

NovoFormula

Table of contents

About	3
License Agreement	3
Licensing Help	3
Getting Started	3
Units System	3
Data Entry	3
Toolbar & Menu	3
Main Page	4
Enter Known Soil Properties	5
Adding a Correlation	5
Results	8
List of Correlated Values	8
Distribution Chart	9
Equation Viewer	9
Reporting	10
Exporting Results	10
Graph Presentation Tool	10
Exporting Tables and Graphs	10
Novo Tech Software Website	10
Contact Us	11

About

NovoFORMULA

This software is designed for correlation between various soil properties.

Although all efforts have been undertaken to ensure that this software is of the highest possible quality and that the results obtained are correct, the authors do not warrant the functions contained in the program will meet your requirements or that the operation of the program will be uninterrupted or error-free. The authors are not responsible and assume no liability for any results or any use made thereof, nor for any damages or litigation that may result from the use of the software for any purpose. All results to be verified independently by user.

» <i>Purchase full version</i>	» About Novo Tech Software Inc
» <i>Update log</i>	» <i>Learn more about our other products</i>
» <i>Program's web page</i>	» <i>Bug report / feature request</i>
» Terms and conditions of use	» <i>Maintenance Plan</i>



Vancouver, Canada

License Agreement



View our online *End User License Agreement*

Licensing Help

View our online *Licensing Help*

Getting Started ...

 We recommend minimum 1024*768 screen resolution for using NovoLAB.

 To call the help contents associated with each page of the software, click on the  button on top-right corner of each page.

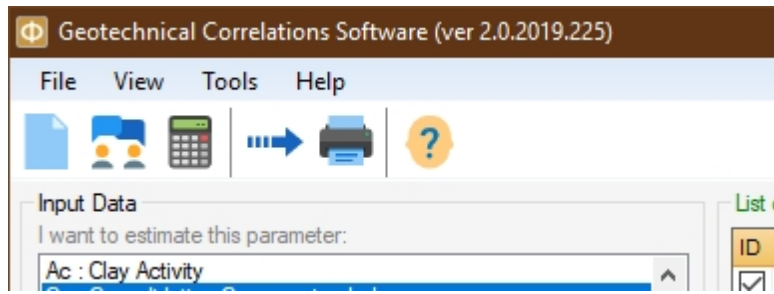
 Please contact us at support@novotechsoftware.com with any questions or suggestions.

Units System

NovoFORMULA supports both Metric and US Customary unit systems

Toolbar & Menu

Most of the commonly used commands in NovoFORMULA are placed in the top toolbar. For other commands use menu bar.



Main Page

In order to start a new analysis, press New button from the [top toolbar](#) or choose [File ▶ New](#) menu. The main steps of correlation analysis are described below:

Input Data
I want to estimate this parameter:
Ac : Clay Activity

List of correlations for Cc : Consolidation Compression Index

ID	Correlation Source	Value
<input checked="" type="checkbox"/>	12 Al-khafaji & Andersland, 1992	0.171
<input checked="" type="checkbox"/>	77 Azzouz et al., 1976	0.175
<input checked="" type="checkbox"/>	121 Azzouz et al., 1976	0.138
<input checked="" type="checkbox"/>	95 Azzouz et al., 1976	0.084
<input checked="" type="checkbox"/>	78 Bowles, 1989	0.164
<input checked="" type="checkbox"/>	83 Bowles, 1989	0.128
<input checked="" type="checkbox"/>	94 Cozzolino, 1961	0.106
<input checked="" type="checkbox"/>	126 Cozzolino, 1961	0.215
<input checked="" type="checkbox"/>	127 Cozzolino, 1961	0.028
<input checked="" type="checkbox"/>	80 Hough, 1957	0.139
<input checked="" type="checkbox"/>	125 Hough, 1957	0.088

Average value = 2.12E-001

Source: Cozzolino, 1961
Comments: Lowlands of Santos, Brazil

Equation of the selected correlation:
$$C_c = 1.21 + 1.055(e - 1.87)$$

Annotations:
- Select the soil parameter you would like to estimate (points to 'Ac : Clay Activity')
- Include / exclude available correlations (points to correlation list)
- Enter the values of known parameters (points to input table)
- See distribution of the correlation results (points to Distribution Chart)

1. Choose the target soil parameter

What soil parameter you are looking for? NovoFORMULA provides you with a list of soil properties which can be estimated based on other parameters (see #1 in the screenshot above).

2. Enter soil parameters

Depending on the chosen target parameter, the table at the bottom-left portion of the page will be populated with the list of the required soil parameters. If the value of all these parameters are entered, then all available correlation for the target soil parameter will be provided to you. However, in most cases we just have some of these soil properties; this will cause part of the correlations be presented. As you enter soil parameters (see #2 in the screenshot), the list of formulas (#3) is updated with more equations.

3. Review the results

Once you are done with data entry, [review the list of correlations](#) (see #3 on screenshot). By clicking on each row, additional comments and the actual equation are presented below the table. Based on these comments you may want to remove some of the results from the list by un-checking the box to the left of each row (for example the equation might have been derived for another soil type or geographical location, etc). Once you remove an equation from the list, the average of correlated values will be updated.

By clicking on "[Distribution Chart](#)" button, will show a chart containing all correlated values in a chart.

Enter Known Soil Properties


In order to obtain the results, value of soil parameters should be entered in the table as shown below:

Based on these parameters: 

Symbol	Parameter Description	Value	Unit	^
LL	Liquid Limit	32	%	
PL	Plastic Limit	43	%	
SL	Shrinkage Limit		%	
IP	Plastic Index	11	%	

Most of the times, part of the input parameters are enough to provide at least one [result](#); however in order to have the results for all the available equations, all the listed soil parameters should be given to the program. As parameters are entered, results will be updated.

Adding a Correlation

More than 140 equations are implemented in this version of NovoFORMULA. However, its database is expandable and can grow by adding new equations. User can add new formula by clicking on  **Tools** ▶ **Add New Formula** menu. This will show the screenshot on the left below:

Add New Geotechnical Formula

Please enter your contact information below:

Full Name: Email:

Add New Formula
 In order to add the new formula, please use the same symbols used in NovoFormula. For a complete list of soil symbols [see here](#).

Author: Web ref.:

Equation:

Comments:

Soil Parameters

The following table shows complete list of soil parameters used in NovoFormula. You can add and delete soil parameters. For formatting see the note below:

Symbol	Parameter Description	Unit	Formatting
Ac	Clay Activity		N1
CBRb	Base Course CBR	%	N2
CBRs	Subgrade CBR	%	N2
Cc	Consolidation Compression		N3
Cc_	Coefficient of Curvature		N2
Cs	Consolidation		N3
Cu_	Uniformity Coefficient (Sieve		N2
Cv	Coefficient of Consolidation	m2/sec	E3
D10	Effective Particle Diameter	mm	N3
D30	30% Passing Diameter	mm	N3
D50	Mean Particle Diameter	mm	N3
D60	60% Passing Diameter	mm	N3
Dr	Relative Density	%	N1

Formatting Examples:
 N2: 1.23
 E2: 1.2E-23

In order to add an equation, NovoFORMULA's standard parameters should be used. For example the equation $\gamma_w = \gamma_d(1+w)$ defines the relation between bulk and dry density using moisture content. This equation is stored as $g_{wet} = g_{dry} * (1 + w/100)$ in NovoFORMULA's database. A list of soil parameters defined in NovoFORMULA can be accessed via [View ▶ List of Soil Parameters](#) menu, also listed below:

Symbol	Description	Unit (Metric)	Unit	Format
--------	-------------	---------------	------	--------

		(Imperial)		
Cc_	Coefficient of Curvature (Sieve Test)			N2
Cu_	Uniformity Coefficient (Sieve Test)			N2
Cc	Consolidation Compression Index			N3
Cs	Consolidation Recompression Index			N3
Cv	Coefficient of Consolidation	m2/sec	ft2/sec	E3
Su	Undrained Shear Strength	kPa	psf	N1
Dr	Relative Density	%	%	N1
Es	Modulus of Elasticity of Soil	kPa	psf	N1
Er	Resilient Modulus of Soil	MPa	ksf	N1
Ed	Modulus of Deformation of Rock	GPa	1000ksf	N1
Phi	Friction Angle	deg	deg	N1
Ks	Modulus of Subgrade Reaction	kN/m3	pcf	N1
Vs	Shear Wave Velocity	m/s	ft/s	N1
Gmax	Shear Modulus	kPa	psf	N1
mv	Constraint Modulus	1/kPa	1/psf	E3
LL	Liquid Limit	%	%	N1
PL	Plastic Limit	%	%	N1
IP	Plastic Index	%	%	N1
LI	Liquid Index	%	%	N1
w	Moisture Content	%	%	N1
mu	Poisson Ratio			N2
e	Void Ratio			N2
Gs	Specific Gravity			N2
gsat	Saturated Unit Weight	kN/m3	pcf	N2
gdry	Dry Unit Weight	kN/m3	pcf	N2
gwet	Wet Unit Weight	kN/m3	pcf	N2
F	Percent fine-grained (clay & silt)	%	%	N1
Fc	Percent clay	%	%	N1
OCR	Over-consolidation Ratio			N2
Svt	Total Overburden Stress	kPa	psf	N2
Sve	Effective Overburden Stress	kPa	psf	N2
K	Coefficient of Permeability	cm/sec	in/sec	E3
D10	Effective Particle Diameter	mm	mm	N3
D30	30% Passing Diameter	mm	mm	N3
D50	Mean Particle Diameter	mm	mm	N3
D60	60% Passing Diameter	mm	mm	N3
CBRs	Subgrade CBR	%	%	N2
CBRb	Base Course CBR	%	%	N2
Pc	Preconsolidation Stress	kPa	psf	N2
S	Degree of Saturation	%	%	N1
n	Porosity			N2
Mv	Coefficient of Compressibility			E3
Ka	Coeff. of Active Earth Pressure			N3
Kp	Coeff. of Passive Earth Pressure			N3
Ko	Coeff. of At-rest Earth Pressure			N3
KD	Dilatometer Parameter			N2

RMR	Rock Mass Rating	%	%	N1
Tv	Time Factor-Consolidation Drainage Thickness of the			N3
Hdr	Layer-Consolidation	m	ft	N2
t	Time	sec	sec	N1
U	Degree of Saturation	%	%	N1
Ac	Clay Activity			N1
Sp	Swelling Potential			N1

List of Correlated Values

Once you are done with data entry, review the list of correlations (see screenshot below). By clicking on each row, additional comments and the actual equation are presented below the table. Based on these comments you may want to remove some of the results from the list by un-checking the box to the left of each row (for example the equation might have been derived for another soil type or geographical location, etc).

The screenshot shows the 'Geotechnical Correlations Software (ver 2.0.2019.225)' interface. On the left, the 'Input Data' section shows 'I want to estimate this parameter:' with a list of parameters. 'Cc: Consolidation Compression Index' is selected. Below this, a table shows 'Based on these parameters:' with values for LL (32%), PL (43%), SL, IP (11%), w, e (0.75), eL, Gs, gsat, gdry, F, and n. A red arrow points to the 'e' value with the text 'Enter the values of known parameters'. The main window displays a 'List of correlations for Cc: Consolidation Compression Index' with columns for ID, Correlation Source, and Value. Several rows are checked, and the 'Average value = 2.12E-001' is shown. A 'Distribution Chart' button is visible. Below the list, the 'Source' is 'Cozzolino, 1961' and 'Comments' are 'Lowlands of Santos, Brazil'. A red arrow points to the 'Distribution Chart' with the text 'See distribution of the correlation results'. The equation $C_c = 1.21 + 1.055(e - 1.87)$ is displayed, with a red arrow pointing to it and the text 'Equation of the selected correlation'. The NovoTech software logo is at the bottom.

Once you remove an equation from the list, the "Average value" of the correlations will be updated.

How to export the table into Microsoft Excel

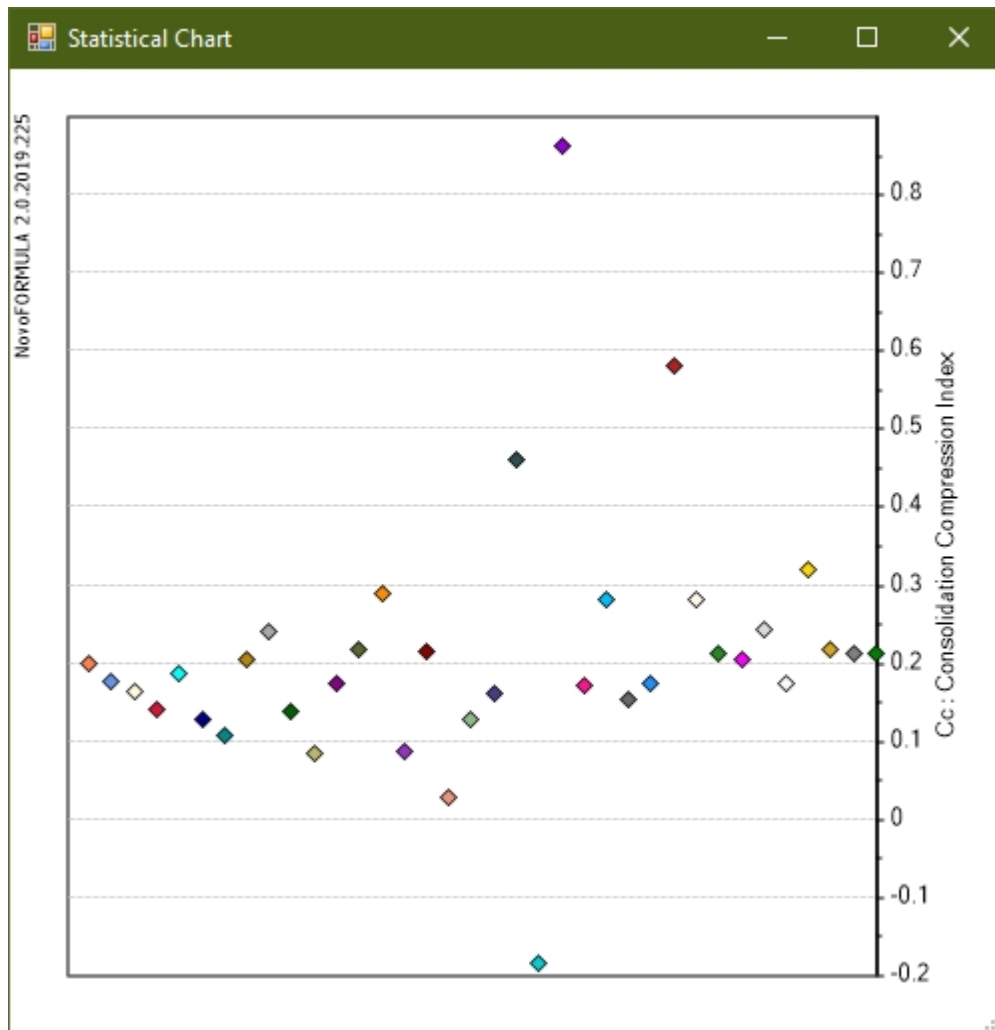
Click on the **File** ► **Export** menu. Then choose the file name and path in the dialog and the table/chart will be saved as an Excel file.

Visualization of correlated values

To better visualize the results of correlations, click on [Distribution Chart](#) button. A new page will show a scatter chart for the results which helps user comparing the correlated values and picking the most reasonable range for the soil parameter. In order to view additional information, move the mouse over each point on the graph.

Distribution Chart

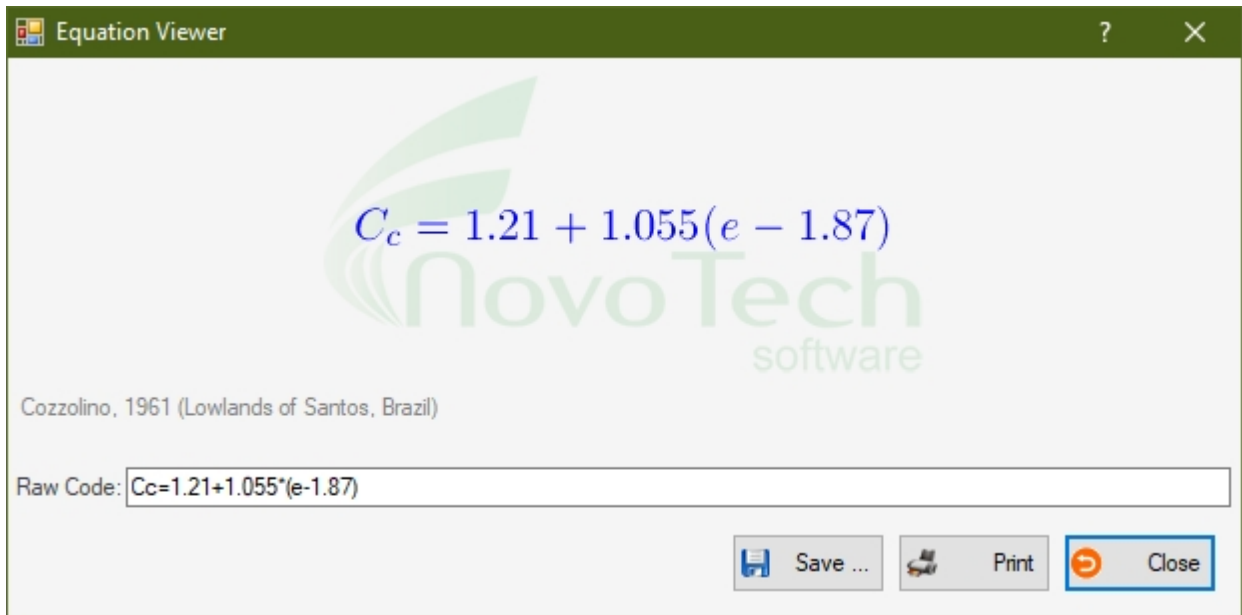
A distribution chart, summarizes all correlated values obtained from several available equations on the same chart. This allows user to get a reasonable understanding of distribution of results. For example, as it can be seen on this screenshot, the C_c values generally vary between 0.1 for 0.2 for the specific input data provided to the program.




In order to get the source (name of geoscientist) of each point, simply move the mouse over the point.

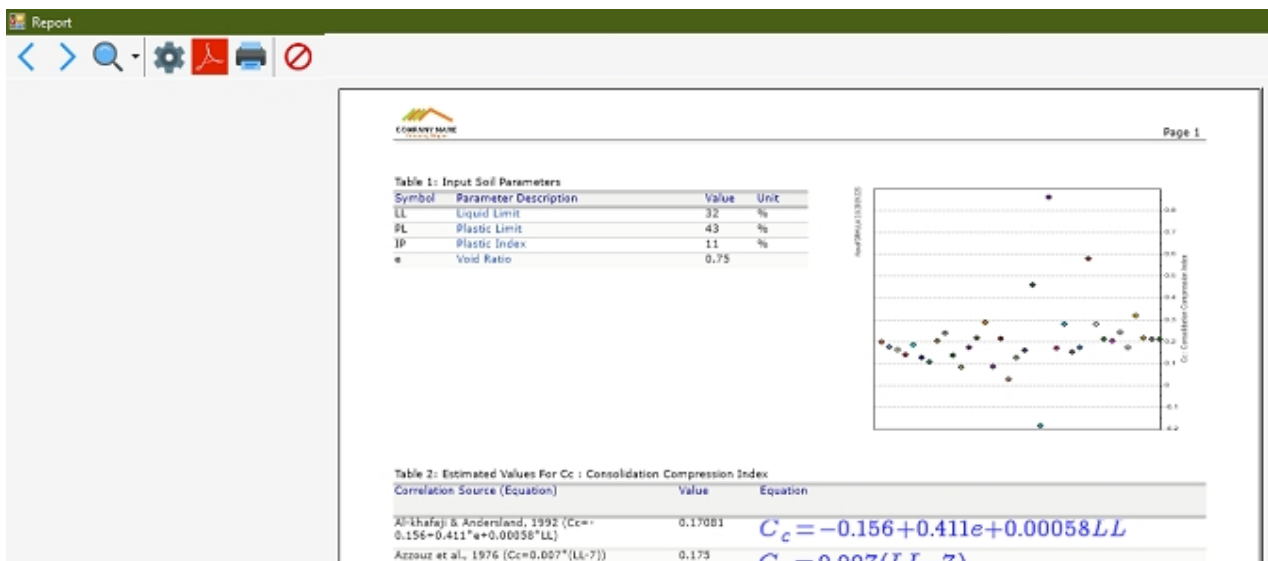
Equation Viewer

By clicking on each row on the [correlated parameters](#), its equation will be presented at the bottom-right portion of the page. If you click on this equation, another page (see below) will appear with more feature such as saving and printing the equation.



Reporting

By pressing  **Print** button all correlated results will be summarized in a report. The print preview page allows user change the page setup, print the report, save the report as PDF, and set the zoom level.



Graph Presentation Tool

Please visit online help for this item. [Click here to open the help.](#)

Exporting Tables and Graphs

Please visit online help for this item. [Click here to open the help.](#)

Novo Tech Software Website

Visit our website at <http://www.novotechsoftware.com>

Contact Us

Send a support request at <http://www.novotechsoftware.com/contact-us/>