Customized Water-based Chemical Additives

PES Enterprise Australia Pty Ltd provides end-to-end *P*etroleum *E*ngineering *S*olutions that bridge laboratory measurement and subsurface decision-making. We specialize in rock and geofluid equipment design and testing, CCUS engineering, and deep-reservoir phase-behavior studies.

Overview:

Customized water-based additives are purpose-built formulations (surfactants, polymers, co-solvents, foaming agents, and conformance modifiers) tailored to the crude/brine/mineralogy of a given reservoir. In hybrid gas–water–chemical schemes—whether simultaneous co-injection or alternating (WAG/foam-WAG)—these additives unlock synergy: they reduce interfacial tension, shift wettability toward water-wet, manage mobility and conformance, and stabilize gas foams to suppress channeling. The result is higher sweep, delayed water/gas breakthrough, and more efficient hydrocarbon displacement with a water-compatible, low-VOC chemistry package

Why customized:

- ✓ Matches crude EACN/SARA profile and reservoir brine (salinity/divalent ions)
- ✓ Tunes rheology and adsorption to rock type (sandstone vs carbonate)
- ✓ Optimizes with your gas choice (CO/NG/N) and operating P–T window
- ✓ Balances performance with HSE, materials compatibility, and produced-water treatability.

DIN EN ISO 9001 certified

PES Enterprise Australia Pty Ltd
Unit A7, 161 Arthur Street, Homebush West NSW 2140, Australia
ABN 74 639 244 894
Tel: +61 405 757 704
Info_au@pesenterprise.com
www.pesenterprise.com

Nano-scale Polymer Microspheres for Conformance Control

PES Enterprise Australia Pty Ltd provides end-to-end *P*etroleum *E*ngineering *S*olutions that bridge laboratory measurement and subsurface decision-making. We specialize in rock and geofluid equipment design and testing, CCUS engineering, and deep-reservoir phase-behavior studies.

Overview:

Polymer microspheres are particulate dispersions synthesized by inverse emulsion or dispersion polymerization; the spheres are well-dispersed in water and have small particle sizes. During reservoir waterflooding, as the injection pressure increases, they readily travel with the injected water into deeper formation zones, achieving deep profile control/plugging. Once in the deep formation, the water velocity decreases and numerous small spheres progressively aggregate and are retained; during migration they block larger pores and pore throats, ultimately forming a larger plugging bank (slug). This delivers water control and oil stabilization, i.e., reduced water production and sustained oil output

Benefits：

- ✓ Using nanometer-scale materials to solve injectivity and plugging-capacity challenges.
- ✓ Insensitive to formation-water salinity and temperature—suitable for a wide range of waterflood reservoirs.
- ✓ Acts in the deep reservoir, requiring a relatively low dosage, which improves overall economics.
- ✓ Better stability and durability than comparable PAM-based products.
- ✓ Rapid, uniform dispersion in various produced waters and seawater; the injection procedure is very simple

DIN EN ISO 9001 certified

PES Enterprise Australia Pty Ltd
Unit A7, 161 Arthur Street, Homebush West NSW 2140, Australia
ABN 74 639 244 894
Tel: +61 405 757 704
Info_au@pesenterprise.com
www.pesenterprise.com