Triangular diagram plotting spreadsheet (TRI-PLOT)

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Full documentation (PDF - requires Adobe Acrobat reader) Get Adobe Acrobat Reader

Introduction

This spreadsheet plots triangular (ternary) diagrams for the representation of particle shape following the method recommended by Benn and Ballantyne (1993) and first proposed by Sneed and Folk (1958). Ordinary ternary diagram plotting software is unable to plot these diagrams as the parameters on the three axes do not sum to 1. The spreadsheet also plots standard ternary diagrams for the representation of particle size. The spreadsheet is described in Graham and Midgley (2000).

Brief instructions

Click here to generate a particle SHAPE (Sneed and Folk) triangular diagram

Click here to generate a particle SIZE (conventional) triangular diagram

This file only contains brief instructions on the operation of TRI-PLOT. Users are referred to the full documentation for full details.

The workbook contains three sheets:
- This sheet contains instructions and information about TRI-PLOT.
- The second sheet is for the generation of particle SHAPE (Sneed and Folk) triangular diagrams.
- The third sheet is for the generation of standard triangular diagrams to represent particle SIZE. It may be used for any tri-variate data in which the three variables represent the proportion of a whole.

To generate SHAPE (Sneed and Folk) triangular diagrams

This part of the spreadsheet generates ternary diagrams for the representation of particle shape as recommended by Benn and Ballantyne (1993) and first proposed by Sneed and Folk (1958). The inputs required are the a-, b- and c-axis lengths of the particles. The "SHAPE" sheet can be accessed using the button above or the tab at the bottom of the screen. The sheet contains five areas: the data entry area, the plotting parameters area, the isoline values area, the triangular diagram itself, and the calculations area.

Data entry area
Type the a-, b- and c-axis dimensions of each clast into the table. The units of measurement are not important, as long as they are consistent. Error messages are displayed in blue. The triangular diagram will update as data are entered. The data entry area is set up initially to accept data for 250 clasts. Samples of less than 250 clasts do not require the spreadsheet to be altered. Samples of more than 250 clasts require that the spreadsheet is altered by copying the formulae in columns P - T the required number of times.

Plotting parameters area
This area defines aspects of how the triangular diagram will appear on the screen and when printed. Full details of the options are in the documentation.

Isoline values area
This area provides the opportunity to define which isolines of the oblate-prolate index and the maximum projection sphericity index are plotted on the triangular diagram. Whether the isolines are plotted depends on the appropriate setting in the plotting parameters area.

Sneed & Folk classes area
This area shows the proportion of particles that fall into each of the Sneed & Folk (1958) descriptive shape classes. Data are presented as raw counts and percentages.

Calculations area
This is the area in which Excel calculates the locations at which to plot the user-entered data and other elements of the triangular diagram. It should not be necessary to modify this area, except if the number of grains to be plotted exceeds 250 (in which case the formulae in columns P - T should be copied the required number of

times).

Modifications to the triangular diagram
The triangular diagram itself may be modified to change line thickness, symbols used etc. Each aspect of the diagram is saved as a different data series and may be altered in the standard way for Excel charts. Additional data series may be added in the standard way to allow multiple data sets to be plotted on a single diagram. Refer to the Excel manual or help for further details of how to modify charts and to the TRI-PLOT documentation for details of the data series that comprise the chart.

To generate SIZE triangular diagrams

This part of the spreadsheet generates standard triangular diagrams for the representation of particle size. The "SIZE" sheet can be accessed using the button above or the tab at the bottom of the screen.

The procedure for generating a SIZE ternary diagram is almost identical to that for shape. The inputs required are the proportion of sediment in each of three size classes (e.g. gravel, sand, mud). These must be entered as a percentage and total 100. An error is given if the data do not sum to 100. The only other significant difference is that the plotting parameters are more limited.

Technical notes

The spreadsheet was prepared using Excel 97 and 2000. It has been tested with Excel 2000 and should work with all subsequent versions, but does not work with earlier versions.

Technical queries and problems with this spreadsheet should be addressed to:
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Revision history

v1.2 Additional option added to SHAPE to enable the boundaries of Sneed & Folk's (1958) descriptive shape classes to be plotted.
v1.3 Additional options added to SHAPE to plot Dobkins & Folk's (1970) oblate-prolate index isolines and Sneed & Folk's (1958) maximum projection sphericity isolines. Error in tick angles along bottom axis corrected. Default maximum number of grains increased to 250. Calculations and input/output sheets combined. Instructions sheet updated.
v1.4 A table showing the proportion of grains falling into each of the Sneed & Folk descriptive classes added. Minor corrections to documentation.

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SHAPE - for producing Sneed & Folk diagrams

Data entry area

Clast no.	Clast axes a-axis	b-axis	c-axis	Error messages
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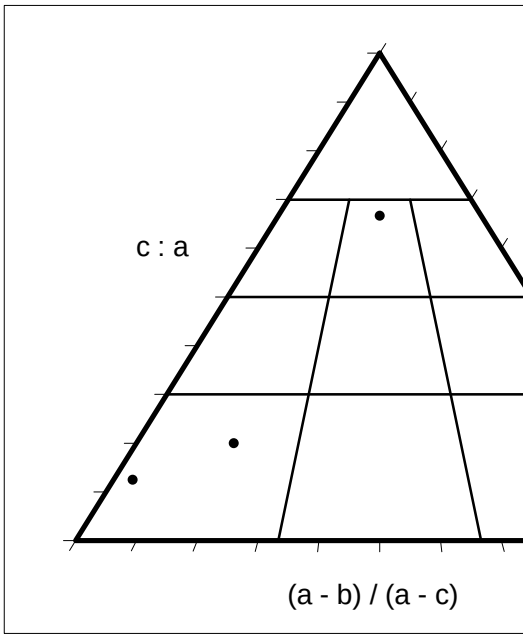
Plotting parameters area

Printer correction:	1.15
Tick interval (0 - 0.5):	0.1
Tick length (0 - 0.2):	0.02
Plot C_{40} line? (Y or N):	n
Left & right axis lines? (Y or N):	n
Bottom axis lines? (Y or N):	n
Bottom axis ticks? (Y or N):	y
Sneed & Folk classes? (Y or N):	y
Oblate-prolate isolines? (Y or N):	n
Max proj sphericity isolines? (Y or N):	n



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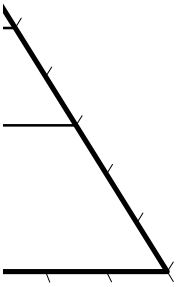
Click here to return to the INSTRUCTIONS

Error messages

Isoline values

		Error messages
Oblate-prolate isoline values:	0.0	
	2.5	
	5.0	
Enter up to 10 values >= 0	7.5	
	10.0	
Negative values are calculated automatically	15.0	
	20.0	
	30.0	
Max projection sphericity isolines:	0.2	
	0.3	
	0.4	
Enter up to 10 values (0 - 1)	0.5	
	0.6	
	0.7	
	0.8	
	0.9	

b : a



Sneed & Folk classes

	Count	Percent
Compact	0	0.00
Compact-Platy	0	0.00
Compact-Bladed	1	33.33
Compact-Elongate	0	0.00
Platy	0	0.00
Bladed	0	0.00
Elongate	0	0.00
Very-Platy	2	66.67
Very-Bladed	0	0.00
Very-Elongate	0	0.00

Calculations area: do not cha

Clast axis ratios	
c/a	b/a
0.13	0.97
0.20	0.84
0.67	0.83
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nge values (workings in red, output in blue)

Graph co-ordinates			Range of c/a				Range of (a-b)/(a-c)					
x	y	(a-b) /(a-c)	<=0.3	>0.3, <=0.5	>0.5, <=0.7	>0.7	<=3.33	>0.333, <=0.67	>0.67	C	CP	CB
0.09	0.12	0.04	1	0	0	0	1	0	0	0	0	0
0.26	0.20	0.20	1	0	0	0	1	0	0	0	0	0
0.50	0.66	0.50	0	0	1	0	0	1	0	0	0	1
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-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
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-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
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-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
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-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
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-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0

-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
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-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
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-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
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-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
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-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
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-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
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-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
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-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0

-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0
-1.00	-1.00	0.00	0	0	0	0	1	0	0	0	0	0

of clasts, copy the contents of columns U-Y into the rows below.

						Sneed and Folk shape class
CE	P	B	E	VP	VB	VE
0	0	0	0	1	0	0
0	0	0	0	1	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

Plotting parameter summary	
Printer correction:	1.15
Tick interval:	0.1
Tick length:	0.02
Plot C40 line?:	0
Plot lines?:	0
Bot'm axis lines?:	0
Bot'm axis ticks?:	1
Sneed and Folk lines?:	1
OPI lines?:	0
MPS lines?:	0

Triang
x
0.50
0.00
1.00
0.50

Tick position	Left x
0	0.00
0	-0.02
0	
0.1	0.05
0.1	0.03
0.1	
0.2	0.10
0.2	0.08
0.2	
0.3	0.15
0.3	0.13
0.3	
0.4	0.20
0.4	0.18
0.4	
0.5	0.25
0.5	0.23
0.5	
0.6	0.30
0.6	0.28
0.6	
0.7	0.35
0.7	0.33
0.7	
0.8	0.40
0.8	0.38
0.8	
0.9	0.45
0.9	0.43
0.9	
1	0.50
1	0.48
1	
	0.50

0	0	0	0	0	0	0	0.50
0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0.50
0	0	0	0	0	0	0	0.50
0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0.50
0	0	0	0	0	0	0	0.50
0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0.50
0	0	0	0	0	0	0	0.50
0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0.50
0	0	0	0	0	0	0	0.50
0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0.50
0	0	0	0	0	0	0	0.50
0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0.50
0	0	0	0	0	0	0	0.50
0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0.50
0	0	0	0	0	0	0	0.50
0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0.50
0	0	0	0	0	0	0	0.50
0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0.50
0	0	0	0	0	0	0	0.50
0	0	0	0	0	0	0	
0	0	0	0	0	0	0	
0	0	0	0	0	0	0	
0	0	0	0	0	0	0	
0	0	0	0	0	0	0	
0	0	0	0	0	0	0	
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0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

0	0	0	0	0	0	0

0	0	0	0	0	0	0

gle outline y
1.00
0.00
0.00
1.00

C40 line x	C40 line y
0.00	0.00
0.00	0.00

(c/a ratio) axis ticks y	Right (b/a ratio) axis ticks x	Right (b/a ratio) axis ticks y	Left axis lines x	Left axis lines y	Right axis lines x	Right axis lines y	Bottom axis lines x	Bottom axis lines y
0.00	1.00	0.00	0.00	0.00	0.00	0.00		
0.00	1.01	0.02	0.00	0.00				
0.10	0.95	0.10	0.00	0.00	0.00	0.00	0.50	1.00
0.10	0.96	0.12	0.00	0.00	0.00	0.00	0.50	1.00
0.20	0.90	0.20	0.00	0.00	0.00	0.00	0.50	1.00
0.20	0.91	0.22	0.00	0.00	0.00	0.00	0.50	1.00
							0.50	1.00
0.30	0.85	0.30	0.00	0.00	0.00	0.00		
0.30	0.86	0.32	0.00	0.00	0.00	0.00		
0.40	0.80	0.40	0.00	0.00	0.00	0.00	0.50	1.00
0.40	0.81	0.42	0.00	0.00	0.00	0.00	0.50	1.00
							0.50	1.00
0.50	0.75	0.50	0.00	0.00	0.00	0.00		
0.50	0.76	0.52	0.00	0.00	0.00	0.00		
0.60	0.70	0.60	0.00	0.00	0.00	0.00	0.50	1.00
0.60	0.71	0.62	0.00	0.00	0.00	0.00	0.50	1.00
							0.50	1.00
0.70	0.65	0.70	0.00	0.00	0.00	0.00		
0.70	0.66	0.72	0.00	0.00	0.00	0.00		
0.80	0.60	0.80	0.00	0.00	0.00	0.00	0.50	1.00
0.80	0.61	0.82	0.00	0.00	0.00	0.00	0.50	1.00
							0.50	1.00
0.90	0.55	0.90	0.00	0.00	0.00	0.00		
0.90	0.56	0.92	0.00	0.00	0.00	0.00		
1.00	0.50	1.00	0.00	0.00	0.00	0.00	0.50	1.00
1.00	0.51	1.02	0.00	0.00	0.00	0.00	0.50	1.00
							0.50	1.00
1.00	0.50	1.00	0.00	0.00	0.00	0.00		

1.00	0.50	1.00	0.00	0.00	0.00	0.00		
1.00	0.50	1.00	0.00	0.00	0.00	0.00	0.50	1.00
1.00	0.50	1.00	0.00	0.00	0.00	0.00	0.50	1.00
							0.50	1.00
1.00	0.50	1.00	0.00	0.00	0.00	0.00		
1.00	0.50	1.00	0.00	0.00	0.00	0.00		
1.00	0.50	1.00	0.00	0.00	0.00	0.00	0.50	1.00
1.00	0.50	1.00	0.00	0.00	0.00	0.00	0.50	1.00
							0.50	1.00
1.00	0.50	1.00	0.00	0.00	0.00	0.00		
1.00	0.50	1.00	0.00	0.00	0.00	0.00		
1.00	0.50	1.00	0.00	0.00	0.00	0.00	0.50	1.00
1.00	0.50	1.00	0.00	0.00	0.00	0.00	0.50	1.00
							0.50	1.00
1.00	0.50	1.00	0.00	0.00	0.00	0.00		
1.00	0.50	1.00	0.00	0.00	0.00	0.00		
1.00	0.50	1.00	0.00	0.00	0.00	0.00	0.50	1.00
1.00	0.50	1.00	0.00	0.00	0.00	0.00	0.50	1.00
							0.50	1.00
1.00	0.50	1.00	0.00	0.00	0.00	0.00		
1.00	0.50	1.00	0.00	0.00	0.00	0.00		
1.00	0.50	1.00	0.00	0.00	0.00	0.00	0.50	1.00
1.00	0.50	1.00	0.00	0.00	0.00	0.00	0.50	1.00
							0.50	1.00
1.00	0.50	1.00	0.00	0.00	0.00	0.00		
1.00	0.50	1.00	0.00	0.00	0.00	0.00		
1.00	0.50	1.00	0.00	0.00	0.00	0.00	0.50	1.00
1.00	0.50	1.00	0.00	0.00	0.00	0.00	0.50	1.00
							0.50	1.00

Bottom axis ticks			
x-calc	y-calc	x	y
0.00	0.00	0.00	0.00
-0.01	-0.02	-0.01	-0.02
0.10	0.00	0.10	0.00
0.09	-0.02	0.09	-0.02
0.20	0.00	0.20	0.00
0.19	-0.02	0.19	-0.02
0.30	0.00	0.30	0.00
0.30	-0.02	0.30	-0.02
0.40	0.00	0.40	0.00
0.40	-0.02	0.40	-0.02
0.50	0.00	0.50	0.00
0.50	-0.02	0.50	-0.02
0.60	0.00	0.60	0.00
0.60	-0.02	0.60	-0.02
0.70	0.00	0.70	0.00
0.70	-0.02	0.70	-0.02
0.80	0.00	0.80	0.00
0.81	-0.02	0.81	-0.02
0.90	0.00	0.90	0.00
0.91	-0.02	0.91	-0.02
1.00	0.00	1.00	0.00
1.01	-0.02	1.01	-0.02
0.00	0.00	0.00	0.00

Sneed and Folk classes		
	x	y
top line	0.35	0.70
	0.65	0.70
middle line	0.25	0.50
	0.75	0.50
bottom line	0.15	0.30
	0.85	0.30
left line	0.33	0.00
	0.45	0.70
right line	0.67	0.00
	0.55	0.70

OPI	(a-b)/(a-c)
	0.50
	0.60
	0.70
	0.80
	0.90
	1.00
	0.50
	0.60
	0.70
	0.80
	0.90
	1.00
	0.50
	0.60
	0.70
	0.80
	0.90
	1.00
	0.50
	0.60
	0.70
	0.80
	0.90
	1.00
	0.50
	0.60
	0.70
	0.80
	0.90
	1.00

0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00

	0.50
	0.60
	0.70
	0.80
	0.90
	1.00
	0.50
	0.60
	0.70
	0.80
	0.90
	1.00
	0.50
	0.60
	0.70
	0.80
	0.90
	1.00
	0.50
	0.60
	0.70
	0.80
	0.90
	1.00
	0.50
	0.60
	0.70
	0.80
	0.90
	1.00

			Oblate-prolate index isolines		
c:a	x-intermed	y-intermed	x-right	x-left	y
	0.00	0.00	0.00	1.00	0.00
	0.00	0.00	0.00	1.00	0.00
	0.00	0.00	0.00	1.00	0.00
	0.00	0.00	0.00	1.00	0.00
	0.00	0.00	0.00	1.00	0.00
	0.00	0.00	0.00	1.00	0.00
	0.00	0.00	0.00	1.00	0.00
	0.00	0.00	0.00	1.00	0.00
	0.00	0.00	0.00	1.00	0.00
	0.00	0.00	0.00	1.00	0.00
	0.00	0.00	0.00	1.00	0.00
	0.00	0.00	0.00	1.00	0.00
	0.00	0.00	0.00	1.00	0.00
	0.00	0.00	0.00	1.00	0.00
	0.00	0.00	0.00	1.00	0.00
	0.00	0.00	0.00	1.00	0.00
	0.00	0.00	0.00	1.00	0.00
	0.00	0.00	0.00	1.00	0.00
	0.00	0.00	0.00	1.00	0.00
	0.00	0.00	0.00	1.00	0.00
	0.00	0.00	0.00	1.00	0.00
	0.00	0.00	0.00	1.00	0.00
	0.00	0.00	0.00	1.00	0.00
	0.00	0.00	0.00	1.00	0.00
	0.00	0.00	0.00	1.00	0.00
	0.00	0.00	0.00	1.00	0.00
	0.00	0.00	0.00	1.00	0.00
	0.00	0.00	0.00	1.00	0.00
	0.00	0.00	0.00	1.00	0.00
	0.00	0.00	0.00	1.00	0.00
	0.00	0.00	0.00	1.00	0.00

		Ma
MPS	c/b	c/a
	lhs	########
	0.10	########
	0.20	########
	0.30	########
	0.40	########
	0.50	########
	0.60	########
	0.70	########
	0.80	########
	0.90	########
	1.00	########
	lhs	########
	0.10	########
	0.20	########
	0.30	########
	0.40	########
	0.50	########
	0.60	########
	0.70	########
	0.80	########
	0.90	########
	1.00	########
	lhs	########
	0.10	########
	0.20	########
	0.30	########
	0.40	########
	0.50	########
	0.60	########
	0.70	########
	0.80	########
	0.90	########

							1.00	########
	0.00	0.00	0.00	1.00	0.00			
	0.00	0.00	0.00	1.00	0.00	lhs		########
	0.00	0.00	0.00	1.00	0.00		0.10	########
	0.00	0.00	0.00	1.00	0.00		0.20	########
	0.00	0.00	0.00	1.00	0.00		0.30	########
	0.00	0.00	0.00	1.00	0.00		0.40	########
							0.50	########
	0.00	0.00	0.00	1.00	0.00		0.60	########
	0.00	0.00	0.00	1.00	0.00		0.70	########
	0.00	0.00	0.00	1.00	0.00		0.80	########
	0.00	0.00	0.00	1.00	0.00		0.90	########
	0.00	0.00	0.00	1.00	0.00		1.00	########
	0.00	0.00	0.00	1.00	0.00			
						lhs		########
	0.00	0.00	0.00	1.00	0.00		0.10	########
	0.00	0.00	0.00	1.00	0.00		0.20	########
	0.00	0.00	0.00	1.00	0.00		0.30	########
	0.00	0.00	0.00	1.00	0.00		0.40	########
	0.00	0.00	0.00	1.00	0.00		0.50	########
	0.00	0.00	0.00	1.00	0.00		0.60	########
							0.70	########
	0.00	0.00	0.00	1.00	0.00		0.80	########
	0.00	0.00	0.00	1.00	0.00		0.90	########
	0.00	0.00	0.00	1.00	0.00		1.00	########
	0.00	0.00	0.00	1.00	0.00			
	0.00	0.00	0.00	1.00	0.00	lhs		########
	0.00	0.00	0.00	1.00	0.00		0.10	########
							0.20	########
	0.00	0.00	0.00	1.00	0.00		0.30	########
	0.00	0.00	0.00	1.00	0.00		0.40	########
	0.00	0.00	0.00	1.00	0.00		0.50	########
	0.00	0.00	0.00	1.00	0.00		0.60	########
	0.00	0.00	0.00	1.00	0.00		0.70	########
	0.00	0.00	0.00	1.00	0.00		0.80	########
	0.00	0.00	0.00	1.00	0.00		0.90	########
	0.00	0.00	0.00	1.00	0.00		1.00	########
						lhs		########
							0.10	########
							0.20	########
							0.30	########
							0.40	########
							0.50	########

		0.60	########
		0.70	########
		0.80	########
		0.90	########
		1.00	########
	lhs		########
		0.10	########
		0.20	########
		0.30	########
		0.40	########
		0.50	########
		0.60	########
		0.70	########
		0.80	########
		0.90	########
		1.00	########
	lhs		########
		0.10	########
		0.20	########
		0.30	########
		0.40	########
		0.50	########
		0.60	########
		0.70	########
		0.80	########
		0.90	########
		1.00	########

x projection sphericity isolines		
x-intermed	x	y
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SIZE - for producing conventional triangular d

Data entry area

Sample no.	Proportion in class (%) Class 1	Class 2	Class 3	Error messages
1	20	50	30	
2	30	20	50	
3	60	10	30	
4				
5				
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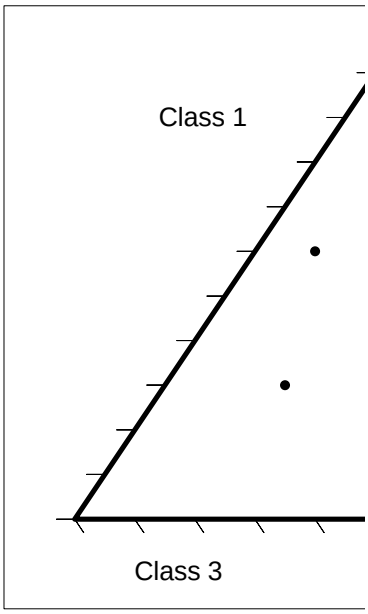
47				

Plotting parameters area

Printer correction:	1.1
Tick interval (0 - 0.5):	0.1
Tick length (0 - 0.2):	0.03
Plot lines? (Y or N):	n



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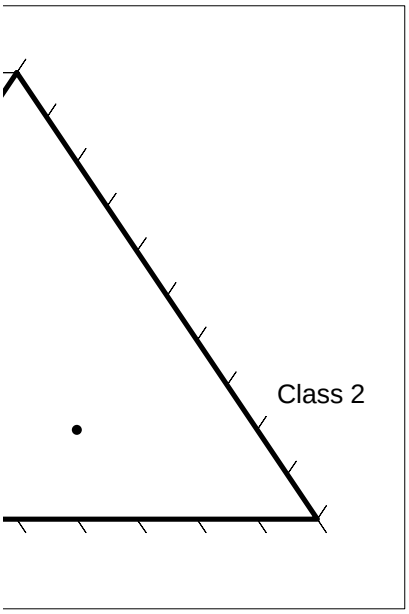
iagrams

Click here to return to the INSTRUCTIONS

Error messages



Calculations area: do not change values (workings in red, output in blue)

Graph co-ordinates	
x	y
0.6	0.19052
0.35	0.28578
0.4	0.57156
-1	-1
-1	-1
-1	-1

-1	-1
-1	-1
-1	-1

-1	-1
-1	-1
-1	-1

-1	-1
-1	-1
-1	-1

-1	-1
-1	-1
-1	-1

Right axis ticks		Left axis lines		Right axis lines		Bottom axis lines	
x	y	x	y	x	y	x	y
1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.02	0.03	0.00	0.00				
1.00	0.00						
0.95	0.10	0.00	0.00	0.00	0.00	0.00	0.00
0.97	0.12	0.00	0.00	0.00	0.00	0.00	0.00
0.95	0.10						
0.90	0.19	0.00	0.00	0.00	0.00	0.00	0.00
0.92	0.22	0.00	0.00	0.00	0.00	0.00	0.00
0.90	0.19						
0.85	0.29	0.00	0.00	0.00	0.00	0.00	0.00
0.87	0.31	0.00	0.00	0.00	0.00	0.00	0.00
0.85	0.29						
0.80	0.38	0.00	0.00	0.00	0.00	0.00	0.00
0.82	0.41	0.00	0.00	0.00	0.00	0.00	0.00
0.80	0.38						
0.75	0.48	0.00	0.00	0.00	0.00	0.00	0.00
0.77	0.50	0.00	0.00	0.00	0.00	0.00	0.00
0.75	0.48						
0.70	0.57	0.00	0.00	0.00	0.00	0.00	0.00
0.72	0.60	0.00	0.00	0.00	0.00	0.00	0.00
0.70	0.57						
0.65	0.67	0.00	0.00	0.00	0.00	0.00	0.00
0.67	0.70	0.00	0.00	0.00	0.00	0.00	0.00
0.65	0.67						
0.60	0.76	0.00	0.00	0.00	0.00	0.00	0.00
0.62	0.79	0.00	0.00	0.00	0.00	0.00	0.00
0.60	0.76						
0.55	0.86	0.00	0.00	0.00	0.00	0.00	0.00
0.57	0.89	0.00	0.00	0.00	0.00	0.00	0.00
0.55	0.86						
0.50	0.95	0.00	0.00	0.00	0.00	0.00	0.00
0.52	0.98	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.95						
0.50	0.95	0.00	0.00	0.00	0.00	0.00	0.00

0.50	0.95	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.95						
0.50	0.95	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.95	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.95						
0.50	0.95	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.95	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.95						
0.50	0.95	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.95	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.95						
0.50	0.95	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.95	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.95						
0.50	0.95	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.95	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.95						
0.50	0.95	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.95	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.95						
0.50	0.95	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.95	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.95						
0.50	0.95	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.95	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.95						
0.50	0.95	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.95	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.95						
0.50	0.95	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.95	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.95						

Bottom axis ticks			
x-calc	y-calc	x	y
0.00	0.00	0.00	0.00
0.02	-0.03	0.02	-0.03
0.00	0.00	0.00	0.00
0.10	0.00	0.10	0.00
0.12	-0.03	0.12	-0.03
0.10	0.00	0.10	0.00
0.20	0.00	0.20	0.00
0.22	-0.03	0.22	-0.03
0.20	0.00	0.20	0.00
0.30	0.00	0.30	0.00
0.32	-0.03	0.32	-0.03
0.30	0.00	0.30	0.00
0.40	0.00	0.40	0.00
0.42	-0.03	0.42	-0.03
0.40	0.00	0.40	0.00
0.50	0.00	0.50	0.00
0.52	-0.03	0.52	-0.03
0.50	0.00	0.50	0.00
0.60	0.00	0.60	0.00
0.62	-0.03	0.62	-0.03
0.60	0.00	0.60	0.00
0.70	0.00	0.70	0.00
0.72	-0.03	0.72	-0.03
0.70	0.00	0.70	0.00
0.80	0.00	0.80	0.00
0.82	-0.03	0.82	-0.03
0.80	0.00	0.80	0.00
0.90	0.00	0.90	0.00
0.92	-0.03	0.92	-0.03
0.90	0.00	0.90	0.00
1.00	0.00	1.00	0.00
1.02	-0.03	1.02	-0.03
1.00	0.00	1.00	0.00
0.00	0.00	0.00	0.00

0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
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0.00	0.00	0.00	0.00
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0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00