

## What's in soil? Soil under the microscope

**MINERAL PARTICLES**  
The non-living skeleton of the soil which is derived from the decomposition of rocks by weathering. The fertility and size of these particles are governed by the type of parent rock.

Particle name is based on size. All **SANDS** have a gritty feel — **COARSE SAND** (0.6–2.0 mm in diameter) is distinctly gritty, **MEDIUM SAND** (0.2–0.6 mm) feels like table salt and **FINE SAND** (0.02–0.2 mm) has a grittiness which is not easy to feel.

**SILT** (0.002–0.02 mm) has a silky or soapy feel.

**CLAY** (less than 0.002 mm) feels distinctly sticky.

**AIR**  
Air is essential for the support of plant life and desirable soil life — it is also required for the steady breakdown of organic matter which releases nutrients. Movement of air is necessary to avoid the build-up of toxic gases — this air movement takes place through the soil pores.

**HUMUS**  
Plant and animal remains are gradually decomposed in the soil. The agents of decay are the bacteria and other microscopic organisms. They break down dead roots and underground insects as well as fallen leaves carried below the soil surface by worms. Partially decomposed organic matter with the horde of living and dead bacteria is known as **HUMUS** to the gardener. For the scientist this word has a much narrower meaning. True humus is the dark, jelly-like substance which binds mineral particles into crumbs — see page 14.

**LIVING ORGANISMS**  
Millions of living organisms can be found in every gram of soil. Most are microscopic — bacteria, fungi, eelworms etc. Others are small but visible — insects, seeds and so on. Worms and beetles are easily seen — the largest and least welcome living thing you are likely to find is the mole.

**DEAD ORGANIC MATTER**  
The soil is the graveyard for roots, fallen leaves, insects etc as well as the organic materials (humus makers) we add to enrich it. Dead organic matter is not humus until it has decomposed. It does, however, serve as the base material for high bacterial activity and humus production. With this decomposition both major nutrients and trace elements are released into the soil. Some types of dead material may take many years to decompose.

**WATER-BASED SOLUTION**  
This is often shortened to **SOIL WATER** but it is in fact a solution containing many dissolved inorganic and organic materials. Some (e.g nitrates, phosphates and potassium salts) are plant nutrients.

**CRUMB**  
Crumbs range from lentil- to pea-sized. The spaces between them are known as **PORES**.

**STONES & GRAVEL**  
These are particles larger than 2 mm in diameter. **STONES** usually refers to sizeable pieces of rock whereas **GRAVEL** describes the smaller weathered fragments — but there is no precise distinction.

From "The Complete Garden Expert" by Dr Hessayon

## What is compost?

The remains of dead organic matter which organisms - eg worms, insects, fungi, oxygen-loving bacteria - have fed on.

## What can go in a garden compost heap?

“Greens” Wet Nitrogen rich		“Browns” Dry Carbon rich
<b>Greens (Nitrogen Rich)</b>	<b>Browns (Carbon Rich)</b>	<b>Avoid including these materials in a backyard compost...</b>
Vegetable / fruit peels & scraps	Dried leaves & brown grass clippings	
Coffee grounds, tea bags	Pine and spruce needles	
Green grass clippings	Paper, cardboard and newspaper	Meat, fish and bones attract animals
Green garden waste	House plants	Dairy products in large quantities make the compost smell bad
Flowers	Prunings & cuttings (these help create air pockets)	Fat, oil and grease in large quantities slow down the process
<b>Other (Add Minerals)</b>	Sawdust from untreated wood	Feces (kitty litter, dog doo, humanure) contain pathogens
Egg shells	Straw	Weed with seeds or persistent roots
Wood & wood pellet ash (sparingly)		Diseased plants
		Ash or sawdust from chemically treated or painted wood

<http://survivalathome.com/wp-content/uploads/2014/01/what-goes-in-the-backyard-compost.jpg>

## What can go in a wormery?

- \* Fruit & veg waste, but beware acid in citrus, raw onions and salt in cooked food
- \* Soft green garden waste, but beware bringing pests indoors
- \* Good summary: <https://www.rhs.org.uk/Advice/Profile?PID=726>

## More information:

- <https://www.rhs.org.uk/advice/profile?pid=444>
- <https://www.gardenorganic.org.uk/compost>
- <http://www.wormsdirectuk.co.uk/acatalog/advice-sheet-establishing-yourwormery.html>
- <http://www.wigglywiggles.co.uk/blog/looking-after-your-wormery-in-the-spring/>