

Product: Fresh pine tree substrate (S3-19)

Source: North Carolina

Date received:

Moisture content upon receipt: 58.9%

Plant species: *Pinus taeda*

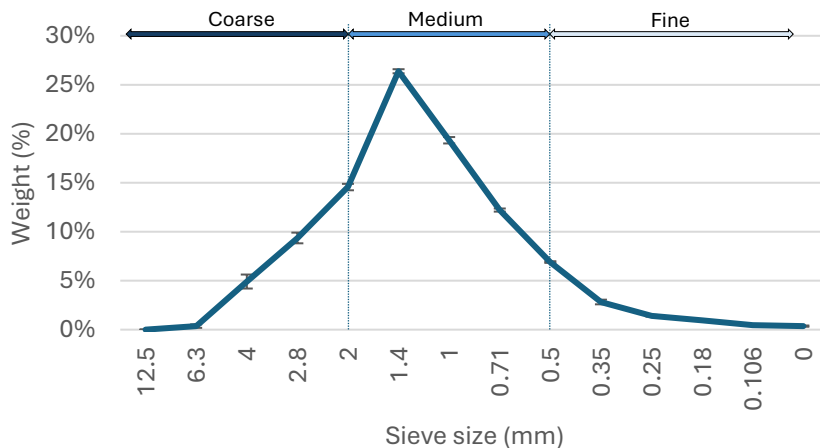
Processing equipment: hammermill

Nominal equipment size:

Note: this is the same material at S3-18, but fresh.



Particle size distribution

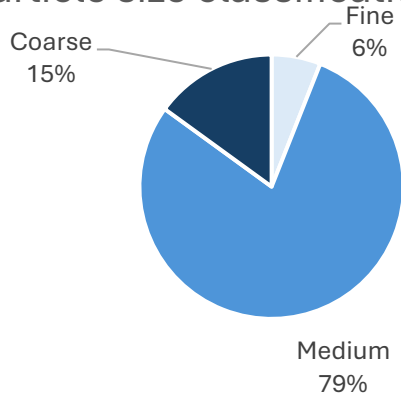


Particle size distribution:

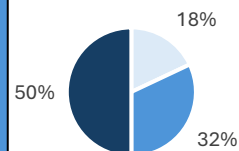
Particle size distribution is uniquely peaked at 1.4 mm. This is likely due to hammermill design.

When analyzed by particle size class, it is overwhelmingly skewed to medium particles with very few coarse particles and relatively low percentage of fine particles.

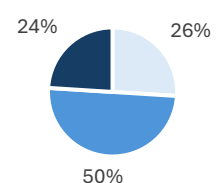
Particle size classification



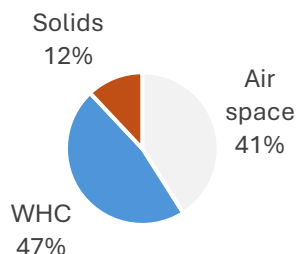
Pine bark



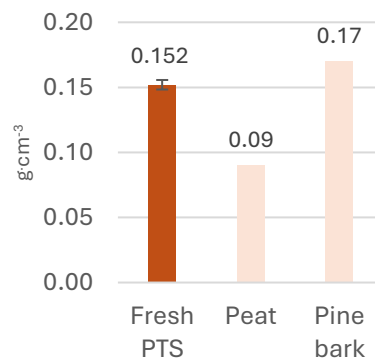
Peat



Physical properties



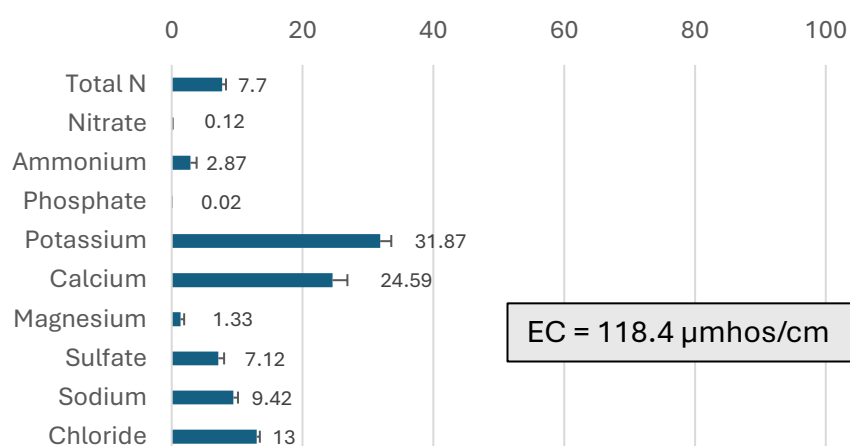
Bulk density



Physical properties:

Total porosity is 88%. Of that, this substrate has high air space. I would expect this material to perform similar to pine bark. Bulk density is slightly lower than other softwood barks, but higher than peat.

Water extractable nutrients (mg·L⁻¹)



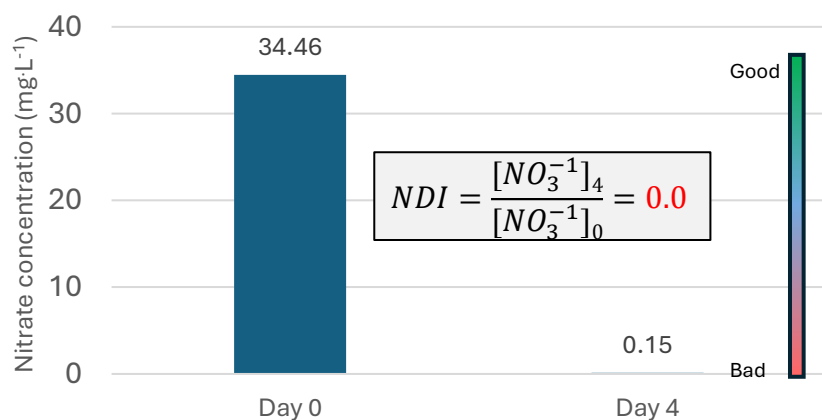
Water extractable nutrients:

All water-extractable nutrients are relatively low.

Ca and Mg are within an acceptable range, however, the Ca:Mg ratio is high (typically there should be 2x to 5x more Ca compared to Mg)

Na and Cl are sufficiently low.

Nitrogen draw-down

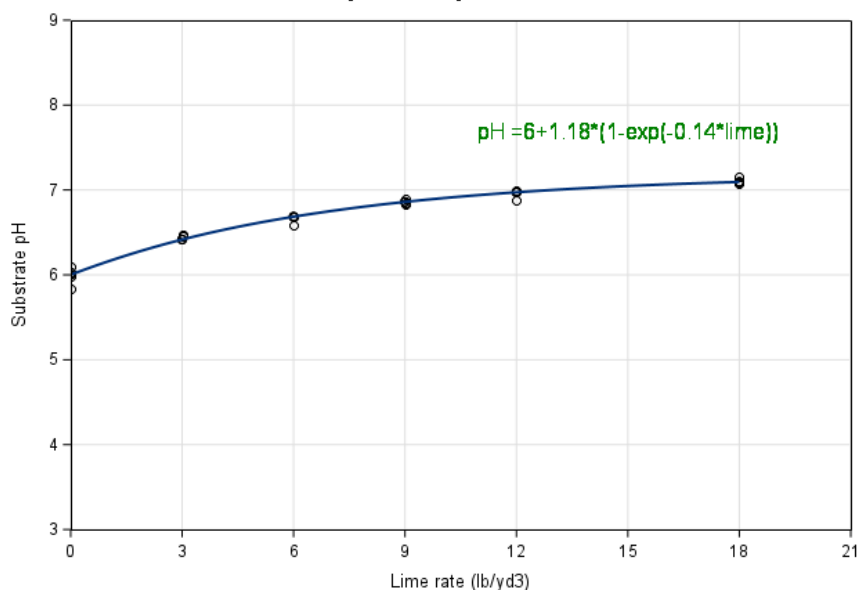


Nitrogen draw down index:

Nitrogen draw-down index (NDI) is 0.0, indicating very high N immobilization. This substrate will require additional N for optimum plant growth.

This value is based on 52.7 g dry mass and 0.152 g·cm⁻³ bulk density.

Substrate pH response to lime rate



Lime rate titration:

Lime calibration curve shows non-amended whole-tree pine with a pH of 6.0. The pH can be raised to a maximum of 7.2 with ~18 lb/yd³ dolomitic lime.