Poly L-Aspartic acid Sodium salt

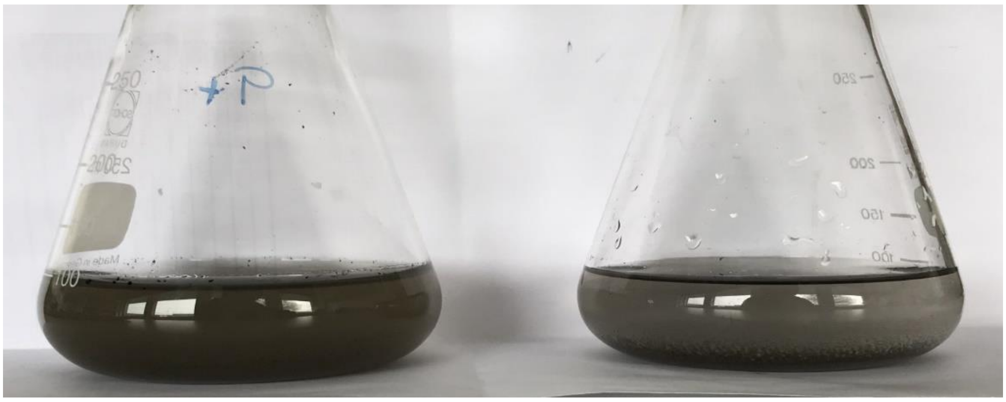
A fully natural and biodegradable dispersant and anti-scalant

Polyaspartic acid is a biodegradable polycarboxylate. The chemical structure resembles other polycarboxylates, such as polyacrylic acid, and hosts the same functions.

Polycarboxylates are used in e.g. liquid detergents, dishwashing formulations, water softening systems and general cleaning formulations. There are two primary functions presented by a polycarboxylate: 1, dispersion and crystal growth inhibition of calcium carbonate (scale) 2, general particulate dispersion, i.e. stabilization of particulate matter.

By far the largest volumes of carboxylates used today are non-biodegradable polymers of petrochemical based materials. Not only will these materials stay outside of a natural recycling, but they are also at risk being classified as micro plastics in many of its uses.

Polyaspartic acid is normally obtained via thermal polymerization of sodium aspartate. The sodium aspartate in turn is normally produced through fermentation. This renders Polyaspartic acid to be a 100% natural polymer, biodegradable, and since it is a polycarboxylate also ready to take on the chemical tasks performed by synthetic polycarboxylates.



Dispersion of wood ash. 0.15% Ash. Left: Addition of 0.1% Polyaspartic acid Right: No addition. 1h after suspension.

In the figure above the effect of dispersion is seen. In this case wood ash, representative of soot, is shown to be readily dispersed by the Polyaspartic acid. This function renders Polyaspartic acid to be an effective component of high performing I&I cleaning formulations.

Furthermore, Polyaspartic acid has been widely demonstrated to also act as an efficient crystal growth inhibitor of calcium carbonate and is thus also a good addition from the anti-scaling point of view.

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Anti-scaling test. Left picture: Sodium carbonate 3.50 g/L and 0.7 g/L mixed. Left, with addition of Polyaspartic acid (~100 ppm), right without addition of Polyaspartic acid. Right picture: Left, emptied and rinsed beaker, no addition of Polyaspartic acid. Right, emptied and rinsed beaker, with addition of Polyaspartic acid (~100 ppm)

In the figure above the scale inhibition effect of Polyaspartic acid is seen. In this case Sodium carbonate and Calcium chloride is mixed to produce “scale” (Calcium carbonate). The effect of Polyaspartic acid addition is clear from both a dispersion/crystal growth inhibition point of view as well as final performance. This renders Polyaspartic acid to be an effective component of any formulation aiming at controlling and/or preventing Calcium carbonate scale.

Please contact your sales representative for inquires and sample!

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