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## Using Compost in planting bed establishment

FACT SHEET 01

# Compost adds life to your soil and to your plants!

New planting schemes are often sited on nutrient poor soils which have been depleted of organic matter. In many cases, the soil has been disturbed following building or construction. In order to create a suitable substrate for the plants to root into, the soils need to be enriched with humus to improve the soils properties.

### What is Compost?

In the United Kingdom, compost is made from source separated plant materials mainly from parks and gardens. This material is processed under carefully controlled conditions to produce a high quality product, as defined by the British Standards Institution's Publicly Available Specification for Composted Materials-BSI PAS 100 (2002). Compost conformity should be independently assessed and verified through a certification scheme such as that managed by the Composting Association. These composts are very different from wholly manure based composts and sludges - and must be used differently.

### Compost characteristics

There are some recommended properties of a good compost for use in soil amendment

Parameters	Reported as (units of measure)	Recommended Range
pH	pH units (1:5 water extract)	7.0 - 8.7
Electrical Conductivity	$\mu\text{S}/\text{cm}$ or $\text{mS}/\text{m}$ (1:5 water extract)	2000 $\mu\text{S}/\text{cm}$ max or 200 $\text{mS}/\text{m}$ max
Moisture Content	% m/m of fresh weight	35 - 55
Organic Matter Content	% dry weight basis	>25
Screen Aperture Size	mm	25 maximum
C:N Ratio		20:1 maximum

Compost also provides the following available nutrients (approximate amounts based on typical analysis):

Depth over an area	Cubic metres per 100m <sup>2</sup>	Cubic metres per hectare	Tonnes per hectare	Tonnes dry matter per hectare	N Kg per hectare	P <sub>2</sub> O <sub>5</sub> Kg per hectare	K <sub>2</sub> O Kg per hectare
6mm 1/4"	0.6	60	30	19	24	45	144
12mm 1/2"	1.2	120	60	38	48	90	288
25mm 1"	2.5	250	125	79	100	190	600
50mm 2"	5.0	500	250	15	200	380	1200

Note: composted kitchen or vegetable materials may have higher nutrient contents than those for composted garden materials.

By comparison inorganic fertilizers provide the follow nutrients:

Product	Analysis	Rate	N kg/ha	P <sub>2</sub> O <sub>5</sub> kg/ha	k <sub>2</sub> O kg/ha
potassium Sulphate	48% k <sub>2</sub> O	35g/m <sup>2</sup>			
superphosphate	18% P <sub>2</sub> O <sub>5</sub>	70 g/m <sup>2</sup>		126	
ammonium sulphate	21%N	70 g/m <sup>2</sup>	147		

### The benefits of compost

Soil amendment with compost can improve establishment and reduce plant deaths in landscape planting schemes.

Compost improves the soil structure biologically, physically and chemically, providing a better rooting environment. Compost contains significant levels of phosphate (vital for strong root development), nitrogen (boosting shoot growth) plus other major and minor nutrients, largely in slow-release form. These enhance plant establishment and sustain growth for many months without the use of expensive or artificial fertilizers.

Using compost as a soil improver brings many benefits:

- increased nutrient levels and reduced need for fertilizers
- reduced nutrient losses and improved cation exchange capacity
- increased microbial activity
- increased soil temperatures
- improved root growth
- reduction in plant deaths
- reduced root diseases
- improved plant quality
- erosion control

Composts are biologically active and contain a complex mix of micro-organisms which have been shown to suppress a range of plant pathogen species including Pythium, Phytophthora and Rhizoctonia, which cause a variety of symptoms including wilting, root rots and tissue necrosis. Using compost as a soil amendment may suppress these diseases and reduce plant losses.



## Using Compost in planting bed establishment

FACT SHEET 01

### How to use compost

#### Soil improvement

Most grades of compost are suitable for use as a soil amendment, but the compost application rate will vary depending on soil conditions. It is necessary to have soil analysis carried out as this will help to determine application rates. A typical rate is 50 mm layer, which is mixed into the top 150 - 200 mm of the soil. This gives an incorporation rate of approximately 20 - 25% by volume. Lower inclusion rates may be necessary for salt-sensitive crops such as Primula, or where composts with higher salt levels are used. Higher inclusion rates, up to 100 mm or more, may be required if the recipient soil is particularly poorly structured or has been depleted of nutrients.

Once the compost inclusion rate is chosen, a representative blend of soil and compost can be produced and analysed prior to planting. This will identify the new soil characteristics, including soluble salt (expressed as electric conductivity) and organic matter content, as well as identify the appropriate fertilizer rates and pH adjustment necessary for optimum plant growth. Compost tends to contain the full range of trace elements, e.g. zinc, copper, manganese and boron. Many conventional fertilizers do not contain trace elements, those that do not contain trace elements, those that do are relatively expensive. As they are only needed in small quantities, trace element applications should not be required when using compost in planting schemes.

#### Container planting

Soils modified for ornamental planting mixes should contain at least 5% organic matter. By using compost as the organic matter source, landscapes get the added benefits of various macro and micronutrients, a stabilised pH, and a supply of beneficial micro-organisms. Planter mixes can contain up to approximately 1/3 compost. At high inclusion rates many perennial and annual species will not require fertilizer. However, gross feeders should be given additional nitrogen.

Care must be taken with some ericaceous subjects (e.g. camellias, heather's, rhododendron's). Soils above pH 6.5 will adversely affect the growth of plants requiring an acid soil. However, a lower rate of compost can be used, e.g. 10% by volume, as long as the other components in the mix are not alkaline (over pH7).

### Site conditions

The site drainage must be adequate before planting takes place. Subsoils may need to be ripped to relieve compact layers. This should not be done when the soil is too wet. Plastic drainage tubes, gravel filled holes, and other methods can be used to assure proper site drainage below or around the planting holes. Where soils are particularly low in nutrients, compost may be supplemented with a nitrogen fertilizer. Nitrogen in compost is mainly in a slow release form and may not provide enough nitrogen in the first few weeks of growth.

### Maintenance of planting schemes

In subsequent years, compost may be applied at 25 - 75mm depths as a mulch, or raked in the soil, replacing the need for any additional fertilizers.

### Look out for Certified Products

Composts certified with BSI PAS 100 by the Composting Association have been monitored by this independent body. This provides further assurance of high quality and an easy way to identify such products. Product properties are declared, and information included to enable product traceability - look for the certification mark.



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## Compost use in turf establishment & renovation

FACT SHEET 02

# Establish & maintain good quality grass with compost

Compost can be used in a variety of situations, including residential and commercial lawns, sports fields and golf courses. Excellent results can be achieved when using compost to both established and renovate turf.

## What is compost?

In the United Kingdom, compost is made from source separated plant materials mainly from parks and gardens. This material is processed under carefully controlled conditions to produce a high quality product, as defined by the British Standards Institution's Publicly Available Specification for Composted Materials - BSI PAS 100 (2002). Compost conformity should be independently assessed and verified through a certification scheme such as that managed by the Composting Association. These composts are very different from wholly manure based composts, spent mushroom.

It is important to ensure that the compost you use is the right quality. It should not contain any stones or physical contaminants and should be mature so that it helps support healthy plant development. Ask for a sample of compost before ordering to make sure that the compost you receive is the required quality. Compost producers should supply details of recent chemicals and physical analysis.

## The benefits of compost

Compost contains slow release nitrogen plus other major and minor nutrients that can replace fertilizers, leading to reduced inputs. Unlike sand-based dressings, compost can retain nutrients and make them available to the plant for a longer period. Grass therefore remains green without excessive growth and so mowing frequency is low.

## Compost characteristics

There are some recommended properties of a good compost for use in turf establishment & maintenance

Parameters	Reported as (units of measure)	Recommended Range
pH	pH units (1:5 water extract)	7.0 - 8.7
Electrical Conductivity	$\mu\text{S}/\text{cm}$ or $\text{mS}/\text{m}$ (1:5 water extract)	2000 $\mu\text{S}/\text{cm}$ max or 200 $\text{mS}/\text{m}$ max for turf establishment 2500 $\mu\text{S}/\text{cm}$ max or 250 $\text{mS}/\text{m}$ max for turf establishment
Moisture Content	% m/m of fresh weight	35 - 55
Organic Matter Content	% dry weight basis	>25
Screen Aperture Size	mm	25 max for turf establishment 10 max for general purpose top dressing 5 max for fine turf top dressing
C:N Ratio		20:1 maximum

Moist compost provides the following available nutrients (approx. amounts based on typical analysis)

Depth over an area	Cubic metres per 100m <sup>2</sup>	Cubic metres per hectare	Tonnes per hectare	Tonnes dry matter per hectare	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O
					Kg per hectare		
06mm 1/4"	0.6	60	30	19	24	45	144
12mm 1/2"	1.2	120	60	38	48	90	288
25mm 1"	2.5	250	125	79	100	190	600
50mm 2"	5.0	500	250	15	200	380	1200

Note: composted kitchen or vegetable materials may have higher nutrient contents than those for composted garden materials.

By comparison inorganic fertilizers provide the follow nutrients:

Product	Analysis	Rate	N kg/ha	P <sub>2</sub> O <sub>5</sub> kg/ha	K <sub>2</sub> O kg/ha
Potassium Sulphate	48% K <sub>2</sub> O	35g/m <sup>2</sup>			168
Superphosphate	18% P <sub>2</sub> O <sub>5</sub>	70 g/m <sup>2</sup>		126	
Ammonium sulphate	21%N	70 g/m <sup>2</sup>	147		
15:15:10 Spring turf		35g/m <sup>2</sup>	52	35	35
5:10:10 Autumn turf		50g/m <sup>2</sup>	25	35	35

Using compost as a soil improver brings many benefits:

- increased root growth from slow release phosphate
- faster turf establishment
- improved turf density and colour from slow release nitrogen, iron and magnesium
- improved soil cation exchange capacity
- higher nutrient buffering capacity
- plant disease suppression

Compost can suppress many turf grass diseases because it is a biologically active material. Studies carried out on golf courses and sports pitches in the USA and Canada have demonstrated a reduction in the severity and incidence of a wide range of turf diseases, particularly when applied as a top dressing or used as a root zone treatment.

## Compost use in turf establishment & renovation

FACT SHEET 02

### How to use compost

#### Turf establishment

Compost should be applied at 25 - 50 mm deep then incorporated to an approximate depth of 100 - 150 mm. The compost application rate will vary depending on the soil conditions, compost characteristics, and turf species to be established. A soil analysis test is recommended to establish the quality of the site soil. Once incorporated, a proper seed bed should be established and the seed lightly brushed into the surface using a drag mat or rake. Turf may be applied directly on to the soil surface either manually, or with specialised equipment. Once planting is completed, the area should be fertilized if necessary and watered on an ongoing basis to ensure adequate rooting.

#### Turf topdressing

Compost can be used as a topdressing for all areas or turf, either as a component of a mix, or on its own. Compost can be blended with various other materials such as sand and loam to produce a product that matches requirements, especially closely mown fine turf and sand dominated, free draining sports turf rootzones. Apply to the turf surface at a rate of 6 mm to 12 mm, brush in and water if necessary. Use the lower rate on sports turf and lawns and the higher rate on low maintenance grass and roadside verges. Core aeration techniques can also be used. The compost should be moist but flowable to facilitate application.

#### Divot repair

Divots can be fixed effectively using a blend of compost and grass seed mix. The compost contains nutrients and holds moisture, and the dark colour can help absorb heat from the sun, speeding up germination in cooler periods.



### Site conditions

The site drainage must be adequate before planting takes place. Subsoils may need to be ripped to relieve compact layers. This should not be done when the soil is too wet. Plastic drainage tubes, gravel filled holes, and other methods can be used to assure proper site drainage below or around the planting holes. Where soils are particularly low in nutrients compost may be supplemented with a nitrogen fertilizer. Nitrogen in compost is mainly in a slow release form and may not provide enough nitrogen in the first few weeks of growth.

### Maintenance of planting schemes

In subsequent years, compost may be applied at 25 - 75mm depths as a mulch, or raked in the soil, replacing the need for any additional fertilizers.

### Look out for Certified Products

Composts certified with BSI PAS 100 by the Composting Association have been monitored by this independent body. This provides further assurance of high quality and an easy way to identify such products. Product properties are declared, and information included to enable product traceability - look for the certification mark.



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## Compost use in tree & shrub planting

FACT SHEET 03

# Trees & shrubs take root in compost!

Compost can improve the conditions of a wide range of soil types, from heavy clay to light sandy soils. The inclusion of compost in a backfill can improve the establishment of a landscaping planting scheme and reduce plant deaths.

## What is compost?

In the United Kingdom, compost is made from source separated plant materials mainly from parks and gardens. This material is processed under carefully controlled conditions to produce a high quality product, as defined by the British Standards Institution's Publicly Available Specification for Composted Materials - BSI PAS 100 (2002). Compost conformity should be independently assessed and verified through a certification scheme such as that managed by the Composting Association. These composts are very different from wholly manure based composts, spent mushroom composts, and sludges and must be used differently.

For use in backfill mixes the compost should be mature, such that it helps support healthy plant development. Such composts can eliminate the need to add major nutrients during planting unless the soil is poor and additional nitrogen is required. In addition, composts tend to contain the full range of minor nutrients and trace elements, e.g. zinc, copper, manganese and boron. Many conventional fertilisers do not contain trace elements and products which include them are relatively expensive.

As they are needed only in small quantities, trace element applications should not be required when using compost in backfill mixes.

The soluble salt content (expressed as Electrical Conductivity) of compost used in backfill mixes may vary and maximum salt tolerance levels are soil and species dependant. Soluble salts should not be a significant problem with most woody ornamentals. However, care should be taken when bare root, ericaceous, and other salt sensitive crops are planted. Compost producers should supply details or recent chemical physical analysis and this should

## Compost characteristics

There are some recommended properties of a good compost for use in soil amendment

Parameters	Reported as (units of measure)	Recommended Range
pH	pH units (1:5 water extract)	7.0 - 8.7
Electrical Conductivity	$\mu\text{S}/\text{cm}$ or $\text{mS}/\text{m}$ (1:5 water extract)	2000 $\mu\text{S}/\text{cm}$ max or 200 $\text{mS}/\text{m}$ max
Moisture Content	%, $\text{m}/\text{m}$ of fresh weight	35 - 55
Organic Matter Content	%, dry weight basis	>25
Screen Aperture Size	mm	25 maximum
C:N Ratio		20:1 maximum

Compost also provides the following available nutrients (approximate amounts based on typical analysis):

Depth over an area	Cubic metres per 100m <sup>2</sup>	Cubic metres per hectare	Tonnes per hectare	Tonnes dry matter per hectare	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O
					Kg per hectare		
6mm 1/4"	0.6	60	30	19	24	45	144
12mm 1/2"	1.2	120	60	38	48	90	288
25mm 1"	2.5	250	125	79	100	190	600
50mm 2"	5.0	500	250	15	200	380	1200

Note: composted kitchen or vegetable materials may have higher nutrient contents than those for composted garden materials.

By comparison inorganic fertilizers provide the follow nutrients:

Product	Analysis	Rate	N/ha	P <sub>2</sub> O <sub>5</sub> kg/ha	K <sub>2</sub> O kg/ha
potassium Sulphate	48% K <sub>2</sub> O	35g/m <sup>2</sup>			
superphosphate	18% P <sub>2</sub> O <sub>5</sub>	70 g/m <sup>2</sup>		126	
ammonium sulphate	21%N	70 g/m <sup>2</sup>	147		

be used in conjunction with an analysis of the site soil.

The compost should have a moisture content between 35-55%. Compost with a high moisture content is expensive to transport and difficult to handle. Dry compost can be dusty, absorbs water less easily, and can aggravate water stress in the tree or shrub on planting.

## Benefits of compost

Compost improves the physical properties of the soil, creating a better rooting environment. The high nutrient content of compost includes slow release nitrogen plus other major and minor nutrients that can replace inorganic fertilisers.

Specific benefits include:

- reduction in soil compression
- improvement in soil water holding capacity
- increase in nutrient levels
- increase in microbial activity
- increase in soil temperature
- improved root growth rate
- reduction in plant deaths
- faster establishment rates

Composts are biologically active and contain a wide range of micro-organisms which have been shown to suppress a number of plant pathogen species including Pythium, Phytophthora and Rhizoctonia, which cause a variety of systems including wilting, root rots and tissue necrosis. Using compost as a soil amendment can suppress these diseases and reduce plant losses.

## Compost use in tree & shrub planting

FACT SHEET 03

### How to use compost

The inclusion rate of compost in the backfill mix will vary, based on the species to be grown and the characteristics of the soil to be blended with native soil at 25 - 50% compost by volume has been widely used, but the preferred inclusion rate is approximately one third compost by volume. Prepare the root-balled, containerised, or bare root plants in accordance with the industry standard methods before planting. The planting hole should be slightly deeper than the root ball and two to four times its width. The soil removed from the planting hole should be thoroughly mixed with compost at a rate of two parts soil to one part compost. Use this material to backfill around the root ball, firming occasionally to remove air pockets. The trees or shrubs should be watered in thoroughly and preferably mulched to conserve moisture and suppress weed growth.



### Site conditions

The site drainage must be adequate before planting takes place. Subsoils may need to be ripped to relieve compact layers. This should not be done when the soil is too wet. Plastic drainage tubes, gravel filled holes, and other methods can be used to assure proper site drainage below or around the planting holes. Where soils are particularly low in nutrients compost may be supplemented with a nitrogen fertilizer. Nitrogen in compost is mainly in a slow release form and may not provide enough nitrogen in the first few weeks of growth.

### Maintenance of planting schemes

In subsequent years, compost may be applied at 25 - 75mm depths as a mulch, or raked in the soil, replacing the need for any additional fertilizers.

### Look out for Certified Products

Composts certified with BSI PAS 100 by the Composting Association have been monitored by this independent body. This provides further assurance of high quality and an easy way to identify such products. Product properties are declared, and information included to enable product traceability - look for the certification mark.



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## Compost use as a mulch

FACT SHEET 04

# See the benefits and mulch with compost!

Mulching provides an attractive, successful and cost effective means of retaining soil moisture, controlling weed growth and preventing soil erosion.

## What is compost?

In the United Kingdom, compost is made from source separated plant materials mainly from parks and gardens. This material is processed under carefully controlled conditions to produce a high quality product, as defined by the British Standards Institution's Publicly Available Specification for Composted Materials - BSI PAS 100 (2002). Compost conformity should be independently assessed and verified through a certification scheme such as that managed by the Composting Association. These composts are very different from wholly manure based composts and sludges - and must be used differently.

Coarser grade composts which contain larger woody fragments are preferable for use as mulches as they do not decompose as readily and remain in place for longer. The surfaces of coarse materials dry out rapidly inhibiting weed seed germination. Therefore avoid including fine particles in the mulch i.e. compost particles below 10 mm in size.

Compost with higher soluble salt contents (expresses as Electrical Conductivity) should be used with caution on herbaceous and salt-sensitive plants. Similarly, caution should be used when applying composts with a high pH where acid loving species are planted, such as camellias, heather's and rhododendron's.

## Compost characteristics

There are some recommended properties of a good compost for use in soil amendment

Parameters	Reported as (units of measure)	Recommended Range
pH	pH units (1:5 water extract)	7.0 - 8.7
Electrical Conductivity	$\mu\text{S}/\text{cm}$ or $\text{mS}/\text{m}$ (1:5 water extract)	2000 $\mu\text{S}/\text{cm}$ max or 200 $\text{mS}/\text{m}$ max
Moisture Content	% m/m of fresh weight	35 - 55
Organic Matter Content	% dry weight basis	>25
Screen Aperture Size	mm	25 maximum
C:N Ratio		20:1 maximum

Compost also provides the following available nutrients (approximate amounts based on typical analysis):

Depth over an area	Cubic metres per 100m <sup>2</sup>	Cubic metres per hectare	Tonnes per hectare	Tonnes dry matter per hectare	N Kg per hectare	P <sub>2</sub> O <sub>5</sub> Kg per hectare	K <sub>2</sub> O Kg per hectare
6mm 1/4"	0.6	60	30	19	24	45	144
12mm 1/2"	1.2	120	60	38	48	90	288
25mm 1"	2.5	250	125	79	100	190	600
50mm 2"	5.0	500	250	15	200	380	1200

Note: composted kitchen or vegetable materials may have higher nutrient contents than those for composted garden materials.

By comparison inorganic fertilizers provide the follow nutrients:

Product	Analysis	Rate	N kg/ha	P <sub>2</sub> O <sub>5</sub> kg/ha	K <sub>2</sub> O kg/ha
potassium Sulphate	48% K <sub>2</sub> O	35g/m <sup>2</sup>			
superphosphate	18% P <sub>2</sub> O <sub>5</sub>	70 g/m <sup>2</sup>		126	
ammonium sulphate	21%N	70 g/m <sup>2</sup>	147		

## The benefits of compost mulches

Using compost as a mulch can bring numerous benefits:

- reduction in soil erosion
- increased microbial activity
- improved plant establishment and growth
- reduced plant disease incidence
- increase in soil temperature
- reduction in herbicide costs
- reduction in irrigation equipment
- reduced labour costs



## Compost use as a mulch

FACT SHEET 04

### How to use compost

#### General mulching

Apply the compost evenly on the surface of the garden bed or around the trees and shrubs, creating a continuous mat of compost mulch. Compost should be applied to a depth of 50 mm beneath trees, shrubs and other plants in garden beds and planting schemes. Avoid placing mulch against the tree trunk or main leader of the shrub as this can cause damage to the protective bark layer of the stem. Once applied, the mulch may be watered-in to help leach out any excess salts. If the compost is high in soluble salts, reduced amounts should be applied and the mulch should be well watered.

#### Weed suppression

Control of weed species is one of the most important benefits of mulches. Prior to the development of chemical herbicides, mulches were widely used to control weeds. To suppress weeds physically, up to a 100 mm thick mulch layer may be required. In general, the germination of weed seeds declines as burial depth increases. Additionally, organic mulches gradually improve soil physical and biological properties as they decompose and become incorporated into the soil over a longer time having similar effects as soil conditioners.

#### Erosion Control

Mulching can prevent soil erosion by reducing rain splash and run off. The compost layer, typically 50 mm in-depth, absorbs the energy from the rainfall and slows down the percolation rate. Mulching can be used to stabilise banks and sloping beds, and in filter berms (strips of compost typically 500 mm high and 1 m wide) to contain soils which are subject to erosion.



### Site conditions

The site drainage must be adequate before planting takes place. Subsoils may need to be ripped to relieve compact layers. This should not be done when the soil is too wet. Plastic drainage tubes, gravel filled holes, and other methods can be used to assure proper site drainage below or around the planting holes. Where soils are particularly low in nutrients compost may be supplemented with a nitrogen fertilizer. Nitrogen in compost is mainly in a slow release form and may not provide enough nitrogen in the first few weeks of growth.

### Maintenance of planting schemes

In subsequent years, compost may be applied at 25 - 75mm depths as a mulch, or raked in the soil, replacing the need for any additional fertilizers.

### Look out for Certified Products

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## Compost use for manufacturing topsoil

FACT SHEET 05

# Reduce costs & conserve resources by making topsoil with compost

Manufacturing topsoil from poor quality soils, subsoil's or other inert materials with imported, manufactured compost can substitute for brought in natural topsoil which is becoming a scarce and expensive commodity. Topsoil may be manufactured either on-site with materials that are present, or off-site. By manufacturing soils on-site, transport costs may also be reduced significantly.

### What is compost?

In the United Kingdom, compost is made from source separated plant materials mainly from parks and gardens. This material is processed under carefully controlled conditions to produce a high quality product, as defined by the British Standards Institution's Publicly Available Specification for Composted Materials-BSI PAS 100 (2002). Compost conformity should be independently assessed and verified through a certification scheme such as that managed by the Composting Association. These composts are very different from wholly manure based composts and sludges - and must be used differently.

### Compost characteristics

There are some recommended properties of a good compost for use in topsoil manufacture

Parameters	Reported as (units of measure)	Recommended Range
pH	pH units (1:5 water extract)	6.5 - 8.7
Electrical Conductivity	$\mu\text{S}/\text{cm}$ or $\text{mS}/\text{m}$ (1:5 water extract)	3000* $\mu\text{S}/\text{cm}$ max or 300* $\text{mS}/\text{m}$ max
Moisture Content	% m/m of fresh weight	35 - 55
Organic Matter Content	%, dry weight basis	>25
Screen Aperture Size	mm	25 maximum
C:N Ratio		20:1 maximum

\*If compost possesses a conductivity of above 2000  $\mu\text{S}/\text{cm}$  or 200 $\mu\text{S}/\text{m}$ , then it should be applied at proportionally reduced rates

### The benefits of compost addition

Organic matter in soil is essential for soil structure, water holding properties, microbial activity and soil health.

Composts can be used to add organic matter to soils and increase the range of applications for the soil.

- greater workability of soil
- reduced need for inorganic fertilizers
- improved water holding in light soils
- beneficial soil micro-organisms
- better soil structure
- increased traffic tolerance
- protection against erosion
- improved visual appearance



## Compost use for manufacturing topsoil

FACT SHEET 05

### How to use compost

#### Soil analysis

The existing site soil and brought in materials should be tested according to the parameters required in BS 3882:1994. Brownfield soils should have been assessed during the site investigation to the relevant standards and compared with the Soil Guidelines Values in CLEA model. Based on the soil and compost analysis (provided by the supplier) a blending ratio of soil: compost can be calculated on a dry weight basis and then converted to volumes for ease of mixing. Analysis of the final mix of soil and compost can be used to verify the new soil's characteristics.

The new soil should be manufactured with the site use in mind i.e. which plants are to be used, or turf laid, etc. Alternatively, the plants chosen should be those that match the new soil's characteristics. Soil pH, electrical conductivity and texture all affect the survival and subsequent growth of plants and should be taken into account.

#### Blending ratios

Poor quality soils, subsoils and other inert materials are usually deficient in organic matter, total nitrogen, available nutrients and in some cases lime content. Compost is a good source of organic matter and nutrients and has a small liming effect and makes ideal blending material. Based on the soil and compost analysis, the new soil organic matter should be raised to a minimum of 5% and total nitrogen content to 0.2%, on a dry weight basis. The available nutrient indices should be raised to at least 2 for phosphate and potash and 1 for

magnesium, and ideally an index level higher for all three nutrients. The pH should be a level suitable for plant growth and within the limits set in BS 3882, as should the stone content, according to the grade of soil being created.

Compost with a typical organic matter content of 30% on a dry weight basis, blended at 65-84m<sup>3</sup> (33-42 tonnes of moist compost) with 100m<sup>3</sup> (100-133 tonnes dry weight) of soil would raise the organic matter of a soil with low organic matter content from 2% for example up to 5%. However, analysis of the blended materials should be carried out on test batches in advance of mixing large quantities.

Compost should be able to supply most of the plant requirements for nutrients from the blended topsoil. However, when nutrient poor materials are added to compost some nitrogen fertilizer may be required for rapid growth.

#### Mixing compost with soil

The storage of materials and the mixing operation is ideally carried out on a concrete surface or other suitably compacted surface with a front end loader, a 360 degree excavator or through proprietary blending/screening equipment. When mixing with a front end loader, always place the lighter material (compost) in a bed on the surface and add the heavier material on top before mixing.

#### Use of new soil

The drainage conditions of the site should be rectified, if required, before the new soil is laid down and any subsoiling should be carried out. The topsoil should be spread a minimum of 150 mm deep for turf and 300-600 mm deep for planting areas. Once levelled, any stones or debris on the surface should be removed prior to planting.

#### Look out for Certified Products

Composts certified with BSI PAS 100 by the Composting Association have been monitored by this independent body. This provides further assurance of high quality and an easy way to identify such products. Product properties are declared, and information included to enable product traceability - look for the certification mark.



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