

COMPOST PRODUCTS FACT SHEET



Compost plays a vital role in improving soil health and enhancing plant growth. It helps to retain moisture, suppress weeds, stabilise soil structure and reduce reliance on synthetic inputs, promoting sustainable practices.

Compost is a product derived from organic wastes and supports a circular economy, as this waste is diverted from landfill and transformed into a valuable resource that can be used in many applications across agriculture and horticulture, landscaping and environmental management.

AS4454: Composts, soil conditioners and mulches

The Australian Standard AS4454 Composts, soil conditioners and mulches provides a framework for defining and classifying compost, soil conditioners and mulches based on their composition, processing and intended use. While voluntary, it is referenced in all regulatory composting guidelines to establish minimum requirements for production, characterisation and quality testing.

What is compost?

Compost is an organic product that is formed from the decomposition of organic matter under controlled aerobic (use of oxygen) conditions. The composting process involves an increase in temperature from microbial activity, which pasteurises and matures the compost and ensures that the products do not distribute pathogens, weed seeds and/or plant matter that can spread following its application in the environment. Compost is high in organic matter and carbon, with key nutrients such as nitrogen, potassium and phosphorus.

What is not compost?

- Products derived from organic matter that do not undergo the composting process, such as blood and bone.
- Shredded garden organics that have not been subject to pasteurisation or the composting process.
- Vermicast (the breakdown of organic matter by earthworms) that has not been subject to pasteurisation or the composting process before or after being processed by worms.

Use of compost

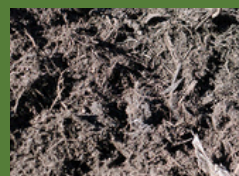
Compost is mostly used as a soil amendment in horticulture, agriculture and landscaping.

What is mulch?

Mulch, available in raw and composted forms, is an organic product that can be placed on the surface or top layer of soil. It can vary in size, from fine to coarse, and usually acts as a protective ground cover that conserves water, regulates soil temperature, and suppresses weeds.



Raw mulch is ground plant material from a single source, such as ornamental bark, untreated wood or bagasse (sugarcane pulp), that is free from harmful seeds, pathogens or other contaminants.



Composted mulch contains larger woody particles that have been through the composting process and can be screened into both fine and coarse mulches. These can originate from raw mulches that are composted, or oversized woody material produced from the composting process.

What is not mulch?

Products made from mixed plant materials, such as garden organics, leaf mulch, processed timber or raw manure, that is not pasteurised and does not meet AS4454 requirements.

Use of mulch

Mulches are commonly used for water conservation and weed control. Raw mulches can also serve as a biofilter (natural filter to reduce pollutants) or an organic cover to reduce odours in composting facilities.

What is a soil conditioner?

Soil conditioners are composted or pasteurised organic products that are added to soils. They are often referred to as a 'soil amendment', 'soil additive', 'soil improver' or similar.

The key difference between soil conditioners and other composted products is the finer particle size, where no more than 20% of the product can have a size above 16mm.

What is not a soil conditioner?

Compost products with particle sizes above 16mm.

Use of soil conditioner

Soil conditioners are used to introduce organic matter and boost soil biology, which can improve soil structure, water infiltration, water and nutrient holding capacity and nutrient levels.

Composted blends

Compost-fertiliser blends combine the benefits of compost with the targeted nutrient supply of fertilisers. Customised blends can be tailored to specific agriculture or horticulture crops, lawns or gardens, offering a more attractive solution for customers.



Why Use Compost?

BOOSTING SOIL HEALTH

Compost improves soil structure by increasing organic matter and promoting beneficial microbial activity. It also helps to balance soil pH and support the long-term fertility of the soil.

STRENGTHENING SOIL STRUCTURE

Compost improves the structure and porosity (voids which can be filled with air or water) of degraded soils, helping to combat compaction and promote better water infiltration and root growth.

WATER RETENTION AND CONSERVATION

The organic matter in compost improves the soil's ability to retain moisture, reducing the need for irrigation. This is particularly beneficial in drought-prone areas, helping to maintain plant health with less water consumption.

PLANT DISEASE SUPPRESSION

Compost introduces beneficial microbes that compete with plant pathogens, helping to reduce the occurrence of soil-borne diseases. It also enhances plant resilience by improving nutrient availability and root development

EROSION CONTROL

Compost stabilises soil, reducing surface runoff and preventing erosion. It helps to bind soil particles together and maintain topsoil integrity, which is essential for plant growth and land conservation.

REDUCTION IN GREENHOUSE GAS EMISSIONS

Using compost helps to store carbon in soils, reducing the release of carbon dioxide into the atmosphere. It also minimises methane emissions by diverting organic waste away from landfill.

CIRCULAR ECONOMY OUTCOMES

Composting transforms organic waste into a valuable resource, reducing landfill waste and closing the loop on nutrient cycles. It supports agriculture and landscaping by providing a sustainable alternative to synthetic fertilisers.

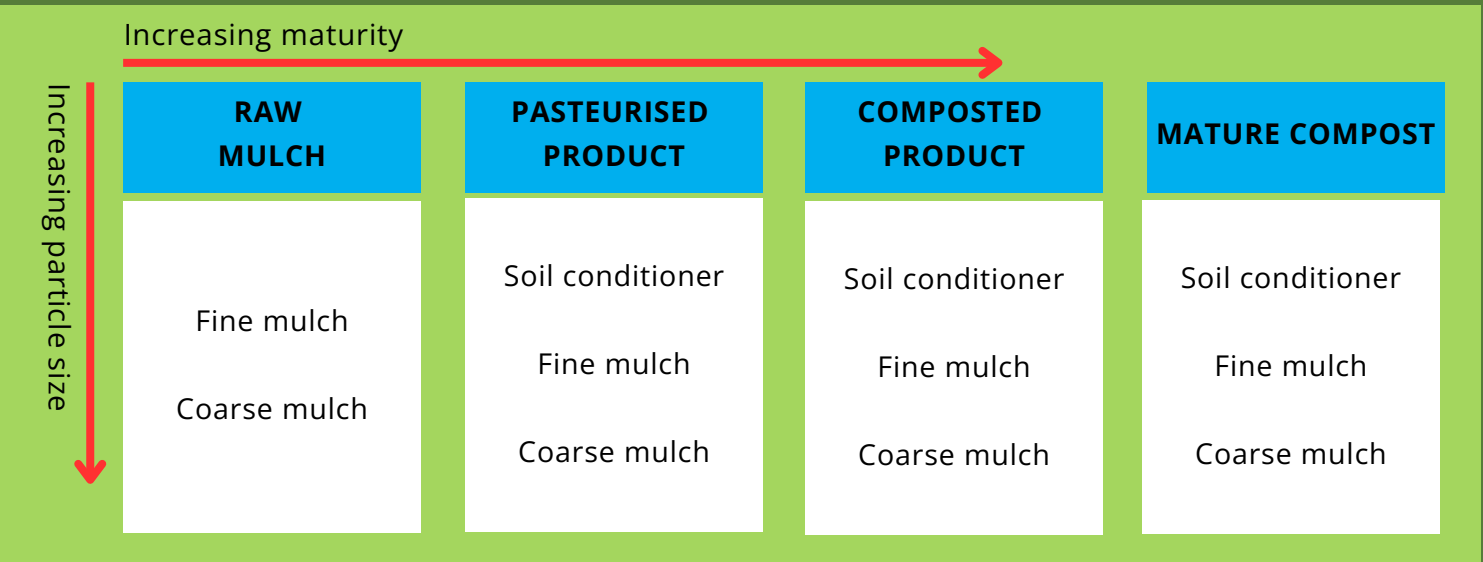
COMPOST HAS THE GREATEST IMPACT THROUGH LONG-TERM REPEATED USE AND IN DEGRADED SOILS.

AS4454 product classifications

Under AS4454, material undergoing the composting process is classified by:

- Maturity – pasteurised product, composted product or mature compost
- Particle size – Coarse, fine and soil conditioners.

This indicates 11 possible products that fall under AS4454 as outlined below.



Stability and Maturity

Stability refers to a compost's resistance to further decomposition, while maturity indicates how fully the composting process has been completed. Immature compost may contain harmful compounds such as ammonia, organic acids or other soluble substances that can negatively impact seed germination, seedling growth and root development, or produce unpleasant odours.

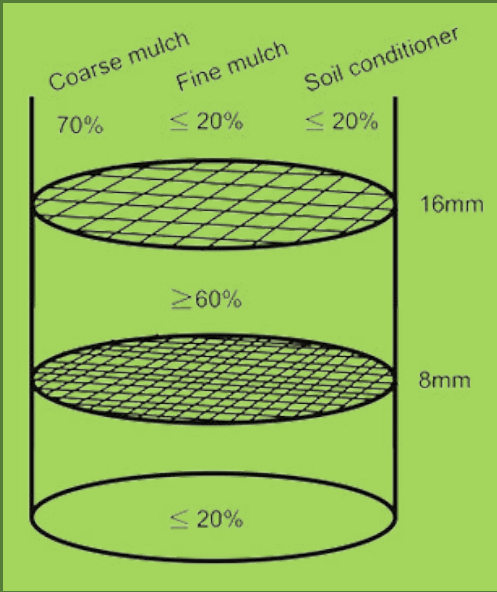
In AS4454, biological stability is used as a key measure to determine compost maturity. The most common and widely accepted method for assessing compost stability is respirometry, which measures biological activity by tracking microbial respiration. This can be done by analysing carbon dioxide production, oxygen consumption, or the heat generated during microbial activity. Higher rates of respiration or heat production indicate a less stable compost. To achieve compost maturity and ensure no harmful levels of nitrogen compounds or other toxic substances, nitrogen compound testing and plant growth trials are conducted to confirm its safety and suitability for use.

Particle size

Particle size in both mulches and composted products are important characteristics which affect its suitability for various end uses.

To determine particle size, the compost is passed through a series of screens of a specified mesh size. The material retained by each mesh is then weighed and reported as percentages of the total weight.

Under AS4454, the standard mesh sizes are 16mm and 5mm and the percentages of each particle size are provided in Figure 1.



Contaminants

Under AS4454, products should comply with maximum physical, chemical and biological parameters. These are outlined below.

Contaminant	Limit
Glass, metal and rigid plastics	≤ 0.5%
Plastics - light, flexible or film	≤ 0.05%
Stones and lumps of clay	≤ 5%
Viable plant propagules (only for raw mulch and pasteurised products)	None after 21 days
Where manure, animal waste, food, grease trap wastes and biosolids are used as feedstock	
Salmonella	Absent in 50g
Faecal coliforms	<1000 units/g