

NatureCide

Aspen Bark Extract

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Code NatCide

INCI Name: Populus Tremuloides (Aspen) Bark Extract

INCI Status: Applied

Suggested Use Level: 0.2 - 3.0%

Suggested Applications: Antimicrobial with added dermal benefit

Populus tremuloides also referred to as Quaking, Trembling or American Aspen originates in the northern and western areas of North America. The trees typically grow in vast colonies that originate from one seedling, as the

trees' primary means of reproduction is the sprouting of new root suckers (new stems) from the roots. Although the trees live on average between 40 and 150 years, the root system can survive for a considerable length of time. In fact, an Aspen colony in Utah referred to as 'Pando' is said to be 80,000 years old which would make this the oldest known living colony. The Aspen's root system is capable of spreading approximately a meter per year and is therefore capable of expanding to cover an area of several hectares. One reason

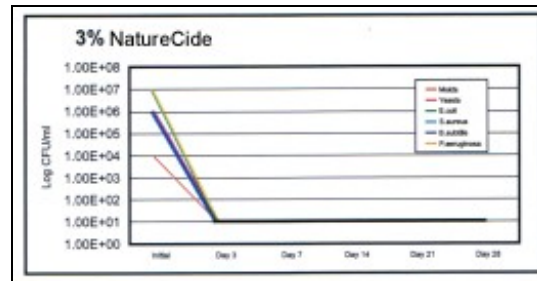
for the tree's success is due to the colony's ability to withstand fires, although the trees may burn, the roots that are capable of sprouting new trees are safely below the fire's reach.

The bark of the Aspen tree is rich in salicylates that may function as the plant's natural defense mechanism against invading parasites. The salicylates in Aspen bark may also be used for medicinal purposes. Medicinal barks have been used as analgesics and to reduce fevers for centuries. Today doses of 1 to 3 g of bark with concentrations ranging between 60 to 240 mg of salicylates is recommended as an analgesic for low back pain.

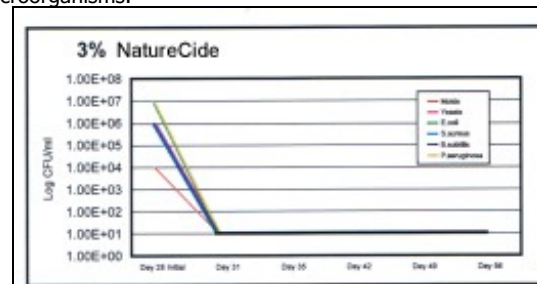
These salicylates may be isolated from Aspen Bark and applied to cosmetic and personal care products as a natural alternative to more traditional preservative systems. The manufacturing method allows it to consistently isolate a salicylate content between 54.0 — 60.0%,

which makes NatureCide Aspen Bark Extract an ideal preservative. Initial efficacy testing reveals that NatureCide Aspen Bark Extract is effective at inhibiting the growth of mold, yeast, *E. coli*, *S. aureus*, *B. subtilis* and *P. aeruginosa*. As a secondary benefit, NatureCide Aspen Bark Extract may also impart a smooth feel to the skin.

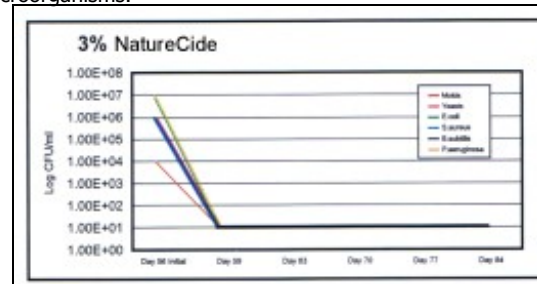
NatureCide Aspen Bark Extract is water soluble and may therefore be added to aqueous systems as well as the aqueous phase of emulsions with ease. When using NatureCide Aspen Bark Extract, it is recommended to maintain the formulation pH between 3 and 9. We also suggest incorporating the product at a temperature of 60°C or below.



Day 0, a 3% NatureCide solution was inoculated with the selected microorganisms.



Day 28, a 3% NatureCide solution was inoculated with the selected microorganisms.



Day 28, a 3% NatureCide solution was inoculated with the selected microorganisms.

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