

## Product Information Sheet

### C325 Charcoal, Activated, Acid Washed

Synonym: Carbon Black; Activated Carbon  
CAS: 7440-44-0  
Formula: C  
Molecular Wt: 12.01

#### Properties

Form: Powder  
Appearance: Black Fine Powder  
Application: Orchid Media Supplement  
Solubility: Insoluble - Forms Suspension with Water  
Typical Working Concentration: 1 to 5 grams per liter  
Storage Temp: Room Temperature  
Other Notes: Plant Tissue Culture Tested

#### Application Notes

Activated charcoal (AC) works by adsorbing toxic substances (e.g., phenols, inorganic compounds, and other organic impurities) secreted by plant tissues or present in media ingredient that would otherwise affect growth. Due to its ability to adsorb many impurities, usages of AC in culture media had been reported to improve and/or stimulate growth, organogenesis and embryogenesis for many plant species.<sup>2,3</sup>

Typical concentration of AC ranges from 1 to 5 g/L which has been reported to help reduce polyphenol exudation in immature embryos of *Sorghum bicolor*; however, a low concentration of 0.5 g/L has been reported to help reduce polyphenol from *Aristolochia indica*.<sup>3</sup>

For orchid tissue culture, AC is also commonly used in orchid media to adsorb phenolics compounds secreted by wounded plant tissues to prevent darkening of media which would inhibit plant growth. Seedlings of *Phalaenopsis* when cultured on media supplemented with AC at 0.5 g/L have shown significant shoot and root development; while at 3 g/L of AC helped increase root development of *Cymbidium* and *Dendrobium*.<sup>4</sup>

While many advantages has been reported for the use of activated charcoal, a report of AC interference with growth hormones has been report in which it adsorbed the required growth hormones for the growth development of callus growth of *Nicotiana tabacum* cv. Wisconsin 38.<sup>5</sup>

Please Note: It is the sole responsibility of the purchaser to determine the appropriateness of this product for the specific plants that are being cultured and applications that are being used.

#### References

1. Merck 13, 1818
2. George G. 1993. Plant Propagation by Tissue Culture, Part 1: The Technology. England: Exegetics Limited, 574 pp.
3. Thomas, T. Dennis. 2008. The Role of Activated Charcoal in Plant Tissue Culture. *Biotechnology Advances*. 26:618-631.

#### India Contact

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4. Wang, P.J., and L.C. Huang. 1976. Beneficial Effects of Activated Charcoal on Plant Tissue and Organ Cutlures. *In Vitro*. 12(3):260-262.
5. Constantin, M.J., R.R. Henke, and M.A. Mansur. 1977. Effect of Activated Charcoal on Callus Growth and Shoot Organogenesis in Tobacco. *In Vitro*. 13(5):293-296.

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