



COATINGS

INDORAMA
VENTURES



OXIMULSION[®] AND OXITIVE[®]

APE-free surfactants for
emulsion polymerization



Indorama Ventures' surfactants were designed to be easily incorporated in the emulsion polymerization process and to aid the production of latexes with controlled particle size and excellent performance – such as high water resistance and low coagulum formation.



BENEFITS

- Excellent particle size control during the process
- Generate emulsions with small particle size
- Improve electrolytic stability
- Low coagulum formation
- High water resistance



FEATURES

- APE-free surfactants
- Physicochemical properties optimized
- Broad range portfolio
- Package: Sample, Drum, Bulk

Table 1: Main Properties of Nonionic Surfactants

PROPERTIES	OXITIVE® 7254	OXITIVE® 7110	OXITIVE® 7130	OXITIVE® 7140	OXITIVE® 7240
Description	Fatty alcohol ethoxylated	Fatty alcohol ethoxylated	Synthetic alcohol ethoxylated	Synthetic alcohol ethoxylated	Synthetic secondary alcohol ethoxylated
Degree of ethoxylation*	Low	Medium	High	High	High
HLB	13.4	16.9	17.4	18.0	18.0
Appearance	Liquid	Liquid	Liquid	Liquid	Liquid
Actives, wt%	90	60	40	70	70
Diluent	Water	Water	Water	Water	Water
pH	7	7	7	7	4-8
CMC, g/L	0.04	0.19	0.80	1.37	1.47
Surface Tension, mN/m	32	40	39	37	45

* Low: 0-10 EO
 Medium: 11-24 EO
 High: > 25 EO



FEATURES

Table 2:
Main Properties of Anionic Surfactants

Properties	OXIMULSION® 1228	OXIMULSION® 1328 APH	OXIMULSION® 11230	OXIMULSION® B 1000	OXIMULSION® 2742	OXIMULSION® 2780
Description	Sodium salt of sulfated alcohol ethoxylated	Sodium salt of sulfated alcohol ethoxylated	Ammonium salt of sulfated alcohol ethoxylated	Proprietary	Alcohol ethoxylated phosphate (acid form)	Potassium salt of alcohol ethoxylated phosphate
Degree of ethoxylation*	Low	Low	Medium	Proprietary	Low	Low
Appearance	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid
Solid Content, wt%	28	28	28	30	> 95	80
Diluent	Water	Water	Water	Water	Water	Water
pH	7	11	8	8	3	9
CMC, g/L	0.27	0.28	0.34	0.30	0.26	0.04
Surface tension, 0,1%, mN/m	35	38	46	41	28	44

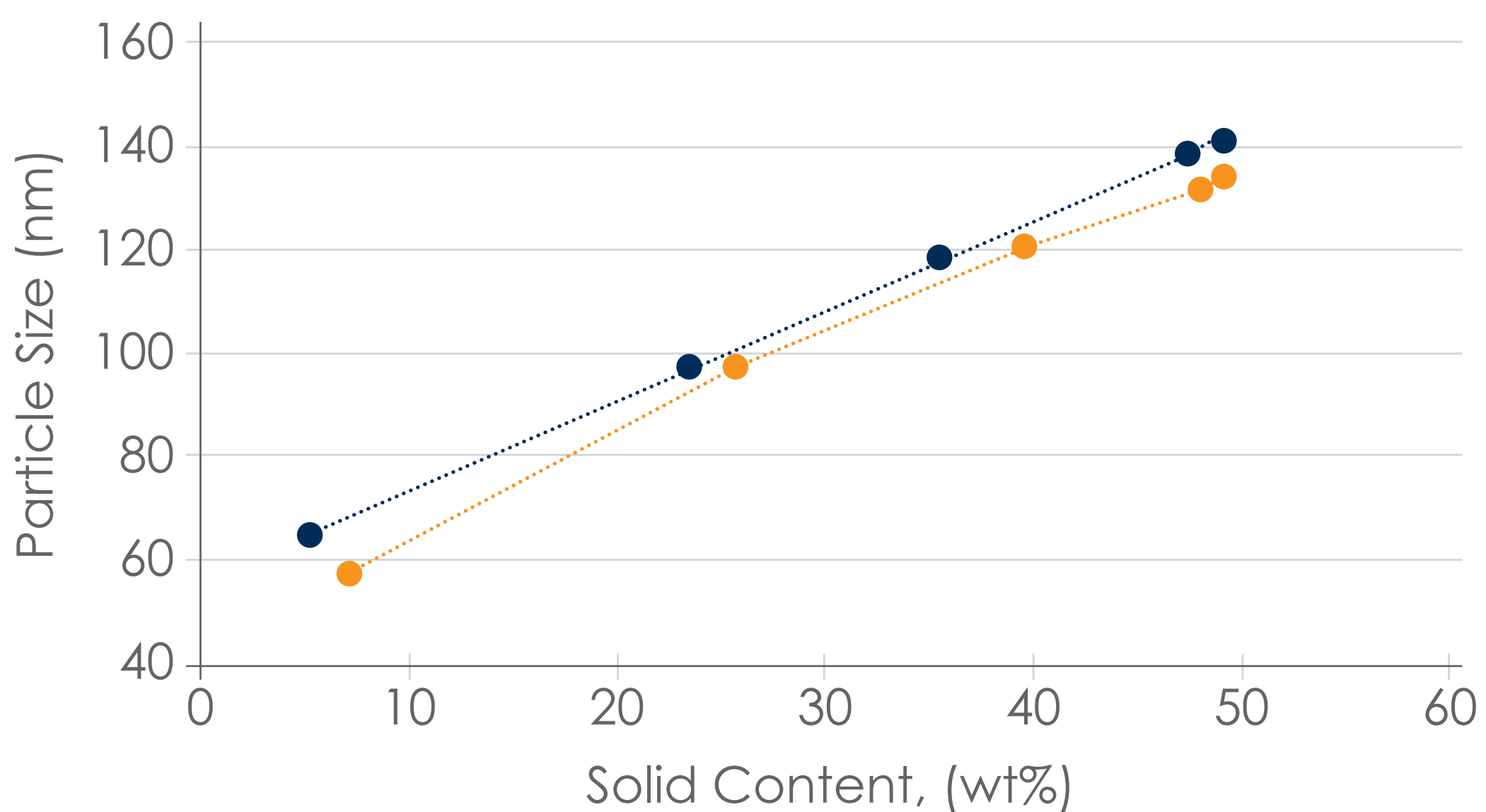
* Low: 0-10 EO
Medium: 11-24 EO
High: > 25 EO





PERFORMANCE TESTS

Particle Size Control



- NPE 25 EO SULFATE + NPE 23 EO
- OXIMULSION® 1228 + OXITIVE® 7110

Instrumental test: Dynamic Light Scattering.

Tested latex: Styrene-Acrylic.

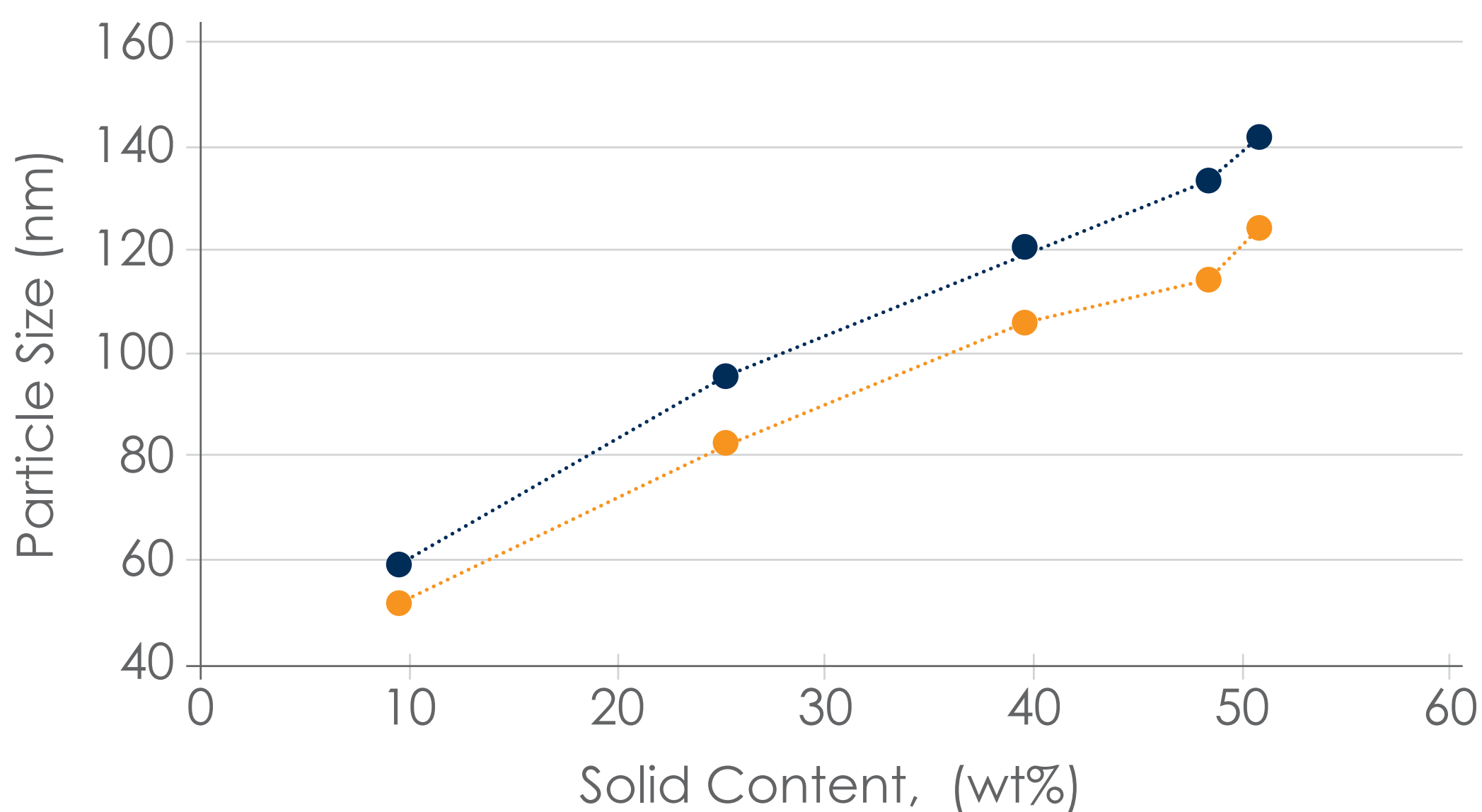
Test condition: Samples took from the reactor during the emulsion polymerization process and diluted before analysis.

OXIMULSION® 1228 and **OXITIVE® 7110** allow to control particle size during the process as well as APE surfactants.



PERFORMANCE TESTS

Particle Size Control



- NPE 9.5 EO + NPE 23 EO
- OXIMULSION® B1000

Instrumental test: Dynamic Light Scattering.

Tested latex: Styrene-Acrylic.

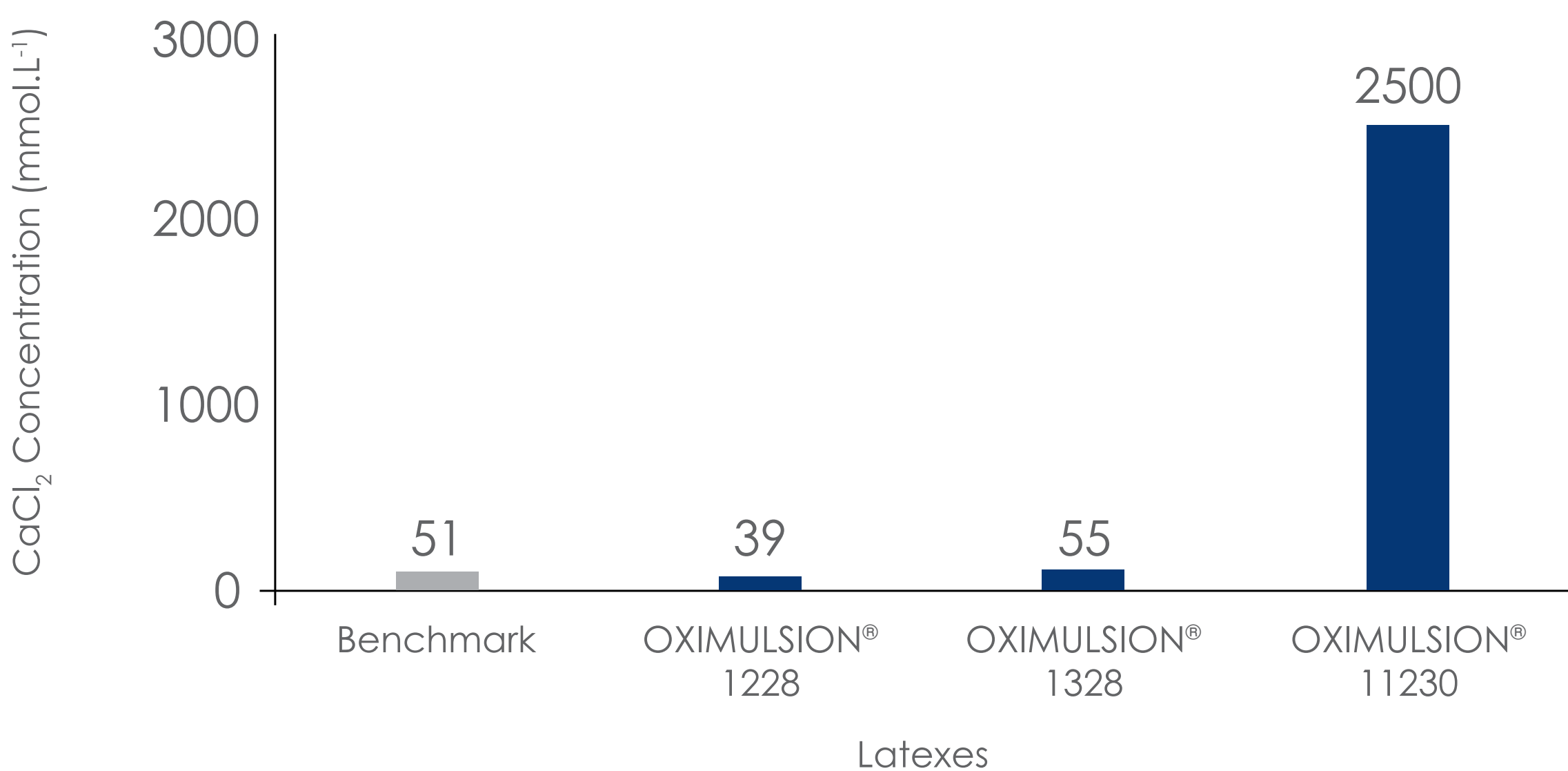
Test condition: Samples took from the reactor during the emulsion polymerization process and diluted before analysis.

OXIMULSION® B1000 allow to control particle size during the process as well as APE surfactants.



PERFORMANCE TESTS

Electrolytic stability



Coagulum formation in the reactor

OXIMULSION® 1228, OXIMULSION® 1328 APH and OXIMULSION® 11230

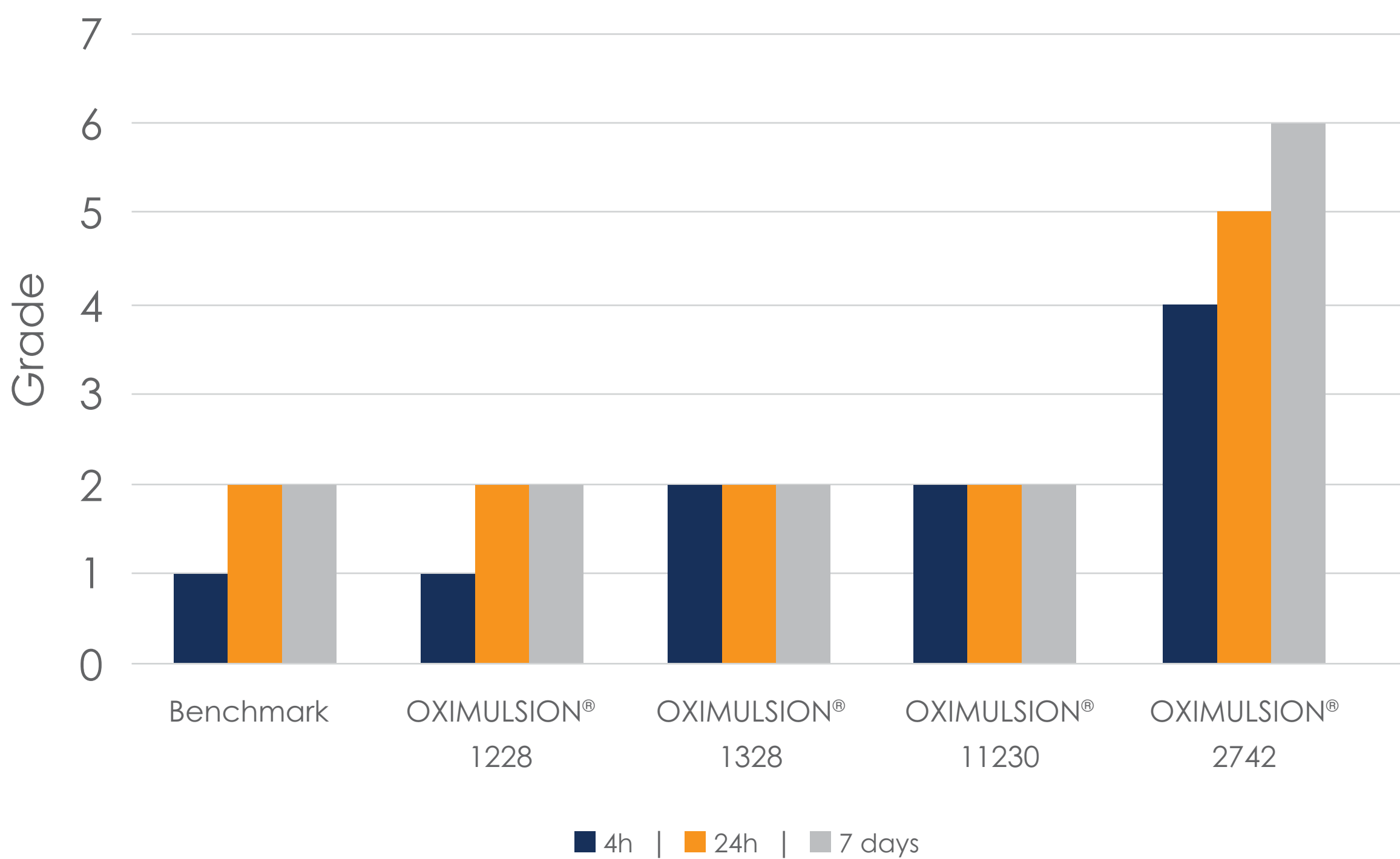
generate stable acrylic latex with very low coagulum formation in the reactor during the polymerization.

Acrylic latex polymerized with **OXIMULSION® 11230** presents outstanding electrolytic stability being recommended for producing latexes for coatings applications that require high electrolytic stability.



PERFORMANCE TESTS

Blocking evolution



Latexes

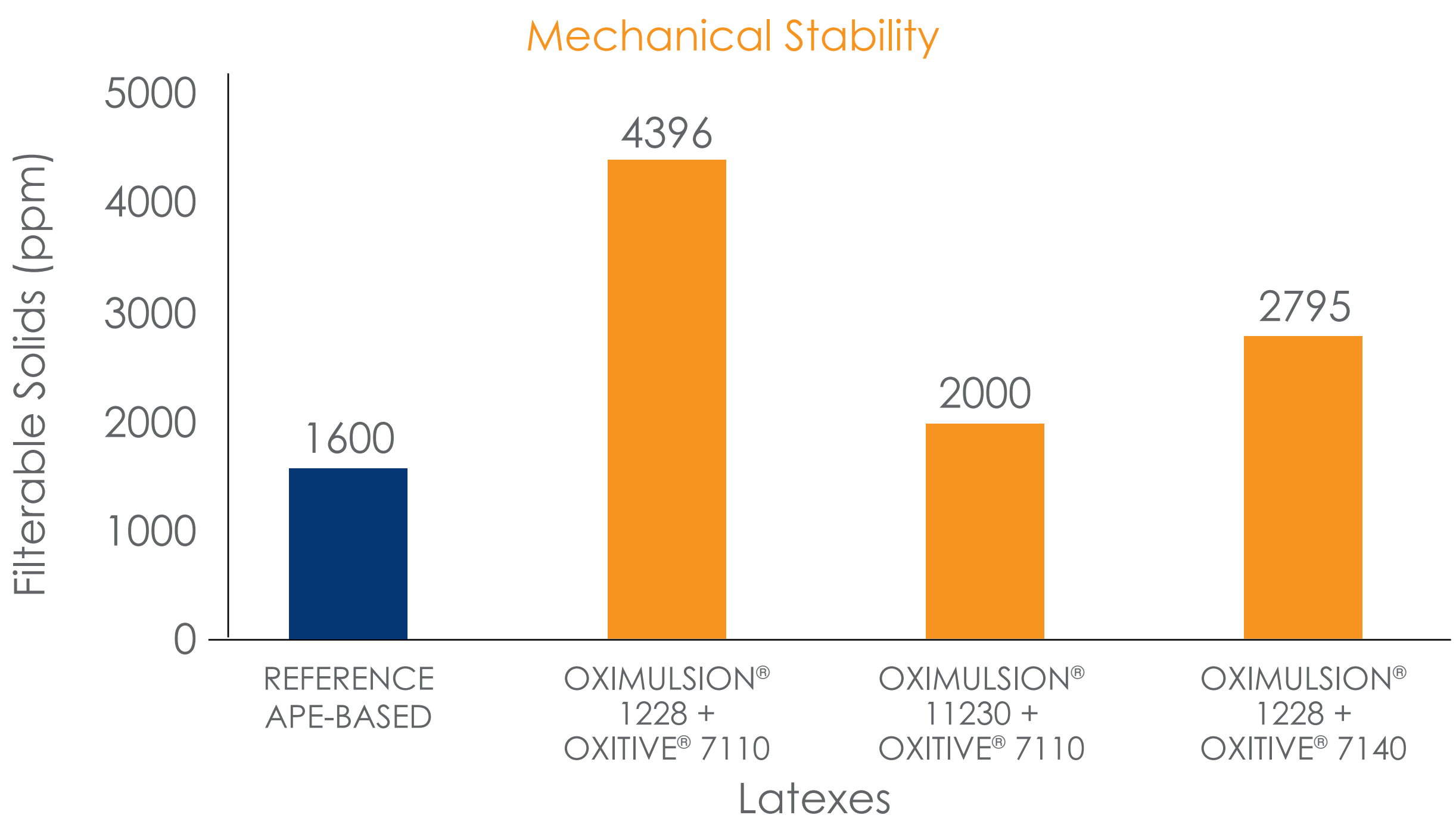
Acrylic latex polymerized with **OXIMULSION® 2742** presents superior blocking evolution in comparison to latexes polymerized with sulfated surfactants and benchmark acrylic latex being recommended for coatings that requires high blocking resistance.





PERFORMANCE TESTS

Mechanical stability



FORMULATION

- Latex Vinyl-Acrylic
- Solids ~ 55%
- Particle Size 200 – 300 nm
- MFFT ~ 5 °C
- Surfactant ~ 4.0% w/w

Instrumental test: Stability testing machine - Klaxon Latex.

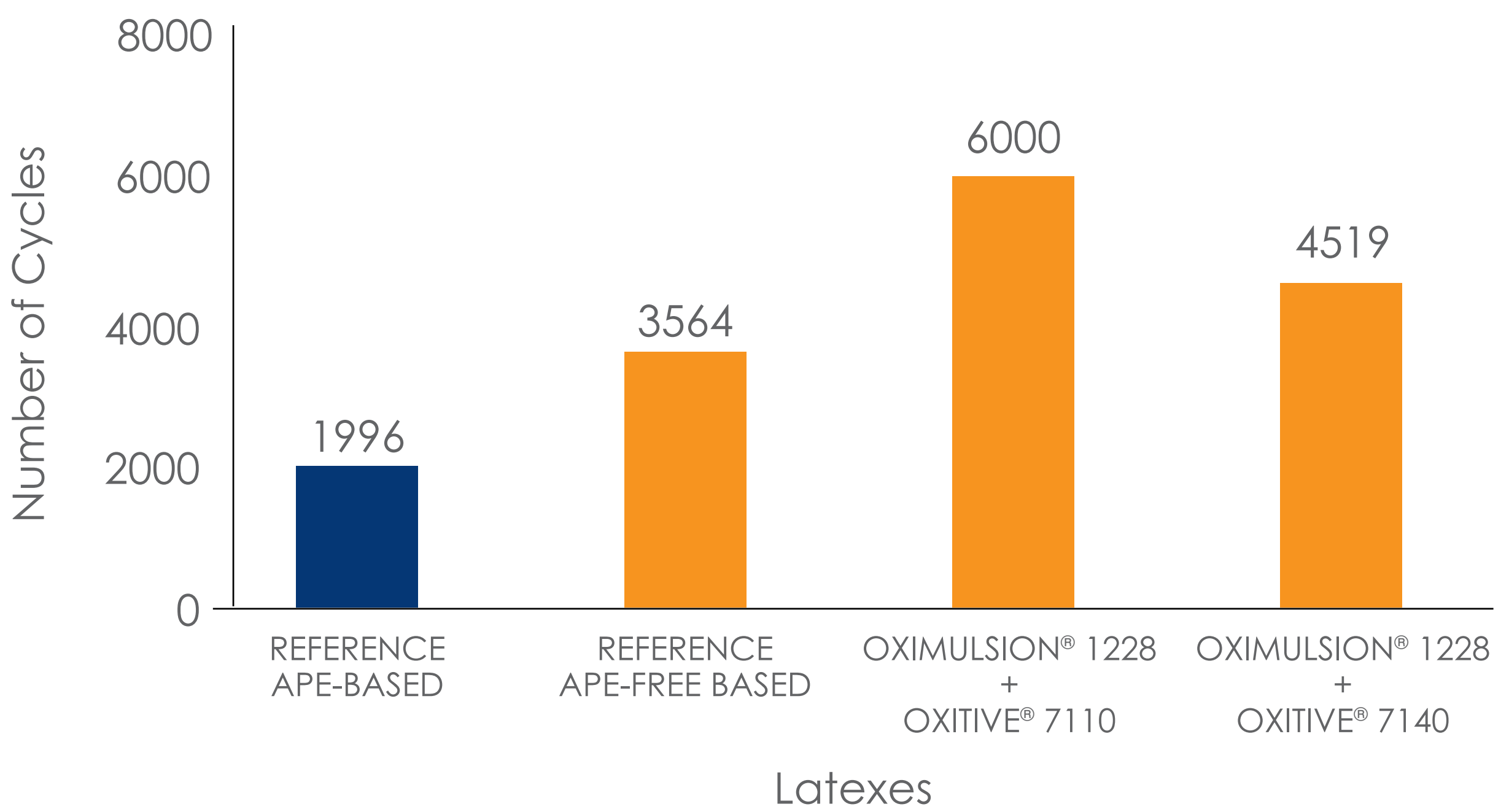
Test condition: Filterable solids after 30min under 14,000rpm.

Vinyl-acrylic latexes polymerized with surfactants from **OXIMULSION®** and **OXITIVE®** lines present very good mechanical stability with formation of filterable solids lower than 10.000 ppm.



PERFORMANCE TESTS

Wet scrub resistance (astm d2486)



FORMULATION

- Latex ~ 35%
- Solids ~ 45%
- Particle Size ~ 2%
- MFFT ~ 100 KU
- Surfactant ~ 9.0

Tested latex: Vinyl-Acrylic.

Test condition: ASTM D2486.

Paints formulated with vinyl-acrylic latexes polymerized with surfactants from **OXIMULSION®** and **OXITIVE®** lines present outstanding wet scrub resistance.

If you are looking for APE-free surfactants for emulsion polymerization, **OXIMULSION**[®] and **OXITIVE**[®] is what you need! Contact us and request a sample.

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