INITIA® 205

USE and FORMULATION GUIDE

INITIA® 205 is different…

INITIA®205 is a high performance polymer based upon carboxylate, sulfonate and non-ionic monomers. The sulfonate and non-ionic monomers impart best-in-class functionality for calcium phosphate and iron stabilization. Additionally, **INITIA®205** is designed to leverage the unique performance benefits of incorporating high levels of non-ionic monomer into the functionalized polymer. These benefits include a dramatic increase of calcium phosphate and iron stabilization functionality over and above competitive copolymers and improved polymer association with hydrophobic contaminants, particulates and debris.

benefits of non-ionics

- reduced treatment levels
- enhanced phosphate/iron stabilization
- improved stressed water stability
- particulate surface adsorption/wetting
- on-line system cleaning
- expanded particulate dispersion range
- functionality for organics/hydrocarbons
- stabilization of silica and silicates

application of INITIA® 205

INITIA®205 contains powerful non-ionic monomer groups which provide extraordinary functionality in process water applications. These non-ionic functional groups provide many benefits and enhancements versus common copolymer technology. In most applications, the required **INITIA®205** treatment level is between 8-12 ppm (solids basis) for process water applications. Excessive treatment with **INITIA®205** can lead to a potential for in-application foaming. It is important to treat at recommended use levels to avoid the potential for foam development. In applications where high polymer solids are required in the bulk water, the mechanically weak foam that can develop is easily mitigated with silicone or non-silicone anti-foams. These materials can either be added as an adjunct treatment or be blended directly with **INITIA®205** at levels between 0.1 – 1.0%.

The development of foam in a particular application is dependent upon variables such as water hardness, alkalinity, organic loading, TDS, and chemical treatment types. Simple foam tendency tests prior to the application of any chemical treatment can be a good indicator of foaming potential prior to application.

blending with INITIA® 205

INITIA®205 contains the highest level of non-ionic monomer in its class. Formulators may notice a tendency of the polymer to create foam during make-down and blending. This is due to the polymer's ability to reduce surface tension in aqueous solutions. While **INITIA®205** is not considered a surfactant, it can have surfactant like tendencies such as wetting of surfaces and foaming.

Foaming can be mitigated or eliminated by reducing the amount of air introduced when transferring or blending with **INITIA®205**. In cases where this is not possible, a very small amount of silicone defoamer can be added to knock down foam levels and allow for rapid formulation to increase vessel throughput.

Surface Tension (milli-Newtons/m)			
Polymer/Concentration	5%	10%	30%
INITIA® 205	45.2	42.72	41.05
Competitive Ter-polymer	50.75	50.96	50.18
Competitive Tetra-polymer	54.12	49.57	47.38

starting point formulations

INITIA®205 is an exceptional choice for phosphate, iron and zinc stabilization and particulate fouling control in process water applications. Below are basic starting point formulations for cooling water which incorporate **INITIA®205**. These starting point formulations are intended for an application rate in bulk water of 100ppm in order to maintain the circulating water concentrations indicated. Radical Polymers provides assistance in formulating with our **INITIA® Polymers**. Please contact us for further assistance.

LSI <1.5 – low to moderate mild steel corrosion

Additive	% As Supplied	Circulating Water Concentration
INITIA®205	22.70%	10 ppm as solids
Phosphoric Acid - 75%	13.75%	10 ppm as PO_4^{3-}
HEDP - 60%	6.00%	3 ppm as active
NaBZT - 40%	9.10%	3 ppm as active
DI Water	*q.s.* to 100%	-

LSI <1.5 – moderate to high mild steel corrosion

Additive	% As Supplied	Circulating Water Concentration
INITIA®205	22.70%	10 ppm as solids
Phosphoric Acid or Sodium Phosphate	6.85% or 6.30%	5 ppm as PO_4^{3-}
TKPP	11.91%	5 ppm as P_2O_5
HEDP	6.00%	3 ppm as active
TTA	4.00%	2 ppm as active
NaOH or KOH (if desired)	*q.s.* to pH 12.5	-
DI Water	*q.s.* to 100%	-

LSI 2.0 – 2.5 – low to moderate mild steel corrosion

Additive	% As Supplied	Circulating Water Concentration
INITIA®205	18.18%	8 ppm as solids
INITIA®585	16.00%	8 ppm as active
PBTC	10.00%	5 ppm as active
Sodium Phosphate	3.80 – 6.33%	3-5 ppm as PO_4^{3-}
TTA	6.00%	3 ppm as active
NaOH or KOH	*q.s.* to pH 12.5	-
DI Water	*q.s.* to 100%	-

product neutralization

INITIA®205 is supplied as a concentrated (~45%) sulfonated copolymer at a pH of 2.5-4.0. The neutralization **INITIA®205** is exothermic and can produce a rapid increase in heat during formulation. **INITIA®205** should be diluted to the desired final formulation concentration with deionized water prior to adding a neutralizing agent. Neutralizing agents should be added slowly until the desired pH is achieved. Effective neutralization is possible without observing product precipitation using either NaOH or KOH. Neutralization curves for **INITIA®205** are available, please contact Radical Polymers for further assistance.

safety use and handling

Consult the Safety Data Sheet (SDS) for further information regarding the safe handling and use of **INITIA®205**. This product should be stored in a cool/dry place and must be protected from freezing. Avoid storage at high temperatures (>90˚F), direct sunlight, and exposure to surface, airborne or other common environmental contaminants such as debris, bacteria, yeast, and mold.

did you know?

The term *q.s.* means *quantity sufficient* and is used in the field of chemistry and medicine. The term is derived from Latin *quantum satis* (as much as is enough) or *quantum sufficiat* (as much as shall suffice.)

The IUPAC name for phosphoric acid is *trihydroxidooxidophosphorus phosphoric acid*.

On July 31, 1790 Samuel Hopkins was issued the first patent for a process of making potash. *The patent was signed by President George Washington*.

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