



ORCHIATA™ TECHNICAL DATA

Processed bark is an excellent medium for growing orchids, however there are many different types of bark with different physical and chemical properties. Some bark varieties can be high in salts, poor in structure, or low in pH which can create problems for orchid growers.

Pinus radiata is a fast growing conifer grown widely in New Zealand in man made forests for the timber industry. The tree is about 30m tall and approximately 20-30 years old when harvested. The bark from these trees is usually 20-50mm thick and forms large overlapping plate-like structures.

New Zealand *Pinus radiata* bark is very strong in nature; it can be ground down to smaller sized nuggets but will retain shape and structure. It is a red colour when raw but soon turns a dark brown when aged. *Pinus radiata* is low in dry bulk density (120-190kg/m³) which means the product can be quite light at low moisture contents.

Growing orchids in a poor quality media is often expensive as management costs increase while plant quality decreases.

Orchiata™ is Aged *Pinus radiata* bark especially produced to grow high quality orchids throughout the world.

Orchid bark that is produced in most European and American countries is created from composted Fir bark. This type of bark is thin and soft in nature. It breaks down very quickly in a pot and can accumulate soluble salts when used as a media for orchids. As the media breaks down it consumes nitrogen which becomes unavailable to the plant. Orchid plants can often grow poorly in these media even with good management. Composted Fir bark can often hold too much water which may encourage unwanted bacterial growth. Pine bark is also used else where in the world for producing orchid bark however this pine bark grows differently to trees in New Zealand; often thinner in nature and is not aged in specific processes.

Pinus radiata bark does contain tannins when the bark is raw. To remove these chemicals we allow the raw bark to sit for up to 12 weeks to remove any toxins that may be present, then further processing occurs to age the bark.

To prepare *Pinus radiata* bark especially for orchid growth, raw bark is ground to smaller particles using specialised equipment. The bark is then aged in windrows for several weeks while moisture and temperature are monitored.



Aging is a different process to composting. Aging allows only the outside of the bark particle to break down, allowing removal of natural toxins. This removes the waxy layer associated with *Pinus radiata* bark allowing the bark particle to hold water and nutrients on its surface for the plant. The inside of the bark particle remains solid in structure creating a strong, long lasting particle that holds the right amount of water and nutrients.

As water is held only on the outside of the bark particle the media does not become too wet. As *Pinus radiata* takes so long to break down (due to high proportions of lignin), there are no negative effects on the nitrogen available for plant growth. **Orchiata™ Power** bark can easily retain its structure in a pot for 10 years when managed correctly.

Aged bark should not be confused with waste bark that has come from landfill dumps. Bark processed from landfill dumps often contain contaminants from the timber processing of old. These include arsenic and other timber treating compounds as well as oil and diesel which were absorbed by bark and then dumped in landfills. Stockpiling of bark into landfills also leads to uneven aging as moisture and temperature appear inconsistent within the large heaps. Landfill bark can also contain a medley of tree species.

Orchiata™ has been developed over the past 20 years through Research and Development and in conjunction with Dr Munoo Prasad, a leading expert in this field. The process is unique to the Pacific Wide Group through its manufacturing plant Pacific Bark. The procedure used to age bark creates a very stable and consistent product.

Where Orchiata™ is entirely *Pinus radiata*; bark from landfill often contains high proportions of Fir and hardwood species which lower the quality of the final product.

Raw bark used to manufacture Orchiata™ is sourced straight from the mill leaving out the need for landfill bark.



New Zealand
Pinus radiata Bark
aging in windrows

Orchiata™ is free of contamination (weeds and pests) compared to alternative growing mediums.

To help produce premium quality bark we perform numerous quality checks and analyses on each bark batch. These include contamination checks of wood and cambium, fines and stones; chemical analysis on pH, EC, toxicity tests, moisture content and particle size analysis at our processing plant.



Properties of pH adjusted **Orchiata™** are:

pH:	5.5-6.5	Sodium:	< 15 mg/L
Electrical Conductivity:	< 0.3 mS/cm	Iron:	< 10 mg/L
Ammonium N:	< 5 mg/L	Manganese:	< 2 mg/L
Nitrate N:	< 5 mg/L	Zinc:	< 1 mg/L
Phosphorus:	< 5 mg/L	Copper:	< 0.05 mg/L
Potassium:	< 45 mg/L	Boron:	< 0.05 mg/L
Sulphur:	< 10 mg/L	C:N:	60 - 80
Calcium:	1-10 mg/L	CEC:	100 meq/100g
Magnesium:	1-6 mg/L	Ash %:	14

Moisture Content of Normal Product: 40 – 50 %

Unprocessed bark is generally acidic because of various chemical compounds in its structure. **Orchiata™** is pH adjusted with a natural mineral called Dolomite to increase the pH. As both fertiliser addition and the plant itself decrease the pH of a media, a higher pH is beneficial in the beginning for orchid growth.

Dolomite addition is also an important and beneficial source of calcium and magnesium required for excellent plant growth.

Pinus radiata bark is a fully renewable resource which is friendly to the environment. No chemicals are added to the media at any stage apart from the naturally occurring mineral dolomite used for adjusting the pH.

Orchiata™ contains natural populations of beneficial micro-organisms which can aid plant growth. These organisms colonise and increase in numbers during the aging process which, later, prevents the occurrence of plant pathogenic organisms. Common biota that occur in the Pacific Wide Group aged orchid bark are organisms such as *Paecilomyces*, *Trichoderma* and *Penicillium* which are famous for suppressing and preventing the colonisation of *Fusarium*, *Phytophthora*, and *Pythium*. This is undoubtedly a benefit to plant growth. We will continue to research on the beneficial micro-organisms found in the Pacific Wide Group aged orchid bark as this is an important element to aged orchid products.

Orchiata™ is a specialised high quality media. Because the media has low concentrations of soluble salts, it is strong in structure and high in calcium and magnesium. Therefore management of plant growth is much easier and cost effective. Fertilisation and watering can occur easily at regular intervals using automated systems; this cuts down on labour costs. Plant growth is much more stable as there is less influence on nutrient levels applied to the media. All types of fertiliser can be used in conjunction with **Orchiata™** making this product easy to use in many different countries.