
KLK OLEO
Palmfonate
Methyl Ester Sulphonates
Powering Better Home Care Applications
High Performance | Formulation Flexibility | Greener Chemistry

Palmfonate MES

Where Sustainability Meets High-Performance Cleaning

In today's world, consumers demand cleaning solutions that are powerful, eco-friendly, and gentle without compromising performance. Methyl Ester Sulfonates (MES) rise to the challenge as a high-performance, plant-based surfactant derived from renewable sources.

With superior biodegradability, excellent hard water tolerance, and outstanding cleaning power, MES is revolutionising home care products from laundry detergents to dishwashing liquids. Whether you're formulating greener, cost-effective, or high-efficiency cleaning solutions, MES delivers sustainability and performance in perfect balance.

Discover how this innovative ingredient can elevate your home care products while meeting the growing demand for environmentally responsible solutions.

Be assured by
Palmfonate

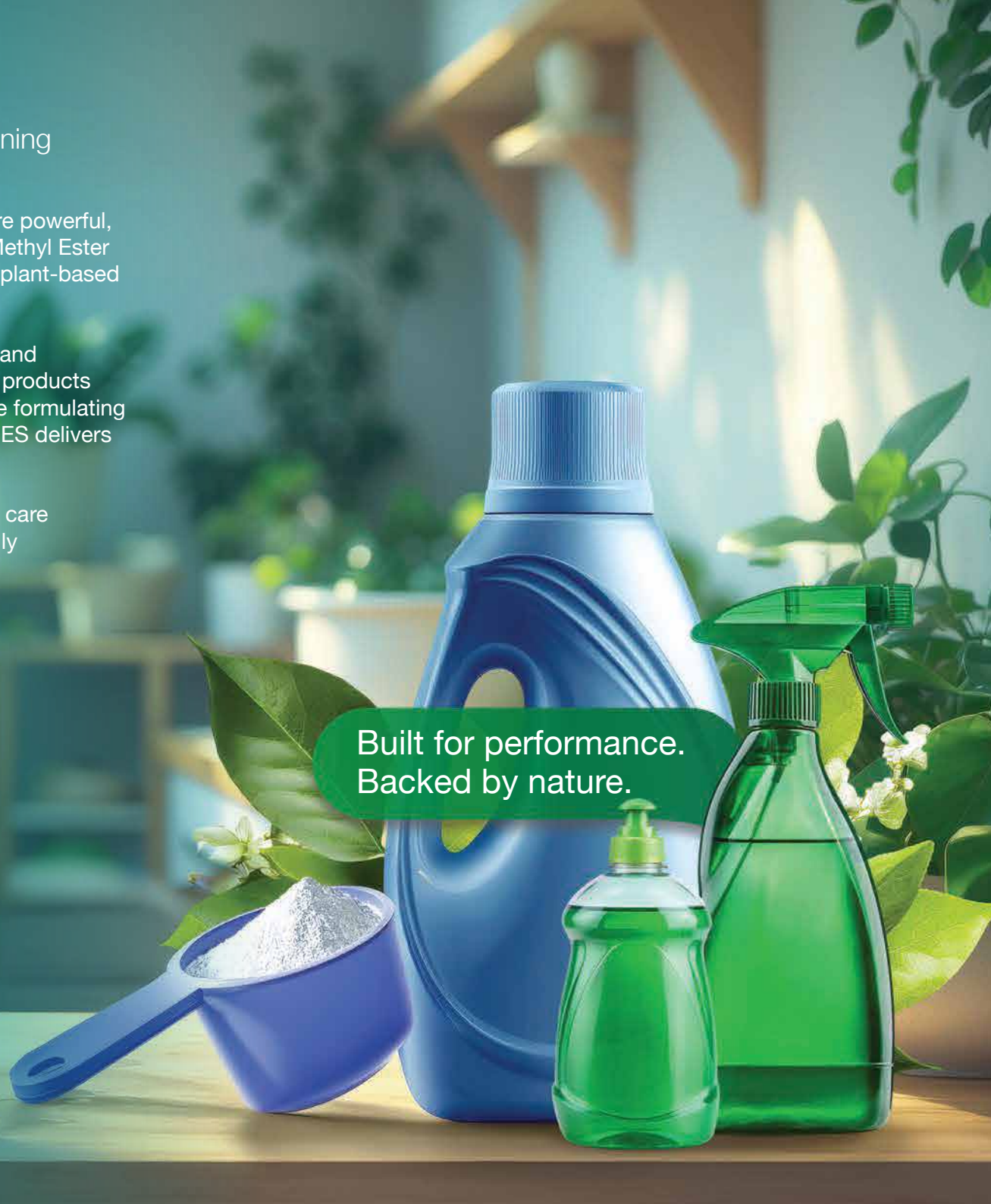
Our Brand in the
Global Arena

16 Operating facilities

Supplying over 120 countries

30 YEARS EST 1991 Excellence in Oleochemicals

FORTUNE SOUTHEAST ASIA 500 2024



Naturality | Detergency | Tower Detergent Economy Spray-Dried | NTD Economy Dry Neutralised | NTD Premium Dry Neutralised | Reduced Builder Usage






Click to learn more

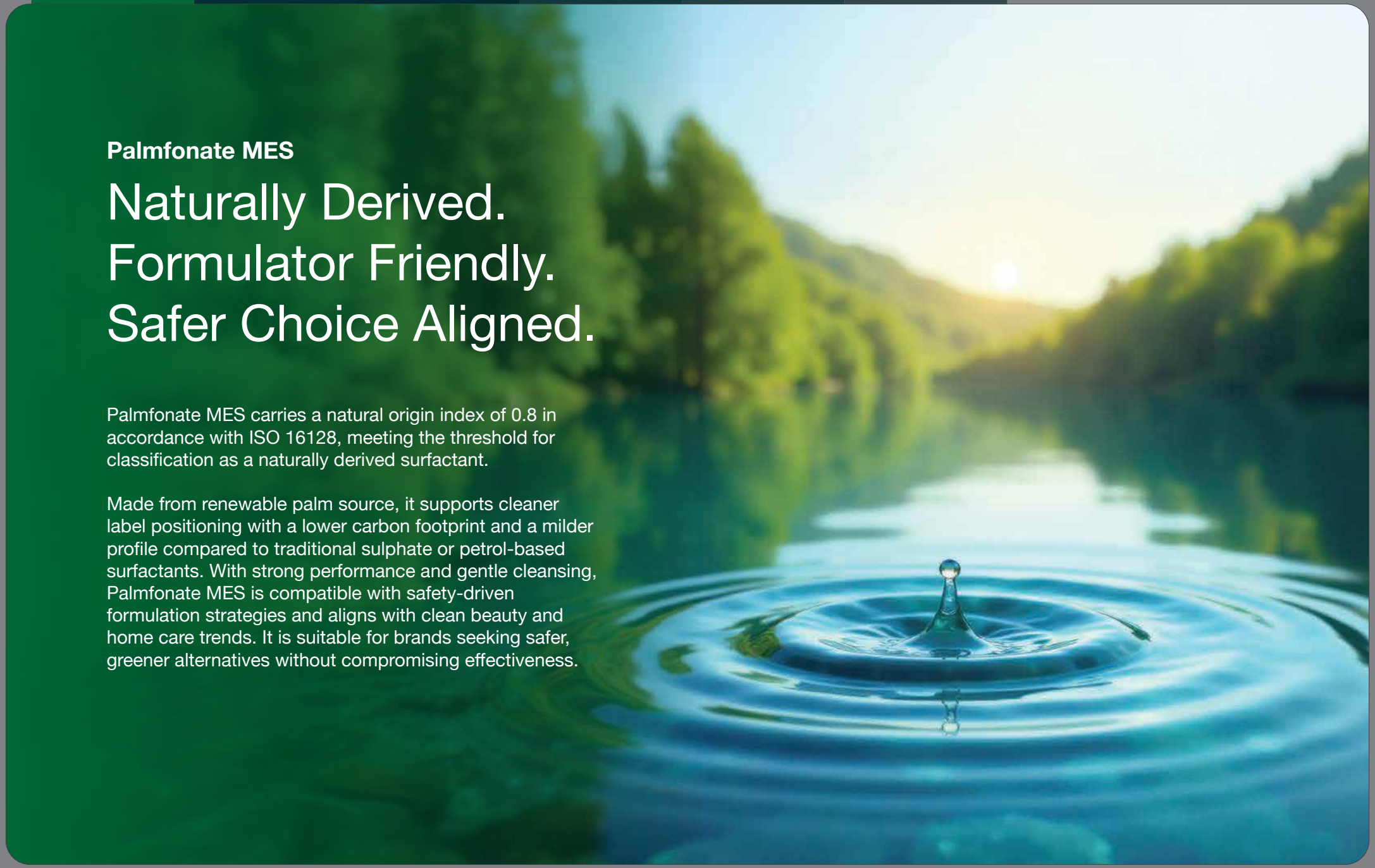
Palmfonate MES
Product Range

Liquid Detergent

Palmfonate	6909F	6703
Active, %	88	30
Appearance	Flakes	Paste

Powder Detergent

Palmfonate	6718	6728	6738
Active, %	85	80	75
Zeolite, %	5	10	15
Appearance	Powder		



Palmfonate MES

Naturally Derived. Formulator Friendly. Safer Choice Aligned.

Palmfonate MES carries a natural origin index of 0.8 in accordance with ISO 16128, meeting the threshold for classification as a naturally derived surfactant.

Made from renewable palm source, it supports cleaner label positioning with a lower carbon footprint and a milder profile compared to traditional sulphate or petrol-based surfactants. With strong performance and gentle cleansing, Palmfonate MES is compatible with safety-driven formulation strategies and aligns with clean beauty and home care trends. It is suitable for brands seeking safer, greener alternatives without compromising effectiveness.

Palmfonate MES

Naturally Derived. Formulator Friendly. Safer Choice Aligned.

According to ISO 16128, materials with more than 50 percent natural origin are considered naturally derived.
Palmfonate MES meets this benchmark while offering formulation flexibility and maintaining consumer safety appeal.

Sodium C14 Olefin Sulphonate – 0.1
*Petrol-based

Sodium Dodecylbenzne Sulphonate – 0.1
*Petrol-based

Sodium Lauryl Sulphate – 0.9
*Sulphate-based, harsh to skin

Palmfonate MES – 0.8
*Sulphate-free, 1,4-dioxane-free, mild to skin

Sodium Lauryl Ether Sulphate – 0.7
*Contains 1,4-dioxane, sulphate-based

Palmfonate MES

Stain Removal

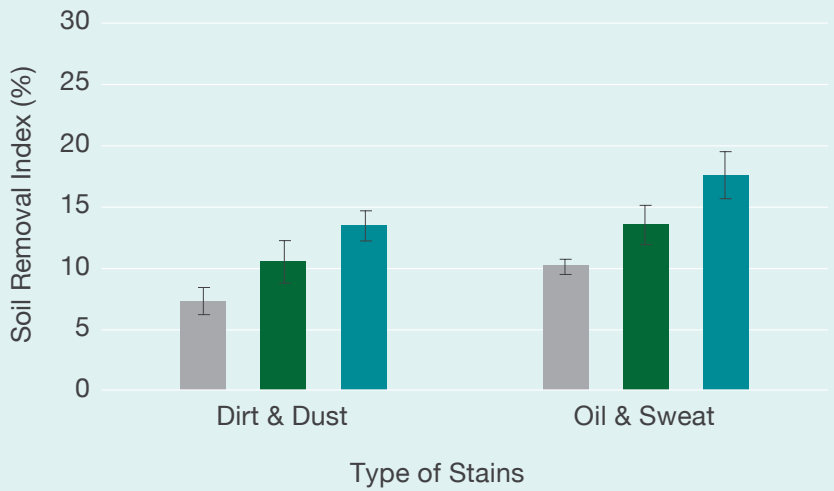
According to NielsenIQ, 59% of consumers prioritise stain removal when choosing a detergent. Meeting this expectation is crucial for brand loyalty and product success. Palmfonate MES delivers superior stain removal power while comparing to the petrochemical alternative LAS.

With cotton and polyester/cotton blends being the most common fabrics in the market, effective yet gentle cleaning is essential. The partial substitution of Palmfonate MES enhances the overall cleaning efficacy of the powder detergent, even in hard water condition.

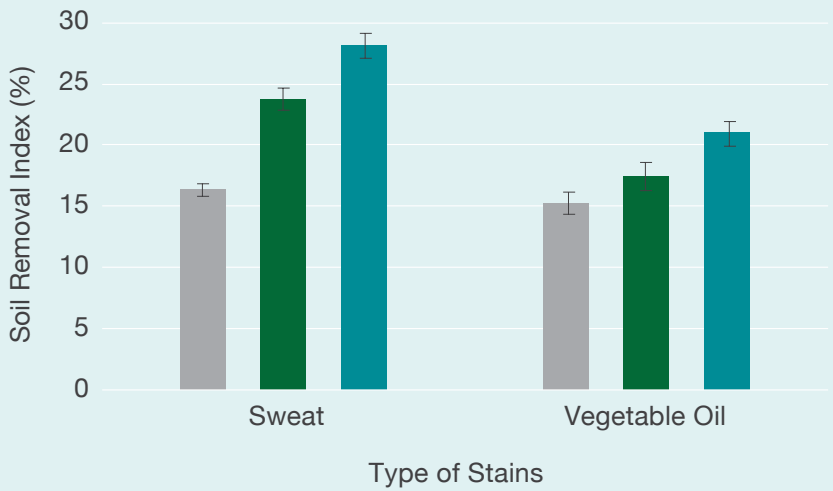
Palmfonate MES

Stain Removal

Cotton



Cotton Polyester



LAS

Palmfonate MES/LAS (30:70)

Palmfonate MES/LAS (50:50)

Terg-O-Tometer Test Condition
Temperature : 30 °C
Water Hardness: 250 ppm
Detergent Dosage : 2.0 g/L
Washing Time : 10 minutes
Rinsing Time : 3 minutes

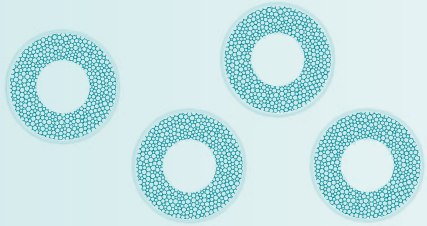
Traditional Format

Performance Uplift with Palmfonate MES

Spray-Dried Tower Powder

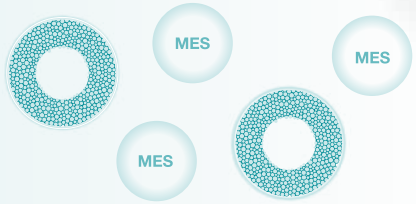
Spray-dried powder is a classic detergent format trusted by brands worldwide. While its structure limits compactness, it offers a familiar production base for large-volume markets. Integrating MES directly into the slurry opens new possibilities for performance, delivering superior cleaning power and sustainability without compromising flow or stability.

MES in Slurry (Pre-Dosed)



Spray-dried particles contain MES evenly dispersed within the structure — improving solubility, cleaning delivery, and active stability.

MES Post-Dosed (Separate Granules)



MES is added after spray-drying, leading to separate granules that may settle or deliver uneven cleaning during wash cycles.

Palmfonate MES

Guided Formulation: Spray-Dried Powder

Ingredient	Active (%)	Function	Wt (%)
Palmfonate 6728	80	Primary surfactant	8.8
LABSA	96	Primary surfactant	7.3
Sodium carbonate	100	Alkalinity & pH control	3.0
Sodium metasilicate	100	Flow control, alkalinity	5.0
CMC	100	Viscosity modifier	1.0
Sodium sulphate	100	Filler & flow aid	74.9
			100
Water (in slurry)		Slurry carrier	Used at 50% solids

Post-Tower Additions

Ingredient	Function	Wt (%)
Optical brightener	Whitening agent	0.2%
Enzymes	Stain removal	0.5%
Fragrance	Scent	0.3%
Speckles (optional)	Visual appearance	0.5%

Making Procedure

Slurry Preparation
- Neutralise LABSA with sodium carbonate.
- Add Palmfonate MES into the slurry and mix until homogenous.
- Add sodium metasilicate and sodium sulphate.
- Adjust to 50% solids, maintain slurry at 80–85 °C.

Spray-Drying
- Feed slurry into tower via high-pressure pump.
- Atomise through a nozzle or rotary disk at standard operating conditions.
- Control inlet temperature at ~280–320 °C and outlet at ~100–120 °C.
- Collect hollow granules as base powder.

Post-Blending Additions
- Post-blend optical brightener, enzymes, fragrance, and speckles.
- Mix thoroughly to achieve uniform distribution and consistent appearance.

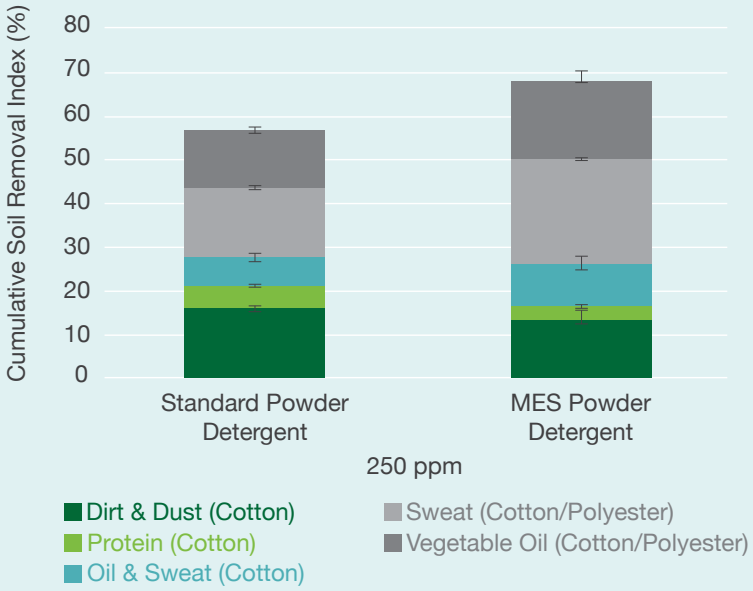
Palmfonate MES

Performance: Foams Well, Cleans Better

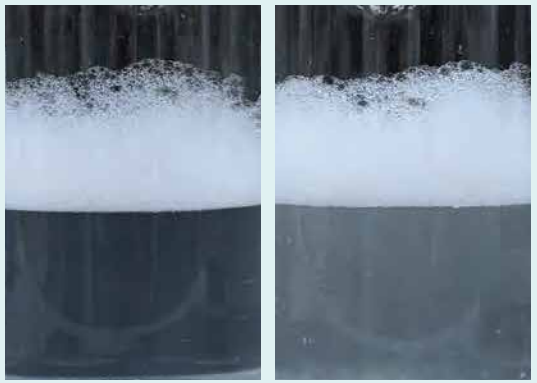
A powder detergent is only as good as its real-world performance.

Consumers expect powder detergents to deliver visible foam and effective stain removal, even in tough wash conditions. MES-based formulations meet these expectations, performing on par or better than standard powders across both foam and cleaning benchmarks.

Soil Removal



Foam Performance



Up to 20% improvement in overall soil removal with MES as 50% of total surfactant.

MES Powder Detergent generates tall, dense foam with full surface coverage, reflecting efficient surfactant action and strong consumer appeal.

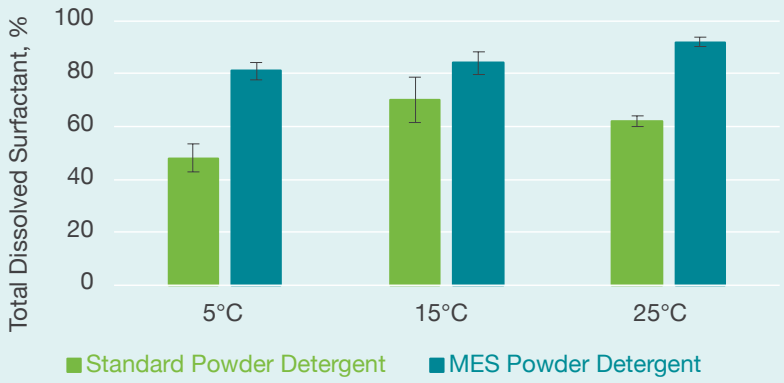
Temperature: 25 °C; Sample size: 2 g; Volume of water used for pouring: 1 L;
Height of water pouring: 50 cm; Water hardness: 250 ppm

Palmfonate MES

Performance: Dissolves Better, Even in Cold Washes

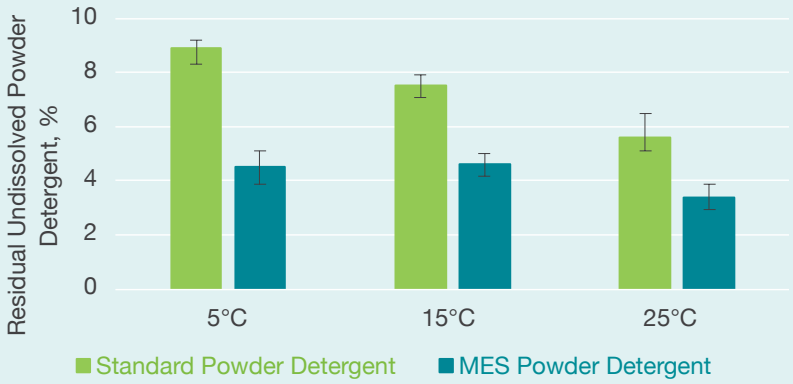
Cold water washing is becoming more common, but lower temperatures can reduce surfactant solubility and increase powder residue. MES-based powder detergent dissolves more efficiently than standard formulations, even at 5 °C, leaving less undissolved active ingredients and making the wash process cleaner and more consistent.

More Active Surfactant Dissolved at Every Temperature



MES-based powder detergent dissolves 69% more surfactant at 5°C compared to standard detergent, supporting strong performance in cold washes.

Lower Residue Across All Temperatures

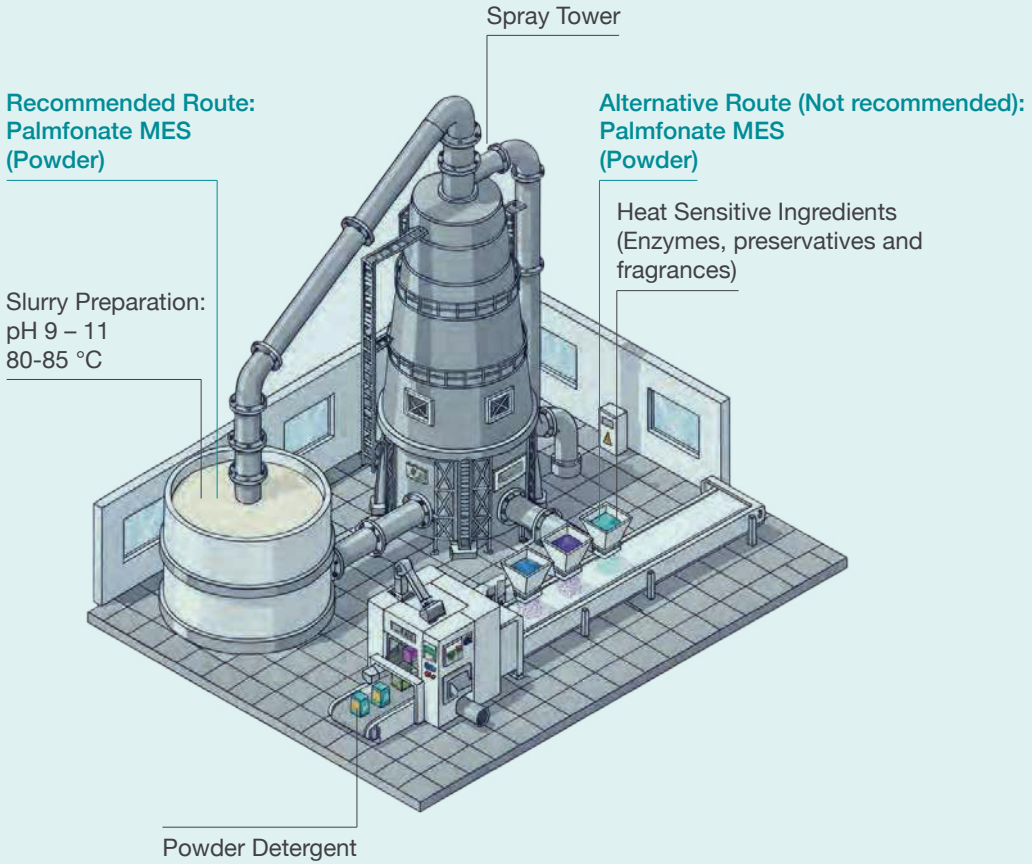


Leaves up to 49% less residue than standard detergent at 5°C, making it the better option for cold and cool wash cycles.

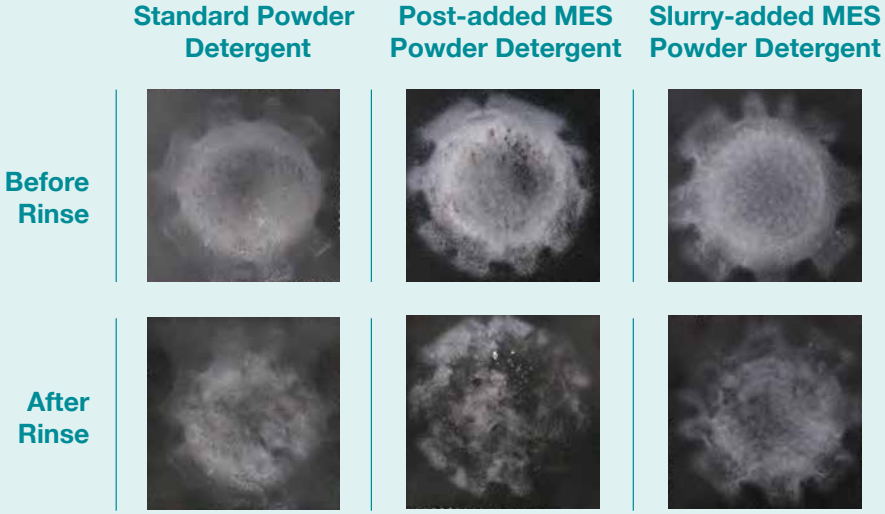
Palmfonate MES

Slurry: Added MES Delivers More, with Less Hassle

Pre-integrating Palmfonate MES into the slurry simplifies formulation and improves product quality. It ensures better dispersion, reduces visible residue, and eliminates the complications of post-tower dosing.



Powder Detergent Residue on Cloth



Slurry-added MES Powder Detergent reduces visible residue more effectively than post-dosed MES.

The test uses 2 g powder in 1 L water at 5 °C with 250 ppm hardness. Dissolution is set for 10 minutes, followed by a single rinse in 1 L fresh water using 10 gentle lifts and 10 light agitations.

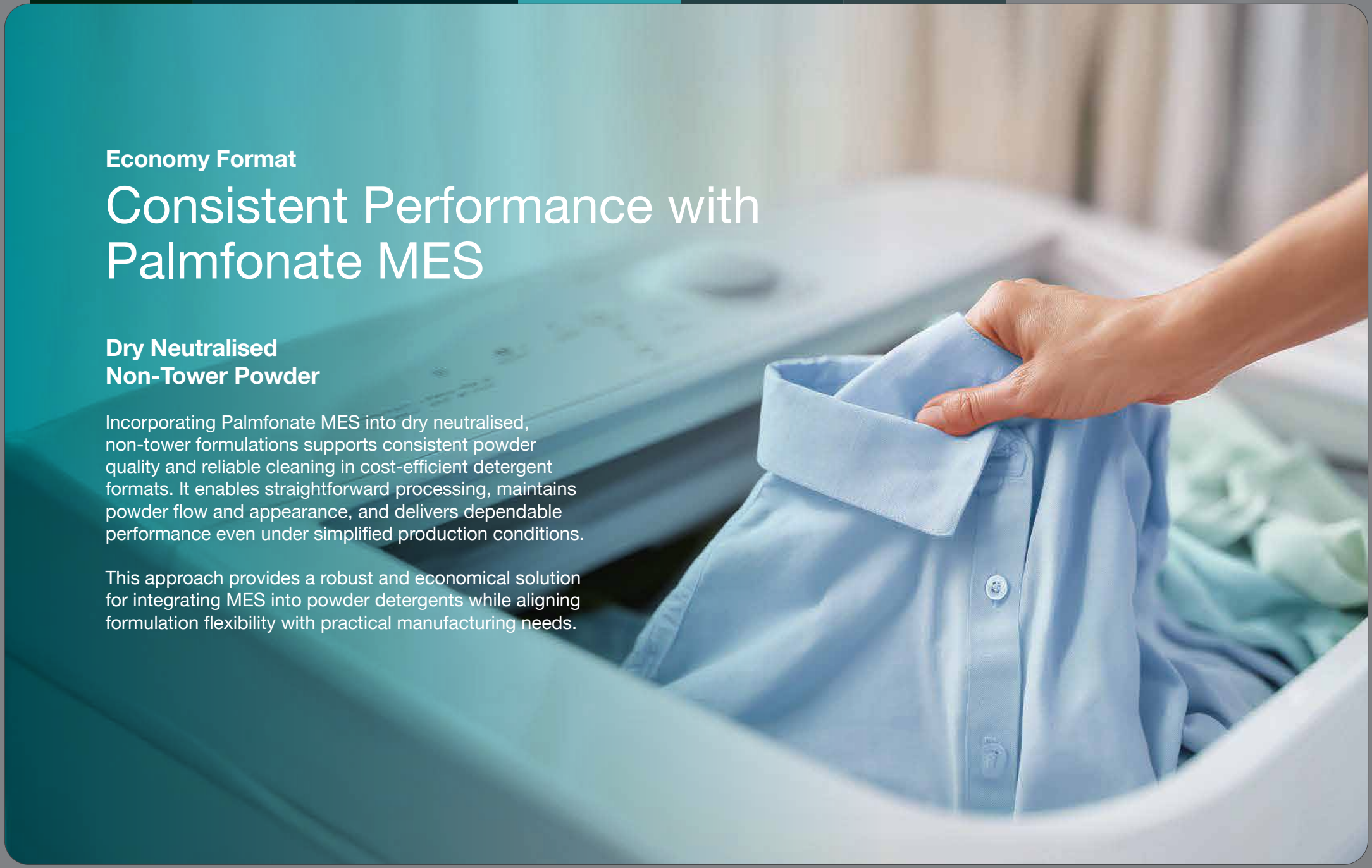
Economy Format

Consistent Performance with Palmfonate MES

Dry Neutralised Non-Tower Powder

Incorporating Palmfonate MES into dry neutralised, non-tower formulations supports consistent powder quality and reliable cleaning in cost-efficient detergent formats. It enables straightforward processing, maintains powder flow and appearance, and delivers dependable performance even under simplified production conditions.

This approach provides a robust and economical solution for integrating MES into powder detergents while aligning formulation flexibility with practical manufacturing needs.



Palmfonate MES

Guided Formulation: Cost Effective Non-tower Powder Detergent

Ingredient	Active (%)	Function	Wt (%)
Palmfonate 6728	80	Primary surfactant	12.2
LABSA	96	Primary surfactant	3.4
Sodium carbonate	100	Neutraliser	25.0
Dolomite	100	Neutraliser & flow-aid	39.0
Sodium chloride	100	Filler & densifier	20.4

Making Procedure

Dry Neutralisation

- Premix Palmfonate MES, sodium carbonate, and dolomite to initiate neutralisation.
- Add LABSA gradually and blend until reaction is complete and mixture is uniform.
- Incorporate sodium chloride to build powder structure.
- Mix for 5–10 minutes to ensure even dispersion and free-flowing powder.

Post-Blending Additions

Ingredient	Function	Wt (%)
Optical brightener	Whitening agent	0.2%
Enzymes	Stain removal	0.5%
Fragrance	Scent	0.3%
Speckles (optional)	Visual appearance	0.5%

Post-Blending Additions

- Post-blend optical brightener, enzymes, fragrance, and speckles.
- Mix thoroughly to achieve uniform distribution and consistent appearance.

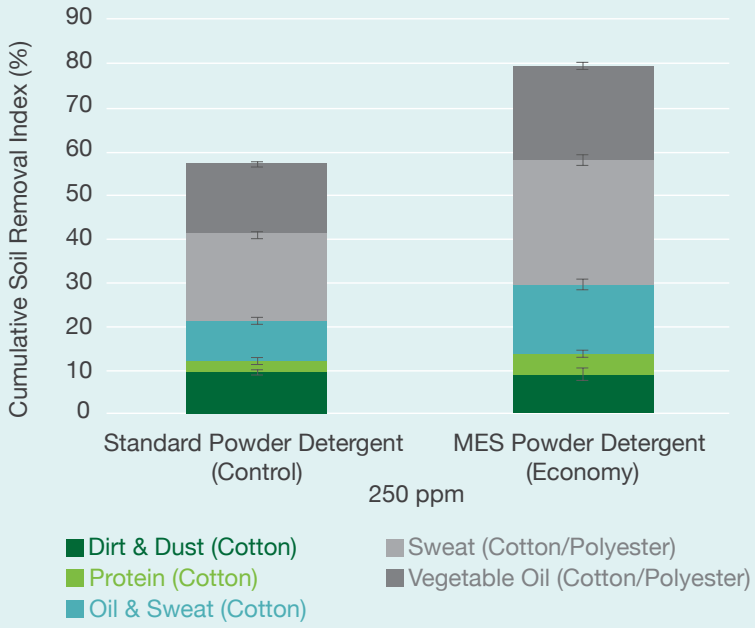
Palmfonate MES

Performance: Stronger Cleaning, Longer-Lasting Foam

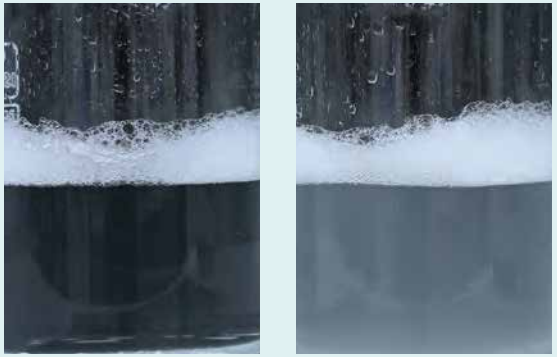
High foam and effective stain removal are essential for hand wash laundry.

Foam must appear fast and stay thick. Stains must lift easily with minimal scrubbing. MES Powder Detergent is designed to deliver both stronger soil removal and richer, longer-lasting foam for a better hand wash experience.

Soil Removal

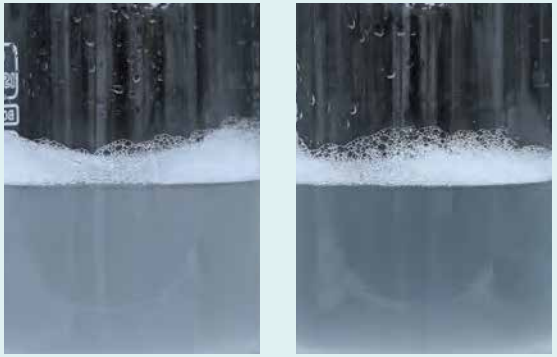


Flash Foam | 0 minute



Standard Powder Detergent (Control) | MES Powder Detergent

Flash Foam | After 10 minutes



Standard Powder Detergent (Control) | MES Powder Detergent

MES Powder Detergent achieves 38% higher total soil removal.

MES Powder Detergent produces comparable foam volume as the standard powder detergent.

Temperature: 25 °C; Sample size: 2 g; Volume of water used for pouring: 1 L;
Height of water pouring: 50 cm; Water hardness: 250 ppm

Palmfonate MES

Comparable Caking Resistance | Matches The Leading Brands

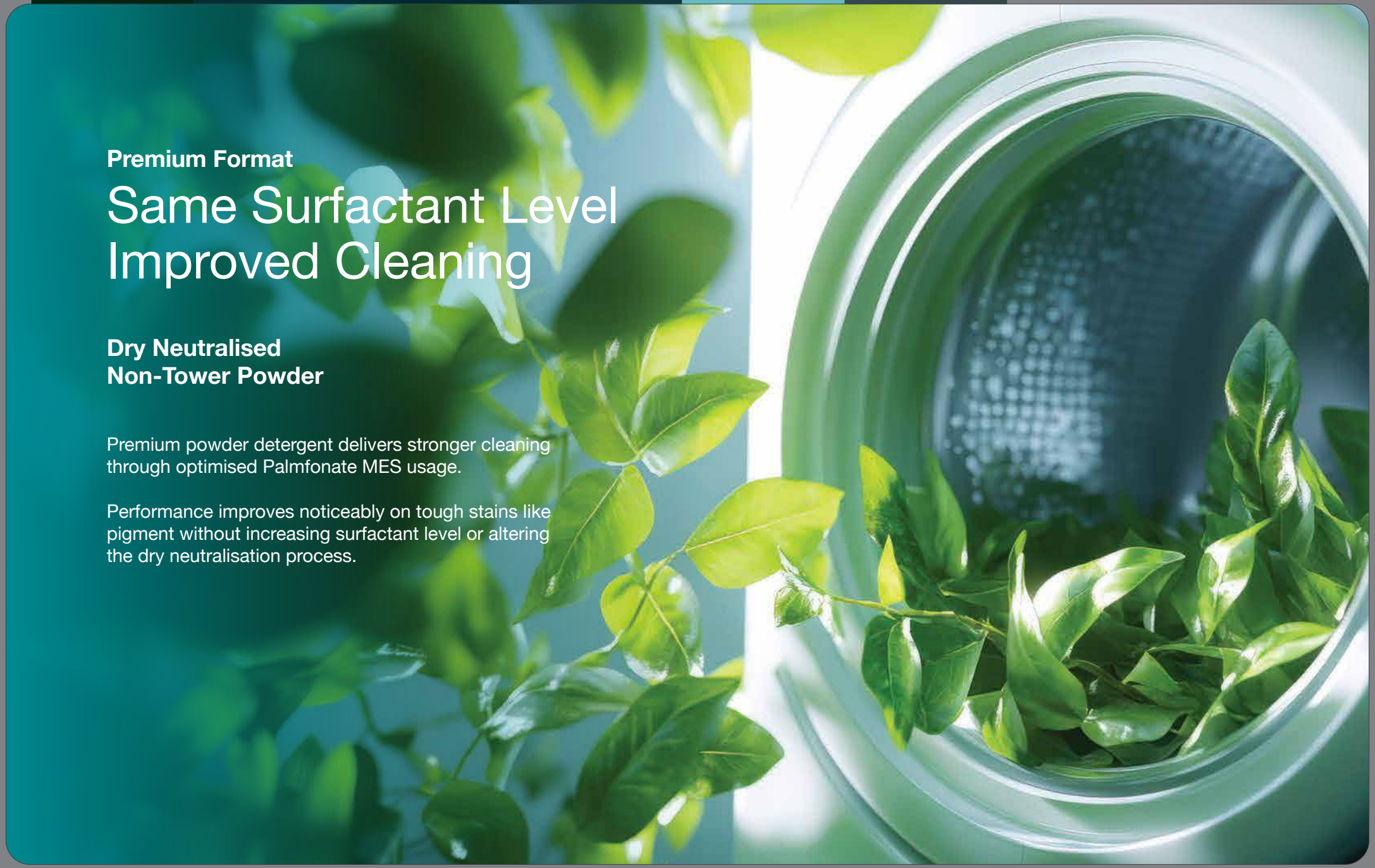
Powder caking ruins handling and customer experience. With MES, the powder detergent remains loose and easy to use even after compression.

Market Sample

MES Powder Detergent

Powder detergents made with Palmfonate MES show the same resistance to powder caking as the leading market brands. Even after storage under compression, MES Powder Detergent does not cake harder than the benchmarked Market Sample.

Temperature: 50 °C; Relative humidity: 75%; Sample size: 35 g; Storage duration: 24 hours



Premium Format

Same Surfactant Level Improved Cleaning

Dry Neutralised Non-Tower Powder

Premium powder detergent delivers stronger cleaning through optimised Palmfonate MES usage.

Performance improves noticeably on tough stains like pigment without increasing surfactant level or altering the dry neutralisation process.

Palmfonate MES

Guided Formulation: Premium Non-Tower Powder Detergent

Ingredient	Active (%)	Function	Wt (%)
Palmfonate 6728	80	Primary surfactant	12.2
LABSA	96	Primary surfactant	3.4
Sodium carbonate	100	Neutraliser	27.0
Dolomite	100	Neutraliser & flow-aid	13.0
Sodium sulphate	100	Filler & powder bulking	16.0
Sodium chloride	100	Filler & densifier	28.4

Post-Blending Additions

Ingredient	Function	Wt (%)
Optical brightener	Whitening agent	0.2%
Enzymes	Stain removal	0.5%
Fragrance	Scent	0.3%
Speckles (optional)	Visual appearance	0.5%

Making Procedure

Dry Neutralisation

- Premix Palmfonate MES, sodium carbonate, and dolomite to initiate neutralisation.
- Add LABSA gradually and blend until reaction is complete and mixture is uniform.
- Incorporate sodium sulphate and sodium chloride to build powder structure.
- Mix for 5–10 minutes to ensure even dispersion and free-flowing powder.

Post-Blending Additions

- Post-blend optical brightener, enzymes, fragrance, and speckles.
- Mix thoroughly to achieve uniform distribution and consistent appearance.

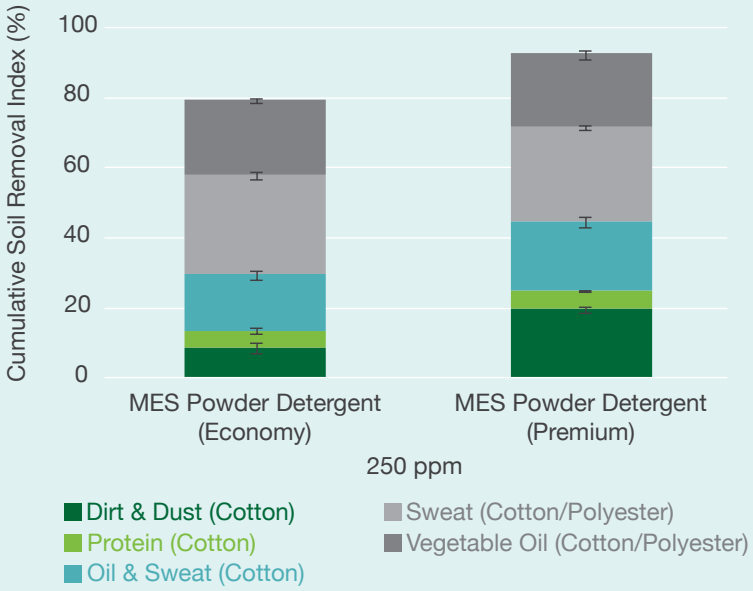
Palmfonate MES

Performance: Stronger Cleaning. Longer-Lasting Foam

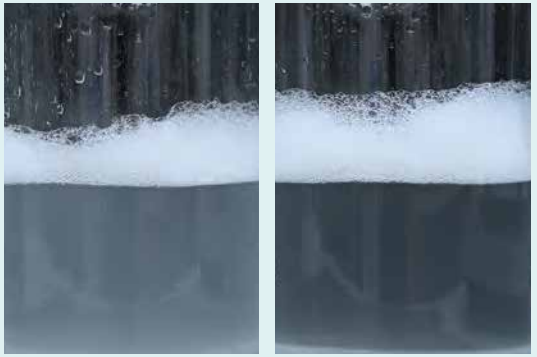
Higher detergency. Same surfactant load. Consistent foam.

Stronger cleaning is delivered by optimising how MES is used in the formula. The surfactant load remains the same, but stain removal improves noticeably. Foam remains rich and lasting, maintaining the expected feel during hand washing.

Better Stain Removal Without Extra Surfactant



Flash Foam | 0 minute



MES Powder Detergent (Economy) | MES Powder Detergent (Premium)

Flash Foam | After 10 minutes

MES Powder Detergent (Economy) | MES Powder Detergent (Premium)

Premium formula improves removal of pigment and body oil stains, with overall total soil removal increased by 17%.

Foam appearance stays consistent, preserving the expected hand wash experience.

Temperature: 25 °C; Sample size: 2 g; Volume of water used for pouring: 1 L;
Height of water pouring: 50 cm; Water hardness: 250 ppm

Palmfonate MES

High MES Leads to Caking? Myth Busted

MES Powder Detergent (Premium) contains 70% Palmfonate MES in the total surfactant system. Despite higher MES level, the powder shows no increase in caking after storage under compression.

MES Powder Detergent
(Economy)

MES Powder Detergent
(Premium)

Temperature: 50 °C; Relative humidity: 75%; Sample size: 35 g; Storage duration: 24 hours

Palmfonate MES

Sustainability: Lower Footprint. Higher Performance.

Palmfonate MES delivers better sustainability and superior cleaning without compromise

With smart MES formulation, powder detergents achieve better detergency, improved foaming, and controlled caking while reducing carbon footprint and fossil-oil use.

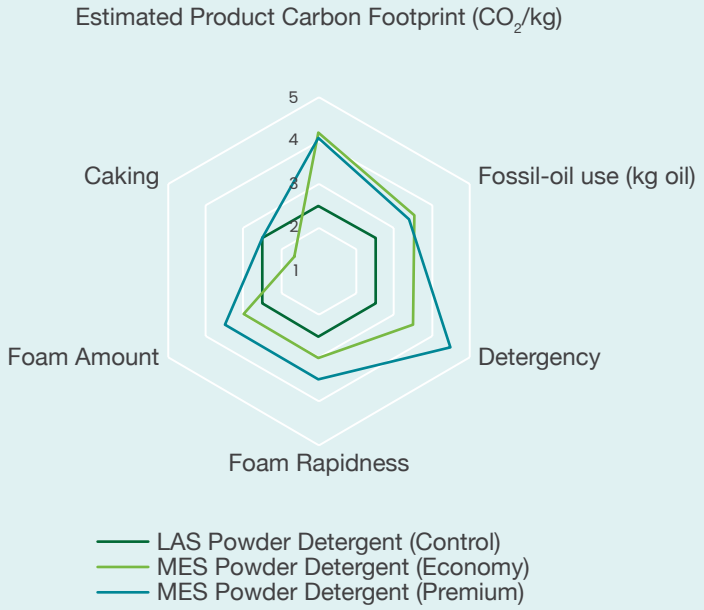
Derived from renewable and sustainable sources, MES supports environmentally responsible manufacturing without sacrificing performance.

The result is a high-performance powder detergent that is easier to handle, better for the environment, and aligned with evolving formulation demands.

	LAS Powder Detergent	MES Powder Detergent (Economy)	MES Powder Detergent (Premium)
Estimated product carbon footprint (kg CO_2/kg)	0.964	0.303	0.367
Fossil-oil use (kg oil)	0.286	0.165	0.184

MES verified by 3rd party System Boundary: Cradle-to-Gate
Base year: FY2023
Functional unit: kgCO_2eq/kg Product
Methodologies aligned with
- ISO 14067 (TUV SUD verified)
- Together for Sustainability (TfS)
- Pathfinder Framework (PACT)
- Greenhouse Gas Protocol

Comparison of Detergent Formulations: Higher Scores Indicate Superior Performance Over Control



Reduced Builder Usage

Smarter Builder Strategy with Palmfonate MES.
Less Builder. Same Clean.

Palmfonate MES enhances cleaning power while reducing reliance on traditional builders. With excellent hard water tolerance and superior detergency, MES-based powder detergents achieve the same cleaning performance with significantly less builder content. Whether phosphate or phosphate-free, Palmfonate MES helps you clean more with less.

Palmfonate MES

Guided Formulation: Phosphate-Free Powder Detergent

Ingredient	Active (%)	Function	Wt (%)
LABSA	96	Primary surfactant	7.5
Sodium carbonate	100	Neutraliser	18.8
Palmfonate 6728	80	Primary surfactant	9.4
Sodium sulphate	100	Filler and densifier	44.3
Sodium metasilicate	100	Builder	10.0
Zeolite	100	Builder	5.0
Sodium carbonate	100	Builder	5.0
Total Solids			**100**
Total Surfactants (Active %)			**15**
Total Builders			**20**

Making Procedure

Dry Neutralisation

- Premix Palmfonate MES and sodium carbonate, to initiate neutralisation.
- Add LABSA gradually and blend until reaction is complete and mixture is uniform.
- Incorporate sodium sulphate and other builders such as sodium metasilicate, zeolite, and sodium carbonate to build powder structure.
- Mix for 5-10 minutes to ensure even dispersion and free-flowing powder.

Post-Blending Additions

Ingredient	Function	Wt (%)
Optical brightener	Whitening agent	0.2%
Enzymes	Stain removal	0.5%
Fragrance	Scent	0.3%
Speckles (optional)	Visual appearance	0.5%

Post-Blending Additions

- Post-blend optical brightener, enzymes, fragrance, and speckles.
- Mix thoroughly to achieve uniform distribution and consistent appearance.

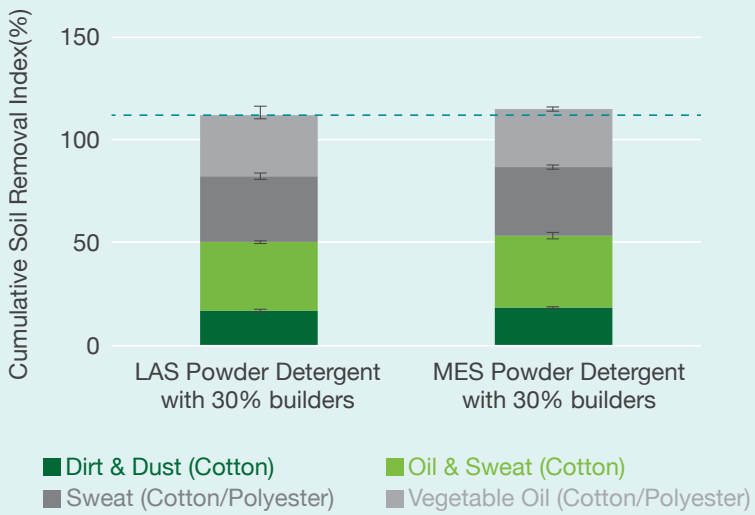
Palmfonate MES

Performance: Same Cleaning with Less Builder

Lower builder. Stronger formula. Same clean.

Palmfonate MES improves calcium tolerance and overall detergency, allowing builder levels to be reduced without compromising stain removal. The MES-based formulation uses only 20 % builders while delivering better cleaning than LAS-based detergents with 30 % builders.

Better Cleaning with Lower Builder Load



MES enables a 33% reduction in total builder content while delivering better cleaning performance.

Temperature: 25 °C; Concentration: 2 g/L; Water hardness: 250 ppm

Builder Adjustment Guide When Formulating with Palmfonate MES

	LAS Powder Detergent	MES Powder Detergent
Sodium metasilicate	20	10
Sodium carbonate	15	10
Zeolite	20	10

Formulation values shown are typical builder levels for phosphate-free systems.
Values may vary based on formulation needs.

Palmfonate MES

Guided Formulation: Phosphate Powder Detergent

Ingredient	Active (%)	Function	Wt (%) LAS Detergent Powder	Wt (%) MES Detergent Powder
LABSA	96	Primary surfactant	15.0	7.5
Sodium carbonate	100	Neutraliser	37.5	18.8
Palmfonate 6728	80	Primary surfactant	-	9.4
Sodium sulphate	100	Filler and densifier	17.5	39.3
STPP	100	Builder	20.0	15.0
Zeolite	100	Builder	5.0	5.0
Sodium carbonate	100	Builder	5.0	5.0
Total Solids			**100**	**100**
Total Surfactants (Active %)			**15**	**15**
Total Builders			**30**	**25**

Post-Blending Additions

Ingredient	Function	Wt (%)
Optical brightener	Whitening agent	0.2%
Enzymes	Stain removal	0.5%
Fragrance	Scent	0.3%
Speckles (optional)	Visual appearance	0.5%

Making Procedure

Dry Neutralisation

- Premix Palmfonate MES and sodium carbonate, to initiate neutralisation.
- Add LABSA gradually and blend until reaction is complete and mixture is uniform.
- Incorporate sodium sulphate and other builders such as STPP, zeolite, and sodium carbonate to build powder structure.
- Mix for 5-10 minutes to ensure even dispersion and free-flowing powder.

Post-Blending Additions

- Post-blend optical brightener, enzymes, fragrance, and speckles.
- Mix thoroughly to achieve uniform distribution and consistent appearance.

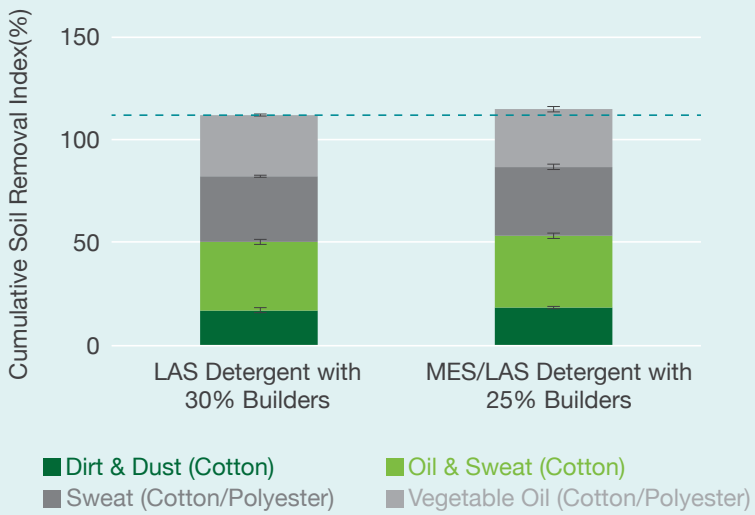
Palmfonate MES

Performance: Effective Builder Reduction in Phosphate-Based Systems

Less phosphate. Retain powerful clean.

Palmfonate MES reinforces builder performance by improving soil removal and hard water tolerance. In phosphate-based powder detergents, Palmfonate MES supports a 25% total builder load without affecting cleaning performance. The reduction in STPP and supporting builders contributes to a more efficient and balanced formulation, aligned with performance and formulation efficiency goals.

Better Cleaning with Lower Builder Load



MES enables a 17% reduction in total builder content.

Temperature: 25 °C; Concentration: 2 g/L; Water hardness: 250 ppm

Optimum Builder Dosage for Powder Detergent

	MES Powder Detergent	LAS Powder Detergent
STPP	15	20
Sodium carbonate	10	15
Zeolite	10	20

Values reflect typical builder ranges used in phosphate-based powder detergent systems.
Adjustments may vary based on formulation needs.

Malaysia
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