EcoSense™ SS-series

Discover the ease of formulating superior hard surface cleaners

Seek Together™

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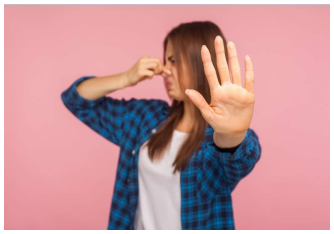
Product concept and characteristics

Product concept

Unique and high-performance blends of glycol ethers and nonionic surfactant, readily to be used as “Chassis” in various Household Cleaners

Market Needs on Hard Surface Formulations

Detergency



Odour

Cost

Sustainability

EcoSense™ SS-201 blend with better sustainability profile

- Superior sustainability: readily biodegradable, US EPA Safer Choice[1], zero VOC[2], not HAP[3]
- Superior odour profile vs commercial benchmark
- Better detergency vs commercial benchmarks
- Broad compatibility in formulation

EcoSense™ SS-202 blend with best-in-class detergency

- Superior detergency performance (faster and better) vs commercial benchmarks
- Favourable odour profile vs commercial benchmark
- Broad compatibility in formulation

[1] EcoSense™ SS-201, SS-202 Solvent/Surfactant Blends meet EPA Safer Choice criteria
[2] Raw materials of EcoSense™ SS-201, SS-202 Solvent/Surfactant Blends are not VOCs (Volatile Organic Compounds) under the California Air Resources Board and U.S. EPA criteria for consumer cleaning product applications
[3] Solvent in EcoSense™ SS-201 Solvent/Surfactant Blend is not HAP (Hazardous Air Pollutants) under The Clean Air Act Amendments of 1990 (CAAA)

Functionality

EcoSense™ SS-201 and SS-202 are high performance Solvent/Surfactant Blends designed for hard surface cleaners. Both are readily biodegradable and meet most environmental and handling safety standard, while offers excellent detergency performance.

Benefits	Applications
• Excellent detergency enhancement • Ready to formulate with other ingredients in hard surface cleaners • Low odour • Low toxicity • Easy to use • Favourable environment profile – readily biodegradable, EPA Safer Choice[1], zero VOC[2], not HAP[3]	• Kitchen cleaner and degreaser • All-purpose cleaner • Oven cleaner • Wipe

[1] EcoSense™ SS-201, SS-202 Solvent/Surfactant Blends meet EPA Safer Choice criteria
[2] Raw materials of EcoSense™ SS-201, SS-202 Solvent/Surfactant Blends are not VOCs (Volatile Organic Compounds) under the California Air Resources Board and U.S. EPA criteria for consumer cleaning product applications
[3] Solvent in EcoSense™ SS-201 Solvent/Surfactant Blend is not HAP (Hazardous Air Pollutants) under The Clean Air Act Amendments of 1990 (CAAA)

Product characteristics

Product	Physical and chemical properties	Formulation guidance
EcoSense™ SS-201 (Eco-option)	▪ Slightly yellow liquid ▪ Low odour ▪ Specific gravity: 0.9216 ▪ Flash point (close cup): 107°C	• Recommended level of addition: 5% to 7% • Post-addition feasible
EcoSense™ SS-202 (Performance-option)	▪ Slightly yellow liquid ▪ Low odour ▪ Specific gravity: 1.0756 ▪ Flash point (close cup): 125°C	• Recommended level of addition: 5% to 7% • Post-addition feasible

These are typical properties, not to be construed as specifications.
Any variation in the formulation/procedure noted may cause performance to change.

Typical properties

Technical data	EcoSense™ SS-201 (Eco-option)	EcoSense™ SS-202 (Performance-option)
Chemical name	Blend of glycol ether and alkoxylated alcohols	Blend of glycol ether and alkoxylated alcohols
Cloud point, 1% aq. (°C)	50 – 70	40 – 55
Color, Pt-Co	50 max.	75 max.
pH (1% aq.)	4 – 8	4 – 8
Water (Wt.%)	0.6 max.	0.6 max.
Water solubility at 20°C (Wt.%)	5	2.6
Environment profile	EPA Safer Choice[1] Zero VOC[2] Solvent not HAP[3]	EPA Safer Choice[1] Zero VOC[2]

[1] EcoSense™ SS-201, SS-202 Solvent/Surfactant Blends meet EPA Safer Choice criteria
[2] Raw materials of EcoSense™ SS-201, SS-202 Solvent/Surfactant Blends are not VOCs (Volatile Organic Compounds) under the California Air Resources Board and U.S. EPA criteria for consumer cleaning product applications
[3] Solvent in EcoSense™ SS-201 Solvent/Surfactant Blend is not HAP (Hazardous Air Pollutants) under The Clean Air Act Amendments of 1990 (CAAA)

These are typical properties, not to be construed as specifications.
Any variation in the formulation/procedure noted may cause performance to change.

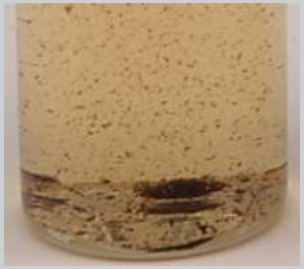
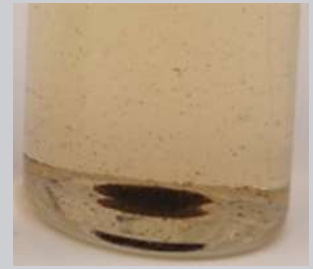
Performance data

- **EcoSense™ SS-201**
  (Eco-option)

Cleaning efficacy of EcoSense™ SS-201 in Detergent Base 1

Soil type: Soil type derived from GBT 35833-2018

Ingredients	Detergent Base 1 Wt. % (ai)
Sodium lauryl ether sulfate	2.0%
Hydrotrope	4.0%
Amine	2.5%
NaOH	2.0%
Deionized water	q.s. to 100%

Commercial Heavy-duty Detergent	Detergent Base 1 + 6% EcoSense™ SS-201	Detergent Base 1 + 7% EcoSense™ SS-201	Detergent Base 1 + 7% Commercial Surfactant Blend 1
			
Aged soil was partially disintegrated	Aged soil was partially disintegrated	Aged soil was completely disintegrated	Aged soil remained intact

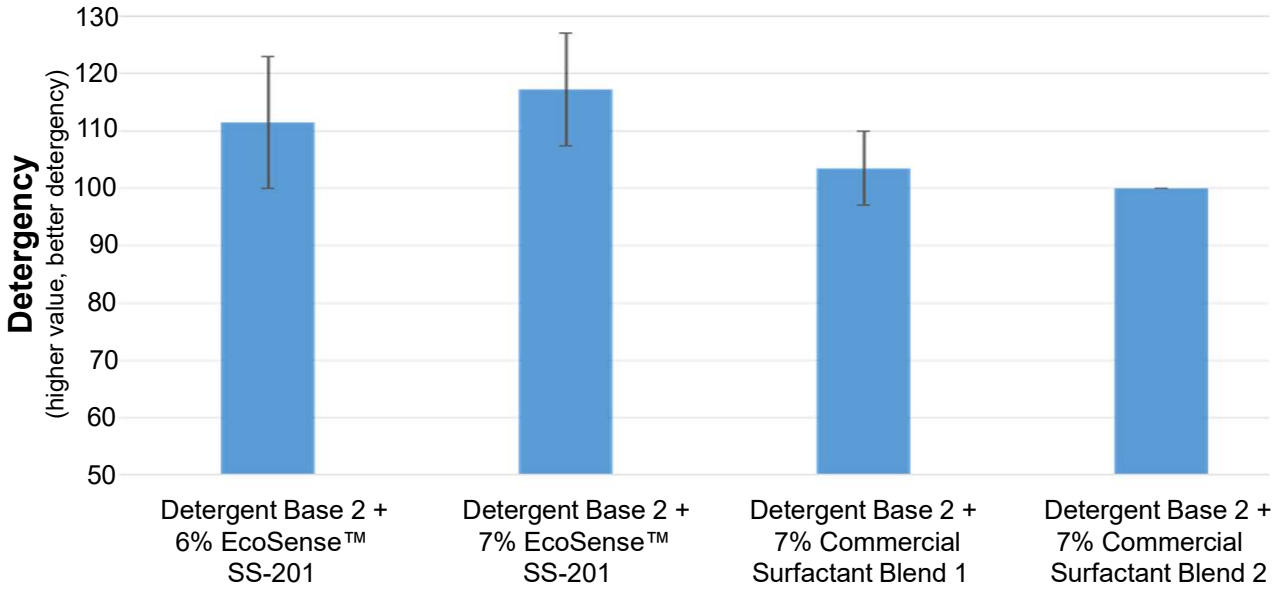
7% EcoSense™ SS-201 Solvent/Surfactant Blend outperformed 7% Commercial Surfactant Blend 1 in Detergent Base 1 and Commercial Heavy-duty Detergent

Commercial Heavy-duty Detergent – selected commercial detergent with best heavy-duty detergency performance
Commercial Surfactant Blend 1 – selected commercial surfactant/surfactant blend that claimed excellent detergency performance for hard surface applications
Test method: Dow HTR method (aged soil at the bottom of vials soaked in detergents gradually disintegrated)

Cleaning efficacy of EcoSense™ SS-201 in Detergent Base 2

Soil type: Soil type derived from GBT 35833-2018

Ingredients	Detergent Base 2 Wt. % (ai)
Sodium lauryl ether sulfate	3.5%
Hydrotrope	–
Amine	2.5%
NaOH	2.0%
Deionized water	q.s. to 100%



7% EcoSense™ SS-201 Solvent/Surfactant Blend outperformed 7% Commercial Surfactant Blends 1 and 2 in Detergent Base 2

Commercial Surfactant Blends 1 & 2 – selected commercial surfactant/surfactant blends that claimed excellent detergency performance for hard surface applications
Test method: Dow HTR method (aged soil at the bottom of vials soaked in detergents gradually disintegrated)

Cleaning efficacy of EcoSense™ SS-201 in Detergent Base 1

Soil type: Soil type derived from GBT 35833-2018

Ingredients	Detergent Base 1 Wt. % (ai)
Sodium lauryl ether sulfate	2.0%
Hydrotrope	4.0%
Amine	2.5%
NaOH	2.0%
Deionized water	q.s. to 100%

5% EcoSense™ SS-201 Solvent/Surfactant Blend outperformed 7% Commercial Surfactant Blend 1 in Detergent Base 1 and comparable with Commercial Heavy-duty Detergent

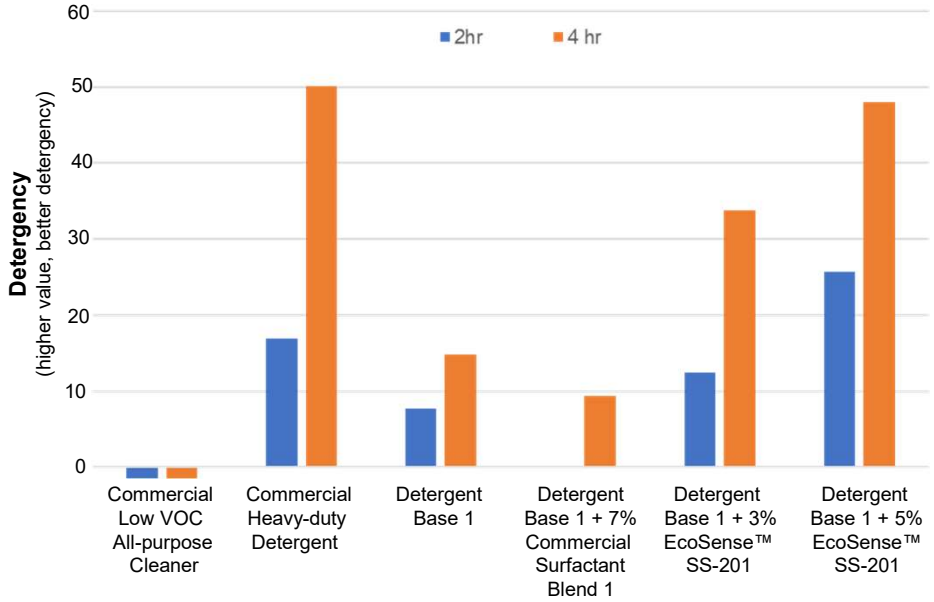
Commercial Heavy-duty Detergent – selected commercial detergent with best heavy-duty detergency performance
Commercial Surfactant Blend 1 – selected commercial surfactant/surfactant blend that claimed excellent detergency performance for hard surface applications
Test method: Dow Standard Soaking method (aged soil on stainless-steel substrates soaked in detergents gradually dropped off from the substrates)

Candidate	0 hour	2 hour
Detergent Base 1 + 7% Commercial Surfactant Blend 1		
Commercial Heavy-duty Detergent		
Detergent Base 1		
Detergent Base 1 + 3% EcoSense™ SS-201		
Detergent Base 1 + 5% EcoSense™ SS-201		

Cleaning efficacy of EcoSense™ SS-201 in Detergent Base 1

Soil type: Soil type derived from GBT 35833-2018

Ingredients	Detergent Base 1 Wt. % (ai)
Sodium lauryl ether sulfate	2.0%
Hydrotrope	4.0%
Amine	2.5%
NaOH	2.0%
Deionized water	q.s. to 100%



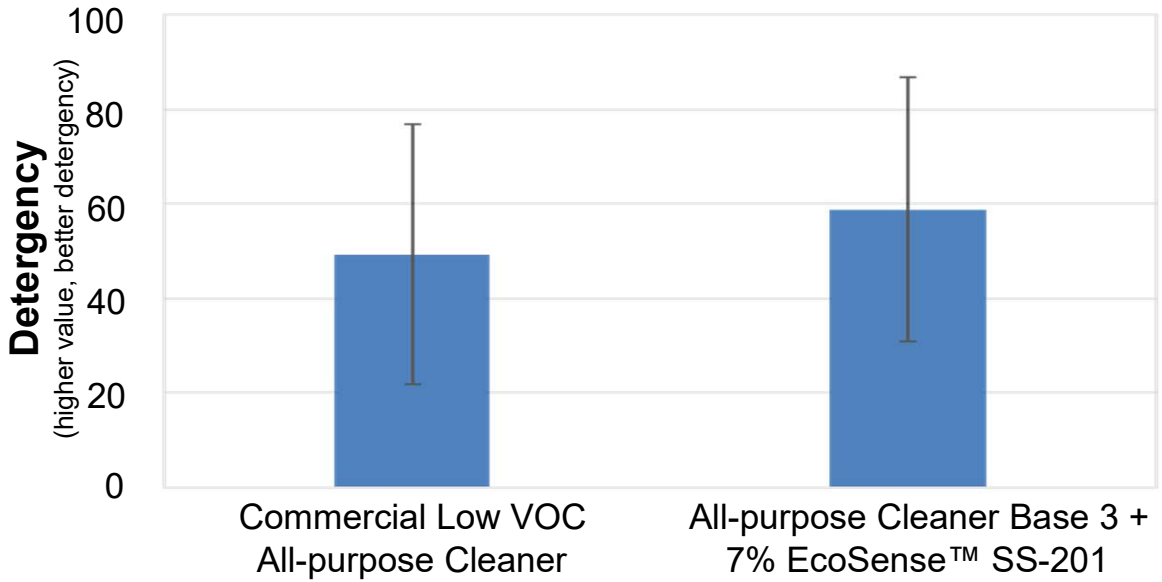
5% EcoSense™ SS-201 Solvent/Surfactant Blend outperformed 7% Commercial Surfactant Blend 1 in Detergent Base 1 and comparable with Commercial Heavy-duty Detergent

Commercial Heavy-duty Detergent – selected commercial detergent with best heavy-duty detergency performance
Commercial Low VOC All-purpose Cleaner – selected commercial detergent for all-purpose detergency performance
Commercial Surfactant Blend 1 – selected commercial surfactant/surfactant blend that claimed excellent detergency performance for hard surface applications
Test method: Dow Standard Soaking method (aged soil on stainless-steel substrates soaked in detergents gradually dropped off from the substrates)

Cleaning efficacy of EcoSense™ SS-201 in All-purpose Cleaner Base 3

Soil type: Soil type derived from GBT 35833-2018

Ingredients	All-purpose Cleaner Base 3 Wt. % (ai)
Sodium lauryl ether sulfate	3.5%
Hydrotrope	–
Amine	2.5%
NaOH	–
Deionized water	q.s. to 100%

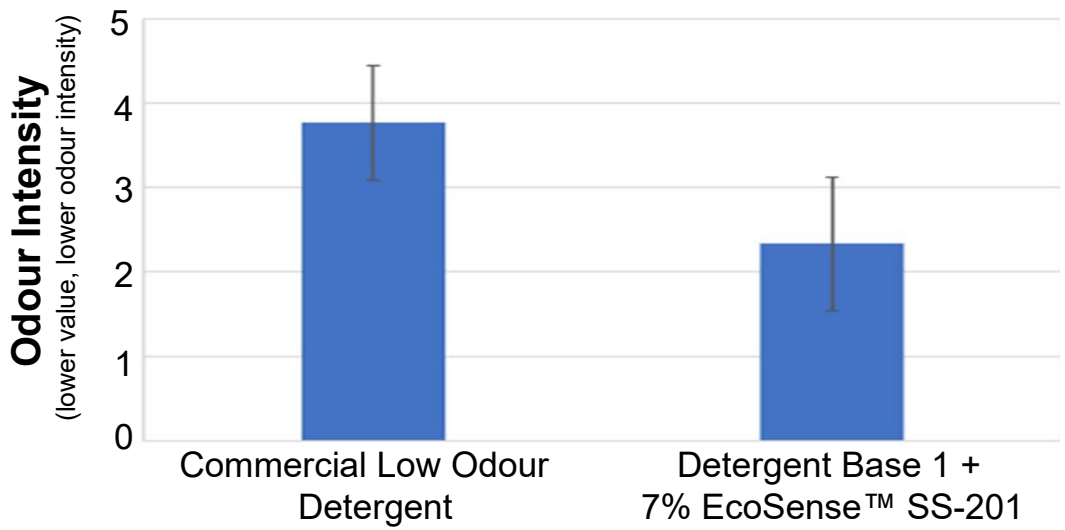


7% EcoSense™ SS-201 Solvent/Surfactant Blend in All-purpose Cleaner Base 3 performed better than Commercial Low VOC All-purpose Cleaner

Commercial Low VOC All-purpose Cleaner – selected commercial detergent for all-purpose detergency performance
Test method: Dow Standard Soaking method (for all-purpose cleaner) (aged soil on stainless-steel substrates soaked in detergents gradually dropped off from the substrates)

Odour intensity evaluation of EcoSense™ SS-201 in Detergent Base 1

Ingredients	Detergent Base 1 Wt. % (ai)
Sodium lauryl ether sulfate	2.0%
Hydrotrope	4.0%
Amine	2.5%
NaOH	2.0%
Deionized water	q.s. to 100%



7% EcoSense™ SS-201 Solvent/Surfactant Blend in Detergent Base 1 had lower odour intensity compared with Commercial Low Odour Detergent

Commercial Low Odour Detergent – detergent that claimed no detergent smell
Test method: Samples were evaluated by 15 panellists that certified by SGS. Co. Ltd on odour intensity following standard procedure

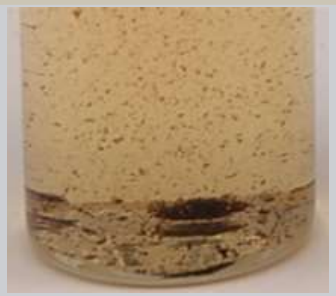
Performance Data

- **EcoSense™ SS-202**
  (Performance-option)

Cleaning efficacy of EcoSense™ SS-202 in Detergent Base 1

Soil type: Soil type derived from GBT 35833-2018

Ingredients	Detergent Base 1 Wt. % (ai)
Sodium lauryl ether sulfate	2.0%
Hydrotrope	4.0%
Amine	2.5%
NaOH	2.0%
Deionized water	q.s. to 100%

Commercial Heavy-duty Detergent	Detergent Base 1 + 7% EcoSense™ SS-202	Detergent Base 1 + 7% Commercial Surfactant Blend 1
		
Aged soil was partially disintegrated	Aged soil was completely disintegrated	Aged soil remained intact

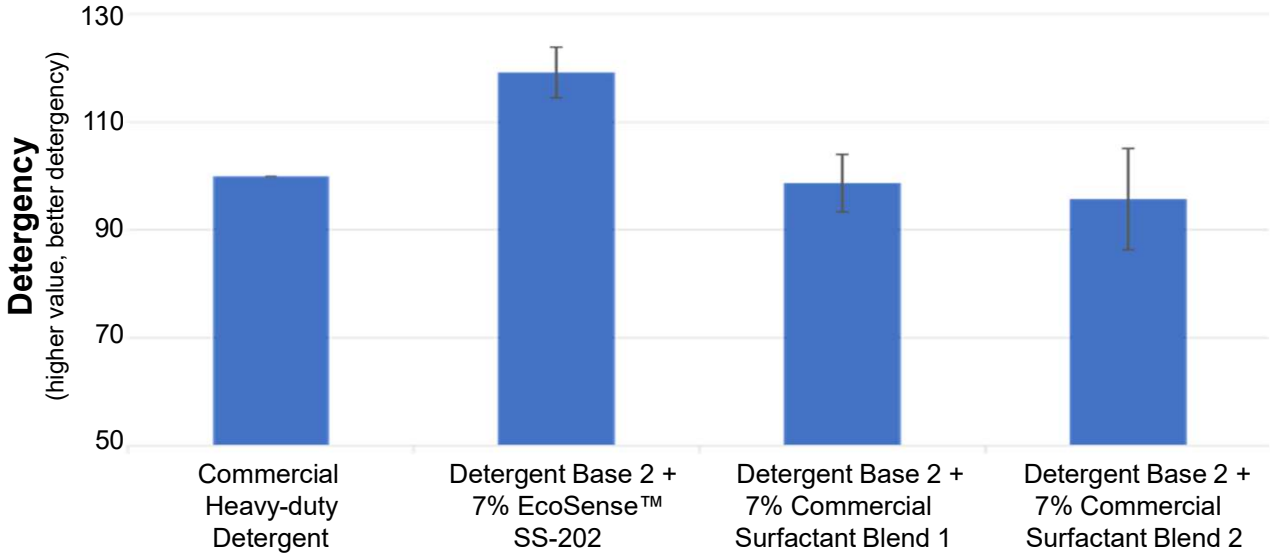
7% EcoSense™ SS-202 Solvent/Surfactant Blend outperformed 7% Commercial Surfactant Blend 1 in Detergent Base 1 and Commercial Heavy-duty Detergent

Commercial Heavy-duty Detergent – selected commercial detergent with best heavy-duty detergency performance
Commercial Surfactant Blend 1– selected commercial surfactant/surfactant blend that claimed excellent detergency performance for hard surface applications
Test method: Dow HTR method (aged soil at the bottom of vials soaked in detergents gradually disintegrated)

Cleaning efficacy of EcoSense™ SS-202 in Detergent Base 2

Soil type: Soil type derived from GBT 35833-2018

Ingredients	Detergent Base 2 Wt. % (ai)
Sodium lauryl ether sulfate	3.5%
Hydrotrope	–
Amine	2.5%
NaOH	2.0%
Deionized water	q.s. to 100%



7% EcoSense™ SS-202 Solvent/Surfactant Blend outperformed 7% Commercial Surfactant Blends 1 & 2 in Detergent Base 2 and Commercial Heavy-duty Detergent

Commercial Heavy-duty Detergent – selected commercial detergent with best heavy-duty detergency performance
Commercial Surfactant Blends 1 & 2 – selected commercial surfactant/surfactant blends that claimed excellent detergency performance for hard surface applications
Test method: Dow HTR method (aged soil at the bottom of vials soaked in detergents gradually disintegrated)

Cleaning efficacy of EcoSense™ SS-202 in Detergent Base 1

Soil type: Soil type derived from GBT 35833-2018

Ingredients	Detergent Base 1 Wt. % (ai)
Sodium lauryl ether sulfate	2.0%
Hydrotrope	4.0%
Amine	2.5%
NaOH	2.0%
Deionized water	q.s. to 100%

5% EcoSense™ SS-202 Solvent/Surfactant Blend outperformed 7% Commercial Surfactant Blend 1 in Detergent Base 1 and Commercial Heavy-duty Detergent (aged soil dropped off much faster)

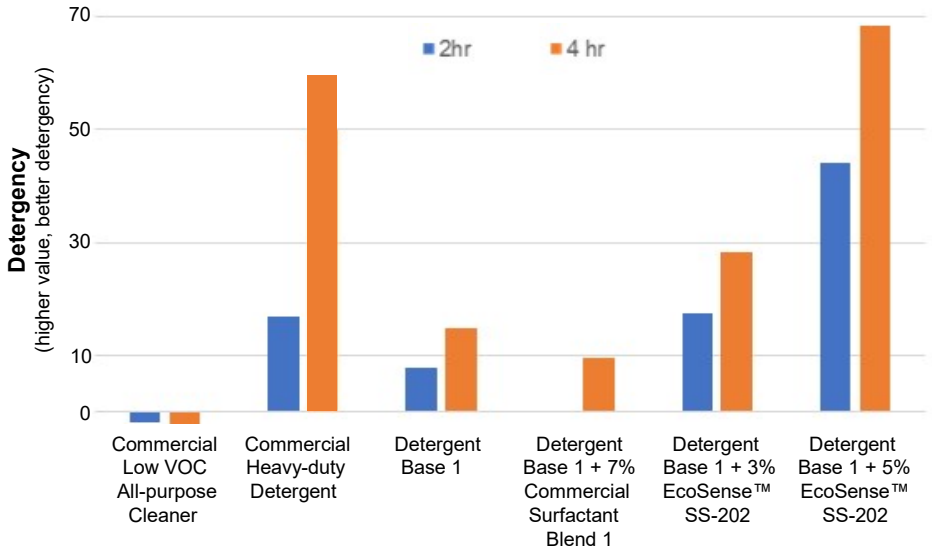
Commercial Heavy-duty Detergent – selected commercial detergent with best heavy-duty detergency performance
Commercial Surfactant Blend 1 – selected commercial surfactant/surfactant blend that claimed excellent detergency performance for hard surface applications
Test method: Dow Standard Soaking method (aged soil on stainless-steel substrates soaked in detergents gradually dropped off from the substrates)

Candidate	0 hour	2 hour
Detergent Base 1 + 7% Commercial Surfactant Blend 1		
Commercial Heavy-duty Detergent		
Detergent Base 1		
Detergent Base 1 + 3% EcoSense™ SS-202		
Detergent Base 1 + 5% EcoSense™ SS-202		

Cleaning efficacy of EcoSense™ SS-202 in Detergent Base 1

Soil type: Soil type derived from GBT 35833-2018

Ingredients	Detergent Base 1 Wt. % (ai)
Sodium lauryl ether sulfate	2.0%
Hydrotrope	4.0%
Amine	2.5%
NaOH	2.0%
Deionized water	q.s. to 100%



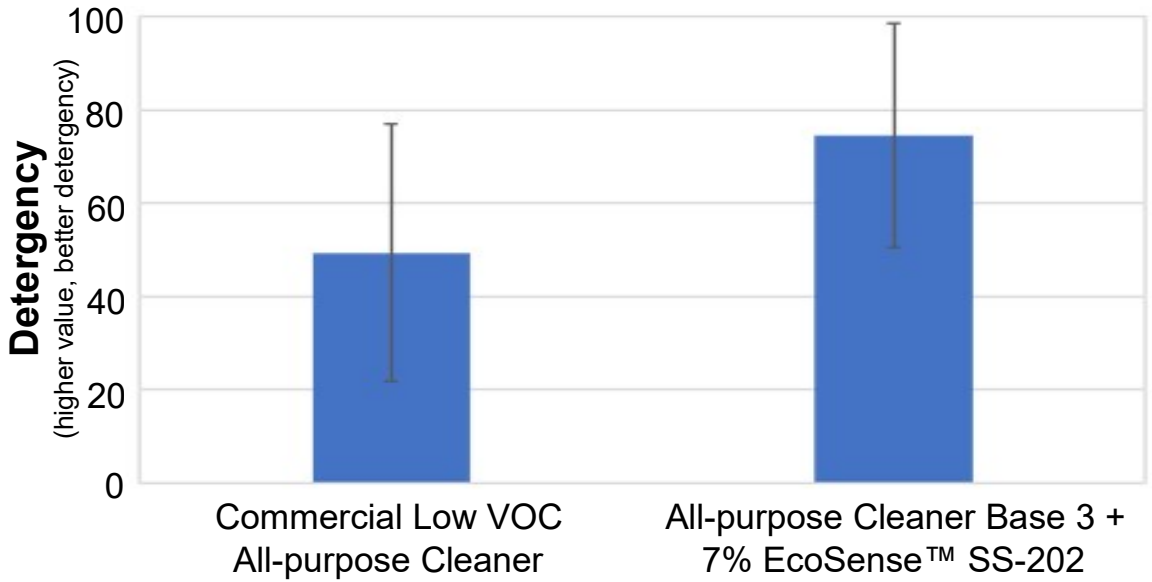
5% EcoSense™ SS-202 Solvent/Surfactant Blend outperformed 7% Commercial Surfactant Blend 1 in Detergent Base 1 and Commercial Heavy-duty Detergent (aged soil dropped off much faster)

Commercial Heavy-duty Detergent – selected commercial detergent with best heavy-duty detergency performance
Commercial Low VOC All-purpose Cleaner – selected commercial detergent for all-purpose detergency performance
Commercial Surfactant Blend 1 – selected commercial surfactant/surfactant blend that claimed excellent detergency performance for hard surface applications
Test method: Dow Standard Soaking method (aged soil on stainless-steel substrates soaked in detergents gradually dropped off from the substrates)

Cleaning efficacy of EcoSense™ SS-202 in All-purpose Cleaner Base 3

Soil type: Soil type derived from GBT 35833-2018

Ingredients	All-purpose Cleaner Base 3 Wt. % (ai)
Sodium lauryl ether sulfate	3.5%
Hydrotrope	–
Amine	2.5%
NaOH	–
Deionized water	q.s. to 100%

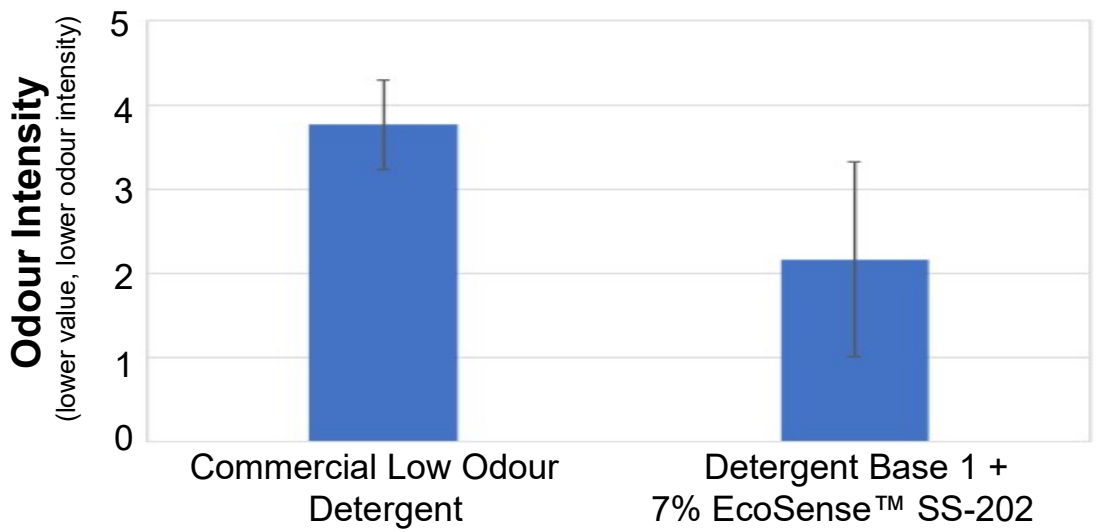


7% EcoSense™ SS-202 Solvent/Surfactant Blend in All-purpose Cleaner Base 3 performed better than Commercial Low VOC All-purpose Cleaner

Commercial Low VOC All-purpose Cleaner – selected commercial detergent for all-purpose detergency performance
Test method: Dow Standard Soaking method (for all-purpose cleaner) (aged soil on stainless-steel substrates soaked in detergents gradually dropped off from the substrates)

Odour Intensity Evaluation of EcoSense™ SS-202 in Detergent Base 1

Ingredients	Detergent Base 1 Wt. % (ai)
Sodium lauryl ether sulfate	2.0%
Hydrotrope	4.0%
Amine	2.5%
NaOH	2.0%
Deionized water	q.s. to 100%



7% EcoSense™ SS-202 Solvent/Surfactant Blend in Detergent Base 1 had lower odour intensity compared with Commercial Low Odour Detergent

Commercial Low Odour Detergent – detergent that claimed no detergent smell
Test method: Samples were evaluated by 15 panellists that certified by SGS. Co. Ltd on odour intensity following standard procedure

Summary

Summary

- **EcoSense™ SS-201** is an eco-option with superior sustainability profile where the solvent used in the blend is not HAP (Hazardous Air Pollutants) under The Clean Air Act Amendments of 1990 (CAAA)
- **EcoSense™ SS-202** is a performance-option with superior detergency profile
- EcoSense™ SS-201 and SS-202 exhibits **outstanding detergency** performance
- EcoSense™ SS-201 and SS-202 displays **lower odour intensity**
- EcoSense™ SS-201 and SS-202 allows **clear formulations** and **ease of use**

We are fully committed to working with you for your next great "Hit" in the market for Hardsurface cleaners/wipes!





Q&A

Contact the speaker if you have questions:

Lan Wei Tang

Email: ltang2@dow.com

Seek

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Thank you