

MINE-SITE REHABILITATION

■ WHO IS BIOWISE

BioWise, a joint development initiative between SITA Organics and the Water Corporation of Western Australia, produces high quality compost mulch for mine-site rehabilitation. BioWise compost has the potential to be used during different stages of rehabilitation. This includes applications to landform reconstruction, topsoil management, transplanting and seedling planting, and regeneration use during maintenance of rehabilitation areas.

BioWise compost is derived from green organics, biosolids and food waste residue, and is carefully matured to ensure compliance with Australian Standard AS4454 Composts, Mulches and Soil Conditioners. BioWise compost mulch has the following characteristics that are beneficial for mine-site rehabilitation:

■ GRADES

- BioWise produces large volumes of compost, which can be used to rehabilitate areas from a few hectares up to a hundred or more hectares
- Different texture grades of compost are produced for use in different rehabilitation applications
- Course-grade mulch/compost is ideal for erosion control and application on large areas for dust suppression
- Medium textured compost is ideal for application to revegetation areas

■ PRESENTATION

- The product resembles a rich dark topsoil
- Pleasant earthy odour

■ BIOWISE COMPOST FOR MINE-SITE REHABILITATION

- Alternative to poultry manure
- Compost can make clay soils and residue lighter and easier to work with
- Supplements traditional methods for controlling water problems in mines, such as armouring, contour ripping and drainage for water run off

- Enhanced water holding quality will increase water availability for plants, whereas good drainage will prevent build up of water which could lead to anaerobic soil conditions
- Increased organic matter in rehabilitation areas increases microbial activity in the soil which helps to convert organic components in the soil into inorganic compounds for plant uptake
- Improved soil infrastructure helps reduce erosion and dust and promotes vegetative cover along embankments for slope rehabilitation
- Compost is suitable for supporting rehabilitation species, and can be used for crops and native vegetation, and in potted or natural environments
- Has appropriate qualities for seedling development, such as moderate nutrient levels and low salinity and phytotoxicity levels
- Consistent and adequate supply of compost which can meet seasonal demands
- Has suitable moisture content for spraying which lowers water consumption
- Can be added to composted topsoil on-site to boost nutrients and micro-organisms which may have been lost during storage
- Can be cost effective even if transported over long distances (due to its ability to be easily mixed with mineral substrates for use over large areas)
- Can help establish green belts in mining camps

■ BIOCHEMICAL PARAMETERS AND QUALITY

- The product is free of weed seeds and dieback which are destroyed during the composting process
- The compost is a good source of organic matter to add to soils which have severely depleted organic matter levels
- Establishes beneficial soil microbial activity
- Stimulates beneficial macrofauna including earthworms
- Provides a long term source of slow-release nutrients by acting as a nutrient reservoir

- The product is tested regularly to ensure compost stability which results in a compost that takes longer to break down, and therefore does not need to be applied as often
- BioWise product complies with stringent microbial and chemical contaminant criteria for unrestricted use (ARMCANZ Grade A) and all criteria for AS4454 Australian Standards

■ PHYSICAL PARAMETERS AND QUALITY

- Stabilises soil temperature and pH (in the long term can help reduce pH in alkaline soils due to the production of humic acids)
- Provides adequate drainage for clay soils and lowers bulk density which assists root penetration and flora establishment
- Enhances soil water holding capacity, aeration, cation exchange capacity and structural stability
- Improves water retention in both clay and sandy soils, which reduces water run off and evaporation from the soil surface
- Adds structure to clay soils and improves the structural stability of sandy soil
- Increases soil resistance to wind and water erosion

■ PRODUCT SPECIFICATIONS

Particle size grading

- Medium and coarse compost/mulch

Moisture content	35-50%
C:N ratio	15-20:1
pH	6.0 – 8.0
Total Nitrogen	0.8 – 1.3% can go up to 3%
Total Phosphorus	0.1 – 1.0% (suitable for a variety of native and exotic plants, excluding P sensitive species)
Wettability	0.62 – 3.44
NDI	1.23
Organic content	>35%
Sodium	0.01 – 0.05%

Note: all criteria above comply with AS4454 Australian Standard – Composts, Soil Conditioners and Mulches

■ RECOMMENDED APPLICATION RATES AND METHODS

In large areas apply 50 to 100m³ per hectare as needed, depending on the health of the soil.

Garden preparation

In smaller areas around miners accommodation compost can be used for gardens applied at the following rates

To establish a new garden or prepare a garden for planting add 5 – 10 cm of compost and if possible till to a depth of 15 - 20 cm. If the soil is very poor, add extra compost to the top 6 – 10 cm of soil.

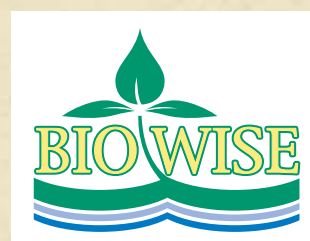
If the compost is mixed as mulch and applied as topsoil, cover the area to a depth of 15 cm and lightly compact.

Trees and shrubs

Lay 2.5 cm of compost around trees and 5 cm around shrubs. Do not place compost right up against plants. Apply in late spring and gently rake into the surface.

To prepare soil for new shrubs, till the soil to a depth of 15 – 25 cm, depending on the size of the shrub.

The depth should be twice the width of the root ball. Use approximately 5 – 10 cm of compost and mix thoroughly into the soil. If the soil is very poor use 15 cm of compost instead.



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