	Digit placeholder. If the value being formatted has a digit in the position where the '#' appears in the format string, then that digit is copied to the output string. Otherwise, nothing is stored in that position in the output string.
	Decimal point. The first dot character ('.') in the format string determines the location of the decimal separator in the formatted value; any additional dot characters are ignored. The actual character used as the decimal separator in the output string is determined by the DecimalSeparator global variable, whose default value is specified in the Number Format of the International section in the Windows Control Panel.
,	Thousand separator. If the format string contains one or more comma characters (','), the output will have thousand separators inserted between each group of three digits to the left of the decimal point. The placement and number of comma characters in the format string does not affect the output, except to indicate that thousand separators are wanted. The actual character used as the thousand separator in the output is determined by the ThousandSeparator global variable, whose default value is specified in the Number Format of the International section in the Windows Control Panel.

The following table shows some sample formats and the results produced when the formats are applied to different values:

Format string 1234 and 0.5

Format string	1234	0.5
0	1234	1
0.00	1234.00	0.50
#.##	1234	.5
#,##0.00	1,234.00	0.50
#,##0.00	1,234.00	0.50

Note Tab

This tab is to enter user note for batch.

Open Existing Batch

To open existing batch, from toolbar click on **Open Batch** button. **Search Batch** dialog will show up. In **Search Batch** dialog, enter search conditions like (**Batch ID**, **Analysis** name or creation date...etc) and press **ENTER** or click **Search** button to see the result list. If search conditions have no result, message will appear. In the case you have to change search conditions.

	Search Ba	tch To Open						Þ	3
🗔 Cher	Search Bat	ch Detail]	Create	red On	Last Up	odated On		
File Bat	Batch ID	example		Cr	reation date range	La	st update range		
	Analysis			From	11/29/2014	From	11/29/2014	~	
Open Bal	Analyte								
openibe	Method			То	12/29/2014	То	12/29/2014	~	
	Mechoa								
	Batch ID		Analysis		Analyte	1ethod	Cre	eated On	L
	EXAMPLE	ватсн	Total Perroleum Hydro	carbons	TPH T	otal Perrole	eum Hydroca 12/	28/2014	1
	<								
								~	
	🛛 🖉 Ca	ncel			Search			💋 Open	
				_			_		

To list all batches available in the database, leave search fields empty and click **Search** button or press **ENTER**.

Click on column header to sort the result. Select batch you want and click **Open** button or press **ENTER**.

	Search Batch To C	lpen		X)
C her	Search Batch Detail		reated On	Last Updated On	
File Bat	Batch ID example		Creation date range	Last update range	
- 110 DO	Analysis	F	From 11/29/2014	From 11/29/2014	
	Analyte				
Орентва	Marker d		To 12/29/2014	To 12/29/2014	
	Method				
	Batch ID	Analysis	Analyte	Method Created On I	Ĩ.
	EXAMPLE_BATCH	Total Perroleum Hydrocarb	oons TPH	Total Perroleum Hydroca 12/28/2014	1

Save Batch As Different Name

Save batch as different name is similar to copy batch. First open the batch you want to copy and press **Save As** button. Save Batch As dialog will show up to enter new unique batch ID. Also, select if whether you want to copy calibration standards and samples to the new batch. There are two options with available at the bottom of the dialog (**Copy calibration standards** and **Copy unknown samples**).

Save Batch As	X
Enter new batch ID:	
Copy calibration standards	Copy unknown samples
Cancel	ОК

Once you enter new batch ID, click **OK**. Then Edit Batch dialog will appear to make changes if there is any. Click **OK** or press **ENTER** when you are done.

	Edit Batch		
pen Batch New Batch Delete Batch	General Calibratio	n Samples Reporting Format Note	
Details 🛛 🔤 Calibration Standards	Batch Batch ID	EXAMPLE_COPY	
Batch Batch ID EXAMPLE BATCH	Analysis	Total Perroleum Hydrocarbons	
Created On 12/28/2014	Analyte Name	трн	
Created By USER	Method Name	Total Perroleum Hydrocarbons by GC-FID	
Batch Status Completed, Approve Last Updated 12/28/2014	Reference	EPA	
Analysis Total Perroleum Hyc	Instrument	GC-FID-01	
Analyte Name TPH Method Name Total Perroleum Hyc	Calibration Date	Sunday , December 28, 2014 💌	
Reference EPA	Calibrated By	Jhon	
Instrument GC-FID-01	Analysis Date	Sunday , December 28, 2014 🕑	
Conc. Unit mg/L Response Unit Reak Area	Analyzed By	Lewis	
Final Conc. Unit mg/Kg	Conc. Unit	mg/L	
Talibration	Response Unit	Peak Area	
Fitting Type Linear alibration Date 12/28/2014	Batch Status	Completed, Approved	
Analysis	Cancel	Ок	
Analysis Date 12/28/2014			

Delete Existing Batch

To delete existing batch, open batch you want to delete. Click **Delete Batch** button from toolbar. A message will appear to confirm, click **Yes** to proceed.

Restore Deleted Batch

To restore deleted batch(s), go to menu **Batch** >> **Restore Deleted Batch**. **Restore Deleted Batch** dialog will show up. Select batch(s) you want to restore, then click **Restore Selection** to proceed.

Standards

Add New Standard

To add new standard to batch click (+) button from standard table toolbar then **Edit Standard** dialog will show up.



Fill all information of the new standard. Below table explain each part:

Item	Description
Standard Name	Name of the standard (e.g. Standard One 25 ppm).
Number	Sequence order in the table. Standards are sorted in the table base
	on this number.
Concentration	Actual concentration of the analyte in the standard solution. Enter
	one value only.
Responses	Responses reading(s) from instruments used to run standard
	solution. You can enter single or multiple reading separated by
	comma. You may enter each ready in new line. The software will
	calculate the average and relative standard deviation RSD of the
	readings.
Weight	Weight factor required when weighted calibration is selected in
	Batch Options. There are manual and automatic calculations of
	weight.
Include in calibration	Include or exclude standard from calibration curve.
points	

Click **OK** to proceed. Once you add new standard, the software will do recalibration and recalculate all samples.

Edit Standard	
Standard Name	Standard 1
Level	1
Concentration	30 mg/L
Response(s) Peak Area	1230
	For mutiple values enter each value in separate line or separated by comma ','
Weight	0.002222222222223
Remark	cadmium chloride
	✓ Include in calibration
Cancel	ОК

Edit Existing Standard

To edit existing standard, **double click** standard you want to edit using left mouse button or select the standard using arrow up/down and press **ENTER**. Another way is to select standard and click on **Edit Standard** button from toolbar.



Edit Standard dialog will show up. Edit the standard information from the dialog and click **OK**. Once you edit standard, the software will do recalibration and recalculate all samples automatically.

Edit Standard	
Name	
Standard Name	Standard 6
Number	6
Analyte	
Analyte X Value	
Concentration	10
Analyte Y Values	
Response	2322,1889
For mutiple values ent	er each value in separate line or separated by comma ','
Include in calibration p	oints
Cancel	С

Delete Existing Standard

To delete standard, select standard you want to delete by mouse or by using keyboard arrows up/down. Click (-) button from standard table toolbar.



From confirmation message, click Yes to proceed. Note that there is no undo for this step.



Recalibrate Batch Standards

When recalibrate batch, the software will do all calculations for fitting equation, will mTo recalibrate batch, from toolbar, click **Recalibrate Standards** button



Samples

Add Sample to Batch

To add new sample to batch click (+) button from sample table toolbar then **Edit Sample** dialog will show up.

🐺 Edit Sample 📃 🗖 🔀
Sample Detail
Sample Name Sample 1
Number 3
Analyte Factors
Analyte Response
Responses 3412 3589
For mutiple values enter each value in separate line or separated by comma '.'
Sample Remark Remark
Cancel OK

Fill all information of the new sample. Below table explain each part

Analyte Tab	
Item	Description
Sample Name	Name of the sample.
Number	Sequence order in the table. Samples are sorted in the table base on
	this number.
Responses	Responses reading(s) from instruments used to run sample solution.
	You can enter single or multiple reading separated by comma. You
	may enter each ready in new line. The software will calculate the
	average and relative standard deviation RSD of the readings.
Remarks	Note about the sample.

📪 Edit Sample			
Sample Detail			
Sample Name	Sample 1		
Number	3		
Analyte Factors			
Dilution Factor			
Di	lution Factor	2	
Multiply Factor			
	Total Vol (L)	0.1	
Divide Factor			
Original Sar	mple Wt (Kg)	0.1	
Cancel			О К

Factors Tab	
Item	Description
Dilution Factor	Dilution factors means how many times sample is diluted, more details
	about this factor in Edit Batch dialog. Calculated concentration from
	calibration equation will be multiplied by this factor.
	If the sample is not diluted then set this factor = 1
Multiply Factor	Usually its value is set to total sample solution volume in liter. This
	factor will multiply with calculated concentration from calibration
	equation. Factor name can be changed from Edit Batch dialog.
Divide Factor	Usually its value is set to initial sample weight in Kg.
	Calculated concentration from calibration equation will divide by this
	factor. Factor name can be changed from Edit Batch dialog.

Factors can be removed from Edit Batch dialog.

Edit Sample

To edit existing sample, **double click** sample you want to edit using left mouse button or select the sample using arrow up/down and press **ENTER**. Another way is to select sample and click on **Edit Sample** button from toolbar.



😺 Edit Sample							
Sample Detail							
Sample N	lame Sample 1						
Nun	nber 3						
Analyte Factors							
Analyte Response							
Resp	onses 3412 3589	^					
		~					
For mutiple values enter each value in separate line or separated by comma ','							
Sample Remark- R	emark						
Cancel		ок					

Edit Sample dialog will show up. Edit the sample information from the dialog and click **OK**. Once you edit standard, the software will do recalculate edited sample final concentration.

Delete sample

To delete sample, select sample you want to delete by mouse or by using keyboard arrows up/down. Click (-) button from sample toolbar.



From confirmation message, click **Yes** to proceed. Note that there is no undo for this step.



Recalculate Samples

When recalculate sample, the software will do all calculations for all samples, it will take responses and calculate concentrations base on calibration equation. From the toolbar, click **Recalculate Samples** button



Note: This step will calculate all samples. It will **NOT** do recalibration of batch standards. If you want recalibration then see <u>Recalibrate Batch</u>.

Report

Batch report contains all batch details, standards and samples.

Generate Report

To generate batch report, open batch you want to report as per <u>Open Existing Batch</u> section. Click on Report button from toolbar, report will be generated on screen. Press **Print** button to print generated report.

Lab Name Testing Laboratory Name		Batch Report			EXAMPLE BATCH					
		Batch ID EXAMPLE BATCH	4			Created On 12/2	8/2014			
Analysis Total Perroleum Hydrocarbons				Created By USER						
		Analyte TPH		Calibrated On 12/28/2014						
		Method Total Perroleum H	ydrocarbons by GC-FID			Calibrated By Jhon				
	h	nstrument GC-FID-01				Analyzed On 12/2	8/2014			
	F	Reference EPA		Analyzed By Lewis						
Batch Status Completed, Approved				Last Updated On 12/28/2014						
				Calibration Stan	dards					
No.	Include Calib.	Standard Name	Concentration (mg/L)	Response (Peak Area)	RSD	Calc. Conc. (mg/L)	Error	Error %	Remark	
1	True	Standard 1	25	1200.000	0.0	18.999	-6.001	24.006		
2	True	Standard 2	50	2494.500	0.0	61.479	1.479	2.959		
3	True	Standard 3	100	4600.000	0.0	104.309	4.309	4.309		
4	True	Standard 4	250	10480.000	0.0	251.846	1.846	0.738		
	_		500	00005 000	0.0	400.360	1 6 2 2	0.326		

Save Report

To save report from report screen click on **Save** button and select the format you want to save. You can save report in various formats (e.g. PDF, JPEG, PNG, MS Excel, MS Word ... etc).

Registration

To register your copy Standard Curve do the following:

- 1. On **Standard Curve** software, go to menu **Help** >> **Registration**, the **Registration** dialog will show up.
- 2. Copy Hardware ID.
- 3. Visit <u>www.chemiasoft.com</u> and place your order for **Standard Curve**. Use the hardware ID while placing your order online, you will be asked for your hardware ID.
- 4. Once you complete your order, you will receive an email with the license information and registration code.
- 5. Copy the registration code from the email you received and paste it on the **Registration** dialog and click **Register** button. Welcome message will appear.
- 6. Close and restart **Standard Curve** to complete registration.
- 7. Enjoy using **Standard Curve** with full features.

Registration	
Registration Information	
	Activated
Hardware Unique ID: 3506-6E82-A635-63CA	
This version is license To:	
Name:	
Activation Code:	
-	
Register	
	CIUSE