

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



¹ EcoSense™ SS-201, SS-202 Solvent/Surfactant Blends meet EPA Safer Choice criteria

² Raw materials of EcoSense M 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	Kitchen cleaner and degreaser
 Ready to formulate with other ingredients in hard surface cleaners 	All-purpose cleaner
Low odour	Oven cleaner
Low toxicity	• Wipe
Easy to use	
• Favourable environment profile – readily biodegradable, EPA Safer Choice ¹ , zero VOC ² , not HAP ³	

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 EcoSenseTM 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.



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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 EcoSenseTM 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

EcoSenseTM SS-201 (Eco-option)





Cleaning efficacy of EcoSenseTM SS-201 in Detergent Base 1

Soil type: Soil type derived from GBT 35833-2018

Ingredients	Detergent Base 1 Wt. % (ai)	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
			and a strand and a strand	La grant the second	
Sodium lauryl ether sulfate	2.0%				
Hydrotrope	4.0%	Sector St	Carton and	Contraction of	C SHIE
Amine	2.5%	-18-20	A CALLER AND A CAL	and at the second	
NaOH	2.0%	Aged soil was	Aged soil was	Aged soil was	Aged soil remained
Deionized water	q.s. to 100%	disintegrated	disintegrated	disintegrated	intaot

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 EcoSenseTM **SS-201 in Detergent Base 2**

Soil type: Soil type derived from GBT 35833-2018



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	o 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)	50 € ⁵⁰)		■ 2hr	■ 4 hr		
Sodium lauryl ether sulfate	2.0%	ency ter detergenc)				_	
Hydrotrope	4.0%	00 Deterg						
Amine	2.5%	(higher 10			_			
NaOH	2.0%	0	Commercial	Commercial	Detergent	Detergent	Detergent	Detergent
Deionized water	q.s. to 100%		Low VOC All-purpose Cleaner	Heavy-duty Detergent	Base 1	Base 1 + 7% Commercial Surfactant Blend 1	Base 1 + 3% EcoSense™ SS-201	Base 1 + 5% EcoSense™ SS-201

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



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)	ity intensity)	5		I				
Sodium lauryl ether sulfate	2.0%	tens odour	3		1			Т	
Hydrotrope	4.0%	ir In t Iower	0						
Amine	2.5%)dou value,	2						
NaOH	2.0%	(lower	1						
Deionized water	q.s. to 100%		0	Comme	ercial Low	Odour	Deter	gent Bas	se 1 +
					Detergen	it	7% Eco	Sense™	SS-201

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
➤ EcoSenseTM SS-202
(Performance-option)





Cleaning efficacy of EcoSenseTM **SS-202 in Detergent Base 1**

Soil type: Soil type derived from GBT 35833-2018

Ingredients	Detergent Base 1 Wt. % (ai)	Commercial Heavy-duty Detergent	Detergent Base 1 + 7% EcoSense™ SS-202	Detergent Base 1 + 7% Commercial Surfactant Blend 1
Sodium lauryl ether sulfate	2.0%			
Hydrotrope	4.0%	1 - The second		And and a second second
Amine	2.5%		Contraction of the	Cane of
NaOH	2.0%	Aged soil was	Aged soil was	Aged soil remained
Deionized water	q.s. to 100%	partially disintegrated	completely disintegrated	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 EcoSenseTM SS-202 in Detergent Base 2

Soil type: Soil type derived from GBT 35833-2018



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	Candidate	o hour	2 hour
Ŭ	Wt. % (ai)	Detergent Base 1 + 7% Commercial Surfactant		Carles C
Sodium lauryl ether sulfate	2.0%	Blend 1		
Hydrotrope	4.0%		Statistics and the	
Amine	2.5%	Commercial Heavy-duty	VICTOR OF STREET	
NaOH	2.0%	Detergent	A CONTRACTOR	
Deionized water	q.s. to 100%		A STREET STREET	
5% EcoSense™ SS-20 Blend outperforme	02 Solvent/Surfactant ed 7% Commercial	Detergent Base 1	and a	

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)





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)				2hr	■4 hr		
Sodium lauryl ether sulfate	2.0%	gency etter deter						
Hydrotrope	4.0%	Deter 05 value, by						
Amine	2.5%	(higher			_			
NaOH	2.0%	0 Cor	mmercial	Commercial	Detergent	Detergent	Detergent	Detergent
Deionized water	q.s. to 100%	Lo All- C	ow VOC -purpose :leaner	Heavy-duty Detergent	Base 1	Base 1 + 7% Commercial Surfactant Blend 1	Base 1 + 3% EcoSense™ SS-202	Base 1 + 5 EcoSense SS-202

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



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



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

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