6. SOIL TEXTURE

6.0 Definition of soil texture

Texture indicates the relative content of particles of various sizes, such as sand, silt and clay in the soil. Texture influences the ease with which soil can be worked, the amount of water and air it holds, and the rate at which water can enter and move through soil.

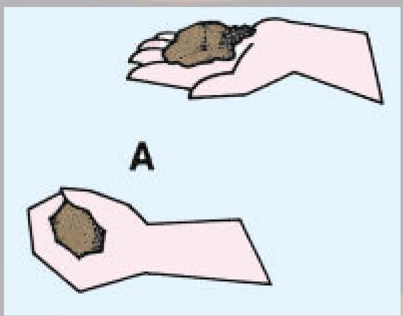
To find the texture of a soil sample, first separate the **fine earth*** , all particles less than 2 mm, from larger particles such as gravel and stones. Fine earth is a mixture of sand, silt and clay. **You must be sure to use only fine earth to perform the following field tests**.

6.1 Quick field tests to determine soil texture

For fish-pond construction, it is better to have a soil with a high proportion of silt and/or clay which will hold water well. To check quickly on the texture of the soil at different depths, here are two very simple tests you can perform.

Throw-the-ball test

- Take a handful of moist soil and squeeze it into a ball;

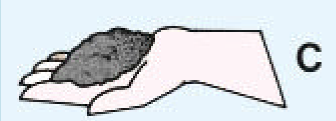


If the ball falls apart, it is poor soil with too much

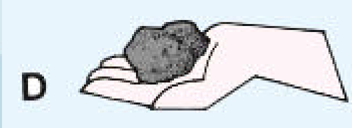
- Throw the ball into the air about 50 cm and then catch it …

If the ball sticks together, it is probably good soil with

- **If the ball falls apart**, it is poor soil with too much sand;

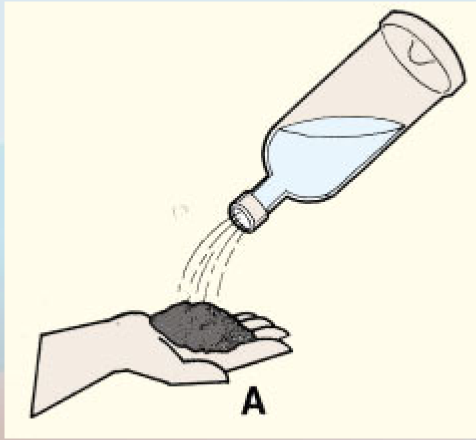


- **If the ball sticks together**, it is probably good soil with enough clay in it.

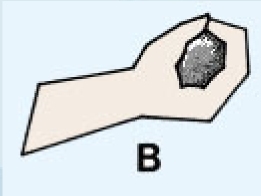


Squeeze-the-ball test

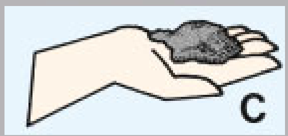
- Take a handful of soil and wet it, so that it begins to stick together without sticking to your hand;



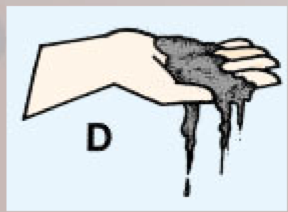
- Squeeze it hard, then open your hand …



- **If the soil retains the shape of your hand**, there is probably enough clay in it to build a fish pond;



- **If the soil does not retain the shape of your hand**, there is too much sand in it.



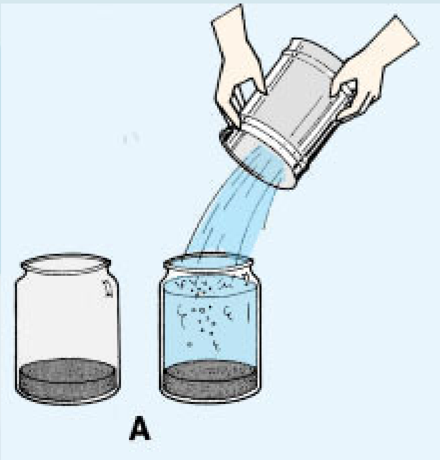
6.2 How to find the approximate proportions of sand, silt and clay

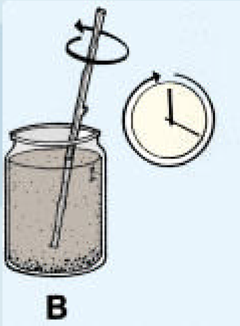
This is a simple test which will give you a general idea of the proportions of sand, silt and clay present in the soil.

The bottle test

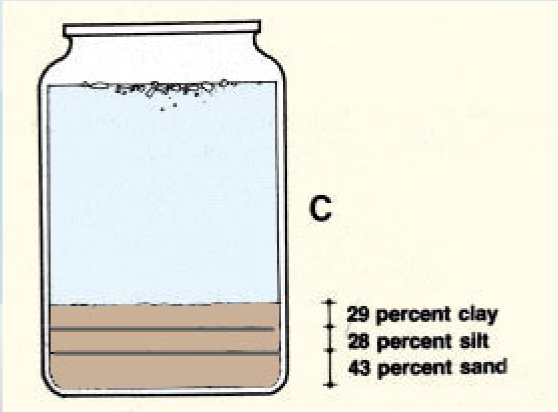
- Put 5 cm of soil in a bottle and fill it with water;
- Stir the water and soil well, put the bottle down, and do

not touch it for an hour. At the end of an hour, the water will have cleared and you will see that the larger particles have settled;





- At the bottom is a layer of sand;
- In the middle is a layer of silt;
- On the top is a layer of clay. If the water is still not clear, it is because some of the finest clay is still mixed with the water;
- On the surface of the water there may be bits of organic matter floating;
- Measure the depth of the sand, silt and clay and estimate the approximate proportion of each.



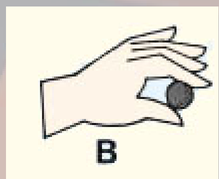
6.3 How to rate soil texture from fine to coarse

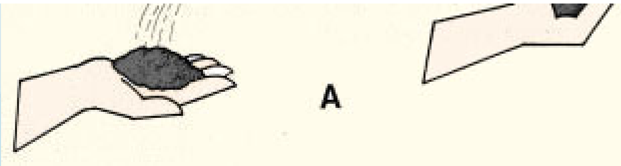
Soil texture may be rated from fine to coarse. **A fine texture** indicates a high proportion of finer particles such as silt and clay. **A coarse texture** indicates a high proportion of sand. More precise definitions may be obtained from Table 4. The simple test below will help you to rate the soil texture from coarse to fine.

The mud-ball test

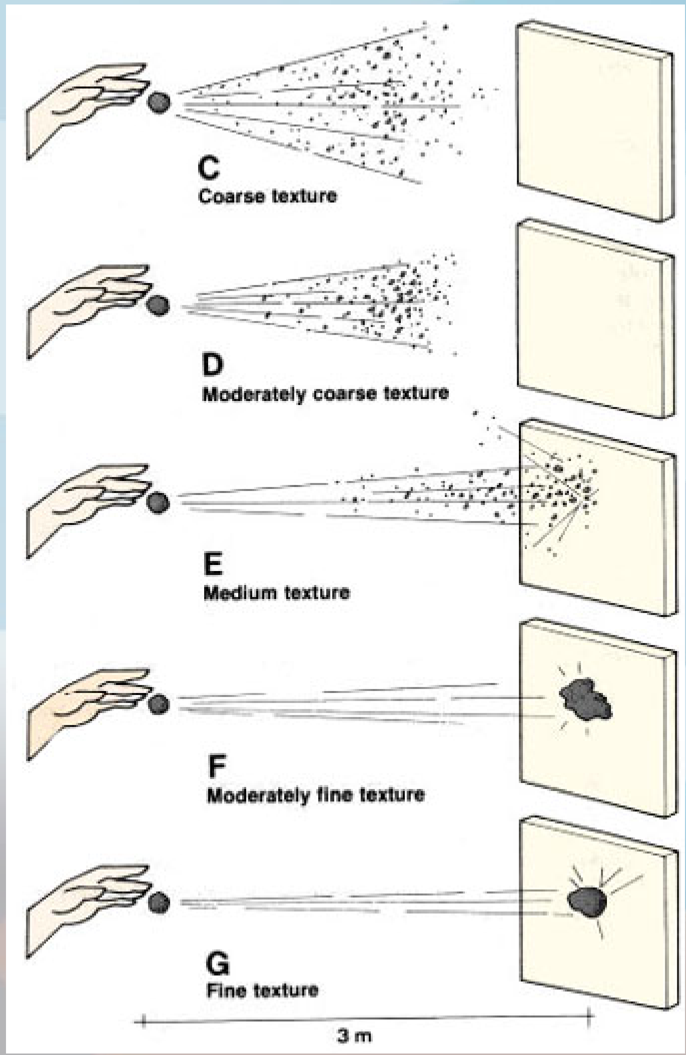
- Take a handful of soil, wet it, and work it to the consistency of dough;

- Continue to work it between thumb and forefinger and make a mud ball about 3 cm in diameter;





- Soil texture can be determined by the way the ball acts when you throw it at a hard surface, such as a wall or a tree ...



- If the soil is good only for splatter shots (C) when either wet or dry, it has a **coarse texture**;
- If there is a "shotgun" pattern (D) when dry and it holds its shape against a medium-range target when wet, it has a **moderately coarse texture**;
- If the ball shatters on impact (E) when dry and clings together when moist but does not stick to the target, it has a **medium texture**;
- If the ball holds its shape for long-range shots (F) when wet and sticks to the target but is fairly easy to remove, it has a **moderately fine texture**;
- If the ball sticks well to the target (G) when wet and becomes a very hard missile when dry, it has a **fine texture**.

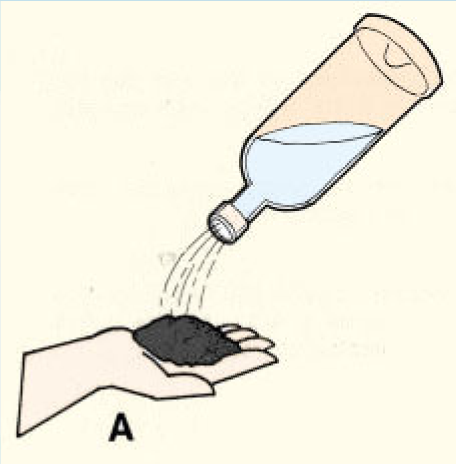
6.4 Soil textural classes and field tests for their determination

A more accurate determination of soil texture

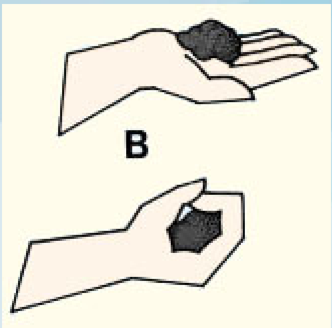
Soils may be assigned to **textural classes** depending on the proportions of sand, silt and clay-size particles. These textural classes are defined in **Table 4** and they are represented in Table 6. In the field, there are several ways by which you can find the textural class of **the fine-earth portion** of a particular soil sample.

The ball-shaking test

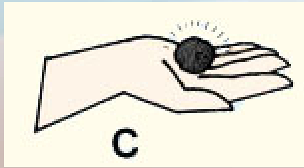
- Take a handful of soil and wet it;



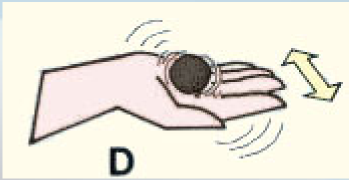
- Make a ball about 3-5 cm in diameter;



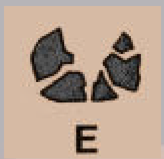
- Place the ball on the palm of your hand: it appears shiny;



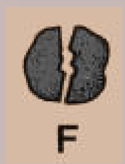
- Shake it from side to side rapidly while watching the surface of the ball …



- If the surface of the ball becomes rapidly dull and you can easily break the ball between your fingers, it is **sand** or **loamy sand**;



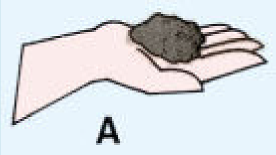
- If the surface of the ball becomes dull more slowly and you feel some resistance when breaking the ball between your fingers, it is **silt** or **clay loam**;



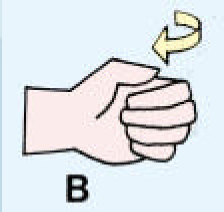
- If the surface of the ball does not change and you feel resistance when breaking the ball, it is **clay** or **silty clay**.

The dry crushing test

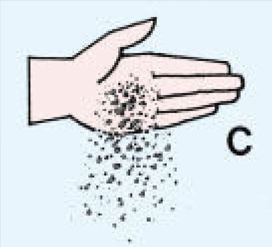
- Take a small sample of dry soil in your hand;



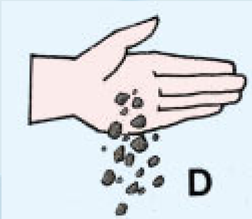
- Crush it between your fingers



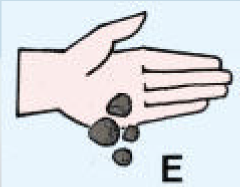
- If there is little resistance and the sample falls into dust, it is fine **sand** or fine **loamy sand** or there is very **little clay** present;



- If there is medium resistance, it is **silty clay** or sandy clay;



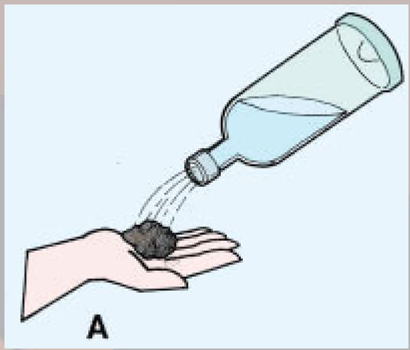
- If there is great resistance, it is **clay**.



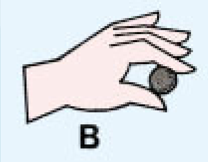
The manipulative test

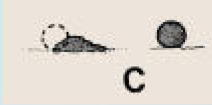
The manipulative test gives you a better idea of the soil texture. This test must be performed exactly in the sequence described below because, to be successful, each step requires progressively more silt and more clay.

- Take a handful of soil and wet it so that it begins to stick together, but without sticking to your hand;

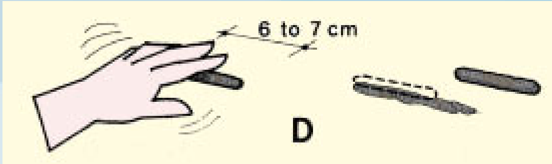


- Roll the soil sample into a ball about 3 cm in diameter;
- Put the ball down…

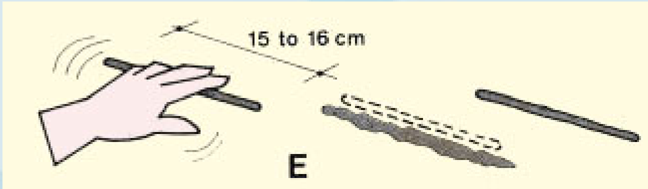




- If it falls apart, it is **sand**;
- If it sticks together, go on to the next step.
- Roll the ball into a sausage shape, 6-7 cm long ...



- If it does not remain in this form, it is **loamy sand**;
- If it remains in this shape, go on to the next step.
- Continue to roll the sausage until it reaches 15-16 cm long



- If it does not remain in this shape, it is **sandy loam**;
- If it remains in this shape, go on to the next step.
- Try to bend the sausage into a half circle ...

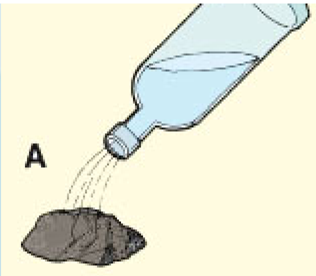
- If you cannot, it is **loam**;
- If you can, go on to the next step.
- Continue to bend the sausage to form a full circle ...
- If you cannot, it is **heavy loam**;
- If you can, with slight cracks in the sausage, it is **light clay**;
- If you can, with no cracks in the sausage, it is **clay**.

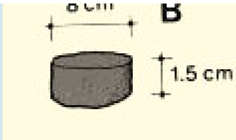
The shaking test: how to differentiate clay from silt

Both silt and clay soils have a very smooth texture. It is very important to be able to tell the difference between these two soils because they may behave very differently when used as construction material for dams or dikes where the silt may not have enough plasticity. Silty soils when wet may become very unstable, while clay is a very stable construction material. plasticity. Silty soils when wet may become very unstable, while clay is a very stable construction material.

- Take a sample of soil and wet it;

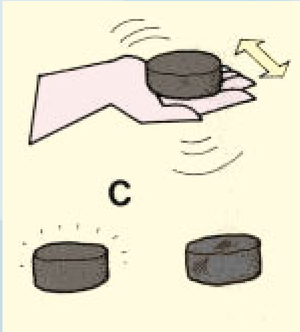
- Form a patty about 8 cm in diameter and about 1.5 cm thick;



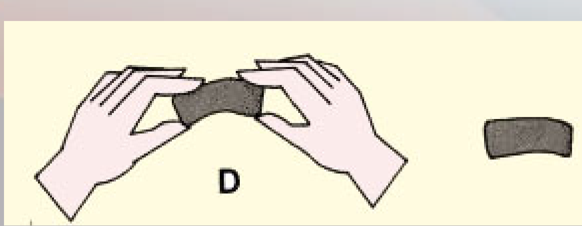


- Place the patty in the palm of your hand: it appears dull;
- Shake the patty from side to side while watching its surface . . .

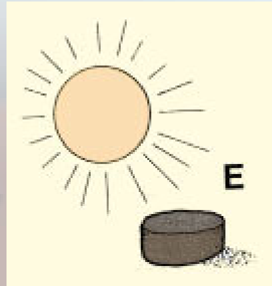
- If its surface appears shiny, it is **silt**;
- If its surface appears dull, it is **clay**.



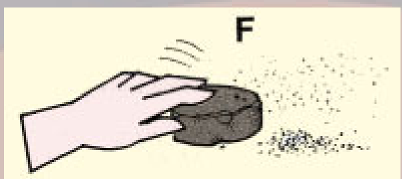
- Confirm this result by bending the patty between your fingers . . .



- If its surface becomes dull again, it is **silt**;
- Put the patty aside and let it dry completely



- If it is brittle and dust comes off when rubbing it with your fingers, it is **silt**;



- If it is firm and dust does not come off when rubbing it with your fingers, it is **clay**.

Note: record the results of the shaking test - rapid, slow, very slow, not at all - according to the speed with which the surface of the patty becomes shiny when you shake it.

TABLE 4

USDA textural classes of soils[1]

Common names of soils (General texture)	Sand	Silt	Clay	Textural class
Sandy soils (Coarse texture)	86-100	0-14	0-10	Sand
	70-86	0-30	0-15	Loamy sand
Loamy soils (Moderately coarse texture)	50-70	0-50	0-20	Sandy loam
Loamy soils (Medium texture)	23-52	28-50	7-27	Loam
	20-50	74-88	0-27	Silty loam
	0-20	88-100	0-12	Silt
Loamy soils (Moderately fine texture)	20-45	15-52	27-40	Clay loam
	45-80	0-28	20-35	Sandy clay loam
	0-20	40-73	27-40	Silty clay loam
Clayey soils (Fine texture)	45-65	0-20	35-55	Sandy clay
	0-20	40-60	40-60	Silty clay
	0-45	0-40	40-100	Clay

[1] Based on the USDA particle-size classification, as defined in Table 2.

6.5 Laboratory tests for textural classes

If you need to define the textural class of your soil more accurately, you should take disturbed soil samples to a testing laboratory for a **quantitative determination of the particle sizes**. This is called a **mechanical soil analysis**. The following are some of the things which may be done in the soil laboratory:

- Your soil sample will be dried;
- Particles greater than 2 mm, such as gravel and stones, will be removed;
- The remaining part of the sample, the fine earth, will be finely ground to free all the separate particles;
- The total weight of the fine earth will be accurately measured;
- The fine earth will be passed through a series of **sieves*** with mesh of different sizes, down to about 0.1 mm in diameter;
- The weight of the contents of each sieve will be calculated separately and expressed as a percent of the total initial weight of the fine earth;
- The weights of the very small particles of silt and clay which have passed through the finest sieve will be measured by sedimentation. They will also be expressed as a percent of the total initial weight of the fine earth.

The results of a mechanical soil analysis made in the laboratory may be given to you in one of the following forms:

- Sample by sample as a list (see Table 5);
- Sample by sample on separate cards (see example below);
- As a series of more detailed tables (see Section 6.7).

With these results, you may assign either a particular textural class to each sample using the **textural triangle method** (see Section 6.6), or prepare a particle-size frequency curve from which you can draw your own conclusions (see Section 6.7).

Note: it is important to know which system of particle-size classification (Table 2) is being used by the soil laboratory for testing. If it is the one used by the **US Department of Agriculture (USDA)** which defines **silt from 0.05 to 0.002 mm**, follow the method described. However, if the laboratory uses another system such as the **international system** which defines **silt from 0.02 to 0.002 mm**, you should request an additional quantitative determination of particle sizes of 0.05 to 0.02 mm in diameter (coarse silt). This will allow you to modify the results given to you, to adjust them to the USDA system, and to use the following textural triangle method.

Usually, a complete mechanical analysis of your soil sample is not necessary. For your requirements, a simple particle-size analysis may be sufficient. This gives you **the percentage of soil particles with a size equal to or larger than 0.075 mm in diameter**. If the percentage is less than 50 percent, it is a fine grained soil (fine texture). If the percentage is more than 50 percent, it is a coarse grained soil (coarse texture). With this information you can then judge the soil quality as described in Sections 11.2 and 11.3.

Note: 0.075 mm is the opening size of US Standard Sieve No. 200. For engineers, this particular size represents the separation limit between sand and silt + clay (see Table 2, line 6).

Example

Typical mechanical soil analysis card

Survey No. .... Field No. .... Laboratory No. ....

Locality ....

Soil type .... Depth ....

MECHANICAL ANALYSIS

U. S. DEPARTMENT AGRICULTURE CLASSIFICATION

Diameter (mm)	Conventional Names		Percent
2–1	Very coarse sand	=	
1–0.5	Coarse sand	=	
0.5–0.25	Medium sand	=	
0.25–0.1	Fine sand	=	
0.1–0.05	Very fine sand	=	
0.05–0.002	Silt	=	
Less than 0.002	Clay	=	
Total (Calculated on basis of organic-free oven-dry sample)		=	

OTHER CLASSES

Less than 0.005 mm	=	
Greater than 2.0 mm	=	
Organic carbon	=	
pH	=	

INTERNATIONAL CLASSIFICATION

Fraction	Diameter (mm)		Percent
I	2.0–0.2	=	
II	0.2–0.02	=	
III	0.02–0.002	=	
IV	Less than 0.002	=	
Total (Calculated on basis of organic-free oven-dry sample)		=	

Remarks:

Date reported ....

Mechanical Analysis Laboratory

TABLE 5
Mechanical soil analysis - particle-size analyses: textural classes and pH for selected soil samples

Sample No.	Sand	Silt	Clay	Textural class	pH
	Percentage				
1	43.0	28.0	29.0	Clay loam	9.4
2	70.0	24.0	6.0	Sandy loam	7.6
3	78.0	18.0	4.0	Loamy sand	7.8
4	44.0	42.0	14.0	Loam	7.9
5	67.0	15.5	17.5	Sandy loam	7.4
28	29.0	30.0	41.0	Clay	
35	65.0	12.5	22.5	Sandy clay loam	
36	21.0	74.0	5.0	Silty loam	
39	86.0	10.0	4.0	Sand	
45	56.0	24.0	20.0	Sandy loam	
46	41.0	46.5	12.5	Loam	
47	48.0	34.5	17.5	Loam	
50	47.5	20.0	32.5	Sandy clay loam	
325	9.2	22.0	68.8	Clay	
312	27.2	12.0	60.8	Clay	
318	27.2	16.0	56.8	Clay	
A4-30	66	25	9	Sandy loam	
A5-30	72	23	5	Sandy loam	
A5-180	71	28	1	Loamy sand	
A7-60	52	35	13	Loam	
A7-120	64	28	8	Sandy clay loam	

6.6 The textural triangle method to determine the basic textural classes

The textural triangle method is based on the **USDA system of particle size** where the following classification is used:

- **Silt**: all particles within the size range of 0.002-0.05 mm;
- **Clay**: all particles smaller than 0.002 mm.

To define the texture of the fine earth fraction:

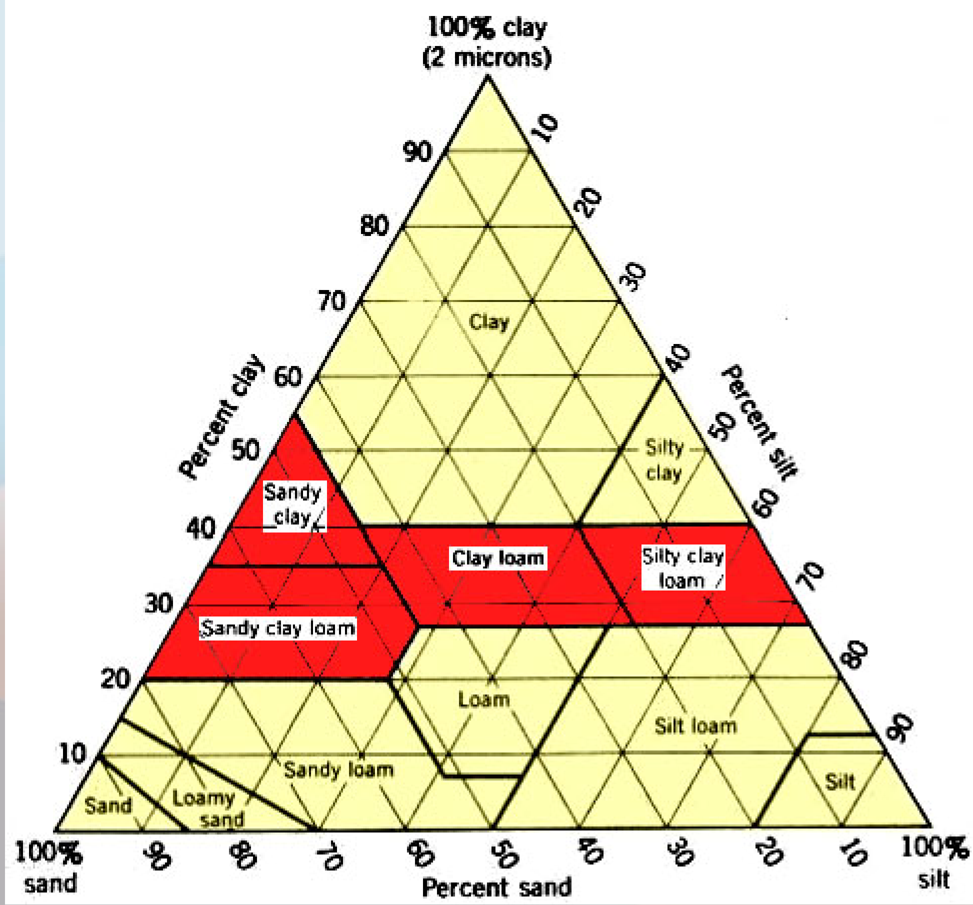
- Send your soil sample to a soil laboratory for mechanical analysis;
- When you receive the results of this analysis, find, if necessary, the relative percentages of sand, silt and clay, as defined above, within the total size range of 0.002-2 mm.

For each soil sample, determine its textural class using the **triangular diagram** shown in **Table 6**; as follows:

- Find the percentage of **sand** along the base of the triangle and follow a line, going up toward the left;
- Find the percentage of **clay** along the left side of the triangle and follow to the right the horizontal line until you meet the previous line for sand (point **o**). This point shows the soil sample texture;
- Check that this point corresponds to the percentage of **silt** of your analysis by following a line from point 0 up to the right, until you reach the percent silt scale on the right side of the triangle;
- If the value agrees for silt, your soil sample texture is determined by the **area of the triangle** in which point 0 falls, as indicated in the example below.

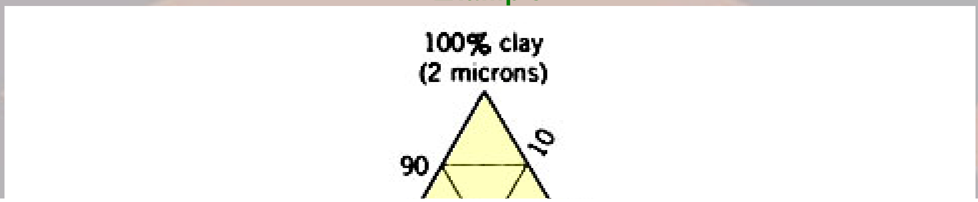
TABLE 6

Triangular diagram of the basic soil textural classes according to USDA particle sizes



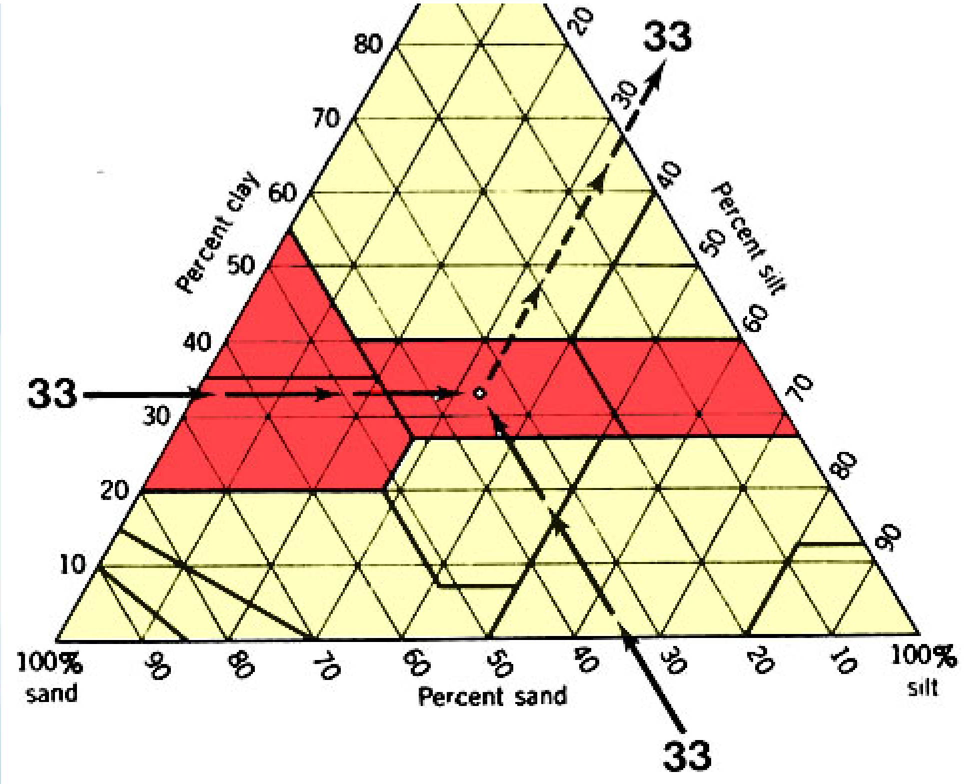
NOTE: The soil textural classes shown in the red portion of the large triangle are best for fish-pond construction.

Example



PARTICLE SIZES

clay	< 0.002 mm
silt	0.002-0.05 mm
sand	0.05-2 mm



6.7 The particle-size frequency curve

The usual mechanical analysis provides percentages for the **three particle-size classes** of sand, silt and clay, such as the one for clay loam shown in the example.

If this is not sufficient, some soil laboratories can provide a much more detailed analysis, with a further breakdown giving the relative amounts of soil particles for more size classes. The results of this kind of analysis may be given in the form of a simple table where the weight for each particle size is given as a percentage of the total dry weight of the fine earth of the soil sample, such as the one shown below.

Example

	Percent
Sand	32
Silt	38
Clay	30

= Clay loam

Example

A more detailed mechanical soil analysis for a clay loam

Percent	Particle size (mm)	Percent total dry weight
Sand 32	1	0.3
	0.2	1.7
	0.075	17
	0.04	13
	0.025	17
	0.02	9
	0.01	8

Silt 38	0.01	8
	0.005	3
	0.0035	0.5
	0.002	0.5
Clay 30	< 0.002	-
	-	-
	-	-

It may also be given as a particle-size frequency curve (PSF-curve), as described and shown in the next paragraph.

Note: for very small particles (less than 0.1 mm in diameter), soil technicians often use the measurement unit called micron(m) to avoid too many decimals.

1 micron (m) = 0.001 mm (or one thousandth of a millimetre)
1 mm = 1 000 m

Examples

0.075 mm = 75 m 0.0035 = 3.5 m
0.002 mm = 2 m 0.0007 = 0.7 m

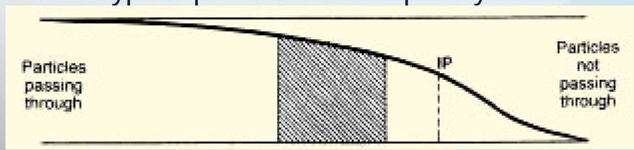
What is a PSF-curve?

A particle-size frequency curve is plotted on a graph where the logarithms of **the particle size** are shown on the horizontal axis, **with the size decreasing toward the right**, and **the cumulative percentages of occurrence** of the particle size are shown on the vertical axis.

Note: generally, two scales are shown on the vertical axis. To the left, the percentages relate to **particles passing through** sieves of a particular size. Here, the percentages increase from bottom to top. To the right, the percentages relate to **particles not passing through** sieves of a particular size. Here, the percentages increase from top to bottom.

Example

A typical particle-size frequency curve



IP=Approximate inflexion point

What does a PSF-curve show?

If you look at the examples of particle-size frequency curves in Table 7, you will note the following:

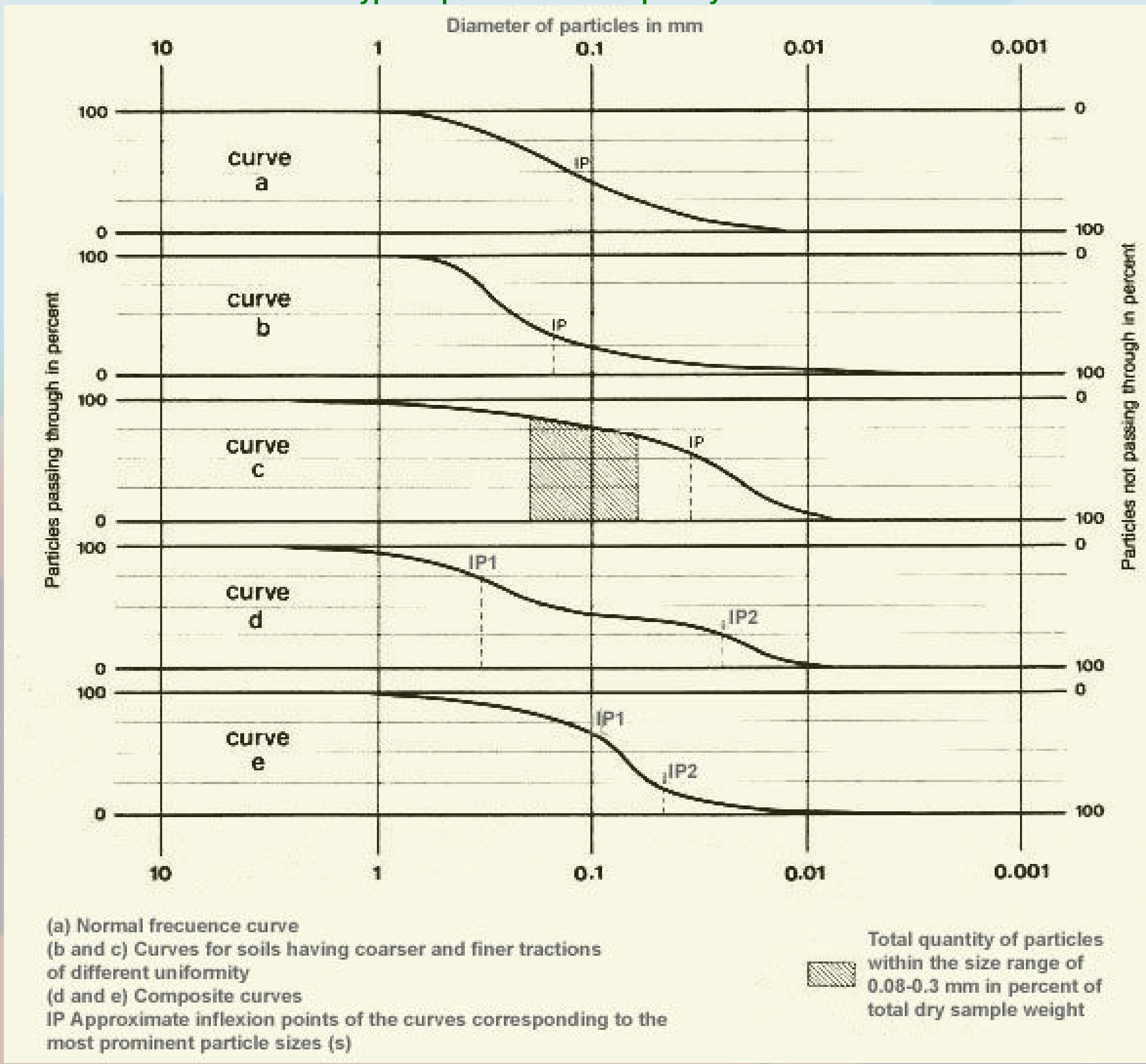
- **The inflexion point** (IP) of the curve shows you the most frequent particle size by weight; in some cases, there may be more than one inflexion point as, for example, if the sample (a composite sample) contains more than one type of soil (see Table 7, curves d and e);

Table 7, curves d and e);

- **The more vertical the curve** or part of the curve, the more uniform the particle size; a vertical line represents a perfectly uniform particle-size;
- **The more inclined the curve** or part of the curve, the greater the difference between the particle sizes, the smaller the pores between the particles, and the more compact the soil;
- **The total quantity of soil particles within a particular range of particle sizes** is defined as the area below the PSF-curve which lies between these two particle sizes, as, for example, from 0.08 mm to 0.3 mm (shaded area) (see Table 7, curve c). To find this quantity as a percentage of the total dry weight of the soil sample, transfer the points which correspond to 0.08 mm and 0.3 mm on the PSF-curve to one of the vertical scales and calculate the percent difference: in this case, read on the left vertical scale, 68 percent and 75 percent. The difference is 7 percent.

TABLE 7

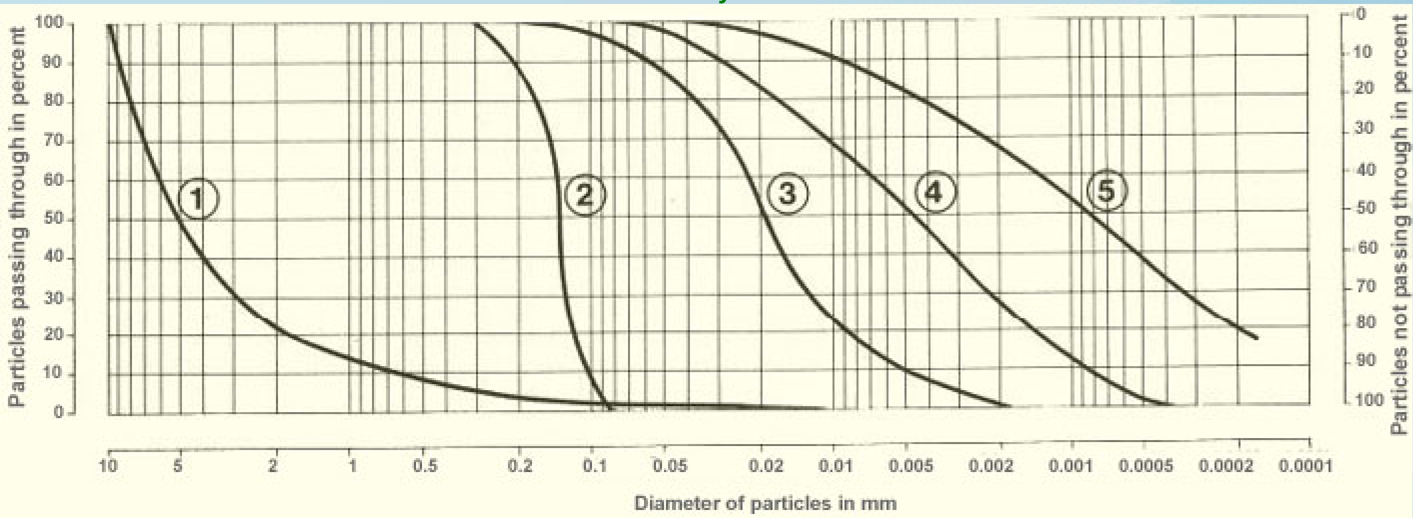
Typical particle-size frequency curves



Note: Table 8 shows **five PSF-curves** for five types of soil, varying from gravel/sand to heavy clay. Study each carefully

Note: Table 8 shows **five PSF-curves** for five types of soil, varying from gravel/sand to heavy clay. Study each carefully to observe its relative position in the graph, its inflexion point and its inclination.

TABLE 8
Particle-size frequency curves for selected soils showing mechanical analysis results down to very small particles of clay



1 Gravel and sand (old alluvium), 2 Sand, 3 Silt, 4 Calcareous clayey soil (marl), 5 Heavy clay

How do you get a PSF-curve?

Some laboratories provide a PSF-curve for soil samples and some do not. When you receive the results of a mechanical soil analysis, you may also get a PSF-curve. For each soil sample, you will receive a graph showing one PSF-curve. **Table 10** shows a PSF-curve prepared by a soil laboratory for one soil sample, see example below.

If your soil laboratory does not give you a PSF-curve, you will receive the results in the form of a table giving the frequency of occurrence (in percent of total dry weight) for a certain number of particle sizes. You can use this table to prepare a PSF-curve yourself. **Table 9** is a blank graph that you can use to prepare a PSF-curve. If possible, use a photocopy of Table 9 for each curve you plot. You will then be able to use the blank graph over and over again, to make more photocopies.

How to draw a PSF-curve

To draw a PSF-curve, proceed as follows:

- Calculate the **cumulative percentages** of occurrence for each given particle size, **starting with the largest size**;
- Enter the cumulative percentages in pencil on a photocopy of the blank graph in Table 9, **using the right vertical scale**;
- Join these points by drawing a continuous curve: this is a PSF-curve.

Note: remember that cumulative percentages represent weights of particles that **have not passed through** a particular

Note: remember that cumulative percentages represent weights of particles that **have not passed through** a particular size sieve. Therefore, use the **right vertical scale** of the graph (0-line at the top) for plotting cumulative percentages.

Example

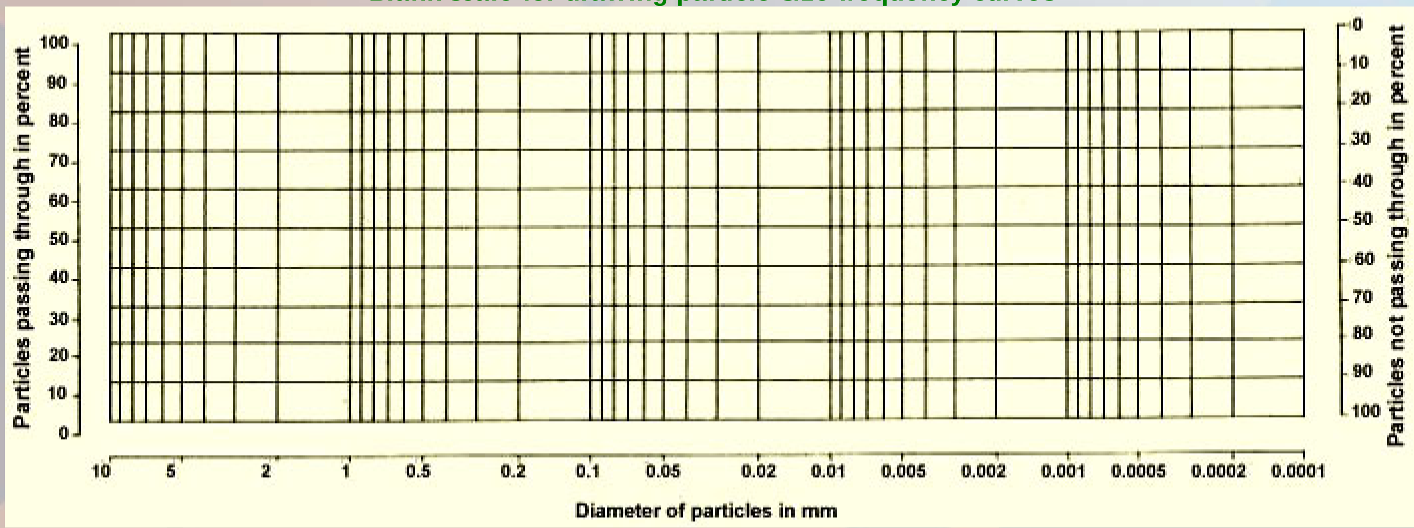
Using the more detailed mechanical analysis at left, calculate the cumulative percentages for each particle size;

YOU RECEIVE THIS		YOU CALCULATE THIS
Particle size (mm)	Percent total dry weight	Cumulative percentages
1	0.3	0.3
0.2	1.7	2
0.075	17	19
0.04	13	32
0.025	17	49
0.02	9	58
0.01	8	66
0.005	3	69
0.0035	0.5	69.5
0.002	0.5	70

Plot the cumulative percentages on the blank graph, using the right vertical scale;

Draw a PSF-curve by joining these points, as shown in table 10.

TABLE 9
Blank scale for drawing particle-size frequency curves



How to use a PSF-curve to obtain particle-size frequency percentages

To obtain the percentages of occurrence of certain particle sizes using a PSF-curve, such as, for example, to find the textural class using the textural triangle method, proceed as follows:

- Using the **right vertical scale** (0-line at the top), read from the given PSF-curve the cumulative percentages corresponding to selected particle sizes, such as 0.05 mm (limit sand-silt) and 0.002 mm (limit silt-clay);
- Write these readings in a two-way table which gives the cumulative percentage for each particle size, **starting with the largest**;
- Calculate the frequency of occurrence of each range of particle size.

Example

You have received the PSF-curve shown in **Table 10** from the laboratory;

You want to know the percentages of occurrence for particles within the ranges 2 - 0.05 mm (sand), 0.05-0.002 mm (silt), and less than 0.002 mm (clay) to find the textural class; you also want to know the 0.075-mm percentages;

Particle size (mm)	Cumulative percent
2	0
0.05	28
0.002	70
0.075	19

For these values of particle sizes, read the cumulative percentages of particle sizes and enter them into a two-way table as shown.

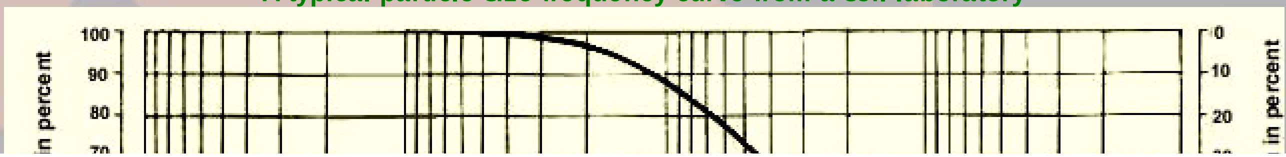
You have already been shown how to calculate the total quantity of soil particles (frequency of occurrence) within a particular range of particle sizes. Now, calculate in the same way the frequencies of occurrence for sand, silt, and clay (**in that order**) for the PSF-curve in **Table 10**. They are as follows:

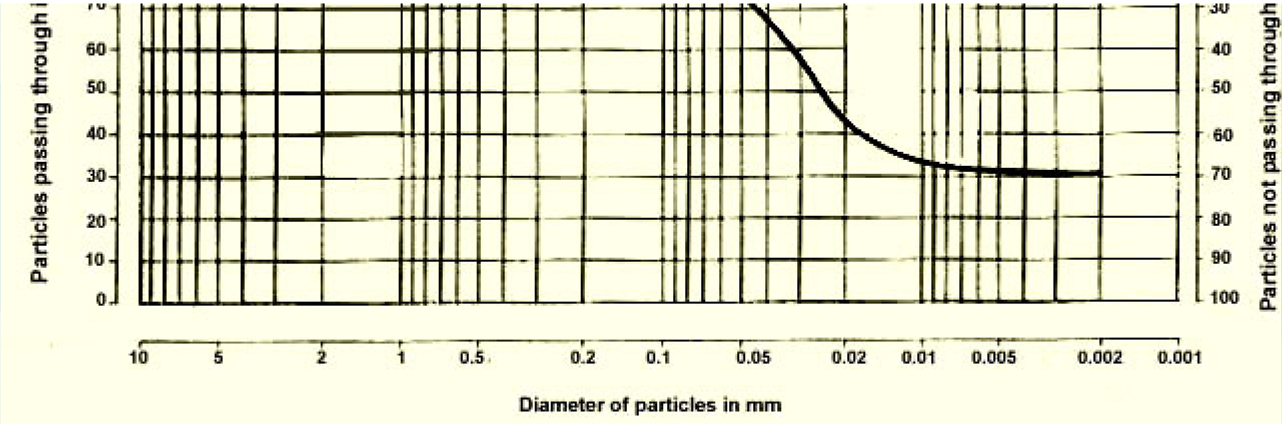
mm	Percent
Sand 2-0.05	28 - 0 = 28
Silt 0.05-0.002	70 - 28 = 42
Clay less than 0.002	100 - 70 = 30

Introduce these values 28-42-30 into the textural triangle (see Table 6); the soil is a clay loam, a moderately fine-textured soil.

From the 0.075-mm particle-size reading, you conclude that the sample contains 19 percent of particles larger than
0.075 mm.

TABLE 10
A typical particle-size frequency curve from a soil laboratory





Further uses of the PSF-curve: effective size and uniformity coefficient

Another important use of the PSF-curve is to express the characteristics of the particle-size distribution of a soil by **numerical values** so that the results of a great number of soil samples may be easily compared. Engineers frequently use **Hazen's method** which defines two particular values which are **most suitable for sands**. These are:

- **The effective size** or D_{10} of a soil is the diameter in millimetres of the sieve through which 10 percent (by weight) of the sample passes;

Note: this value gives an estimate of the most important particle sizes by weight: 10 percent of the soil consists of particles smaller than D_{10} , 90 percent of the soil consists of particles larger than D_{10}

- **The uniformity coefficient** or U of a soil is the ratio of the diameter (in mm) of the sieve hole through which 60 percent (by weight) of the sample passes (D_{60}) to the effective size (D_{10}) or $U = D_{60} \div D_{10}$

Note: when the PSF-curve is a vertical line (U = 1), the particles of the soil sample are perfectly uniform in size. Usually, U is not equal to 1 and the more difference there is, the more the particle size varies within the soil sample.

To obtain D_{10} and D_{60} , find the points where the PSF-curve intersects the horizontal lines which correspond on the **left vertical scale** to the cumulative percentages of 10 and 60 percent respectively.

Example

To calculate the effective sizes and the uniformity coefficients from the four PSF-curves shown in **Table 11** (curves 1-4), proceed as follows:

Draw horizontal lines on the graph starting from 10 percent and 60 percent respectively of the **left vertical scale**;

Find the D_{10} for the curves along the 10 percent line, which shows the following results:

Curve 1 D_{10} = 0.6 mm

Curve 1 D_{10} = 0.6 mm
Curve 2 D_{10} = 0.1 mm
Curve 3 D_{10} = 0.045 mm
Curve 4 D_{10} = 0.00085 mm

Find in the same way the D_{60} for the curves along the 60 percent line:

Curve 1 D_{60} = 6 mm
Curve 2 D_{60} = 0.14 mm
Curve 3 D_{60} = 0.023 mm
Curve 4 D_{60} = 0.0065 mm

Calculate the uniformity coefficients as U = D60 ÷ D_{10} :

Curve 1 U = 6 ÷ 0. 6 = 10
Curve 2 U = 0.14 ÷ 0.1 = 1.4
Curve 3 U = 0.023 ÷ 0.045 = 0.5
Curve 4 U = 0.0065 ÷ 0.00085 = 7.6

Note: the more vertical the PSF-curve (U closer to 1), the more uniform the soil sample.

TABLE 11
Calculation of effective sizes and uniformity coefficients from particle-size frequency curves