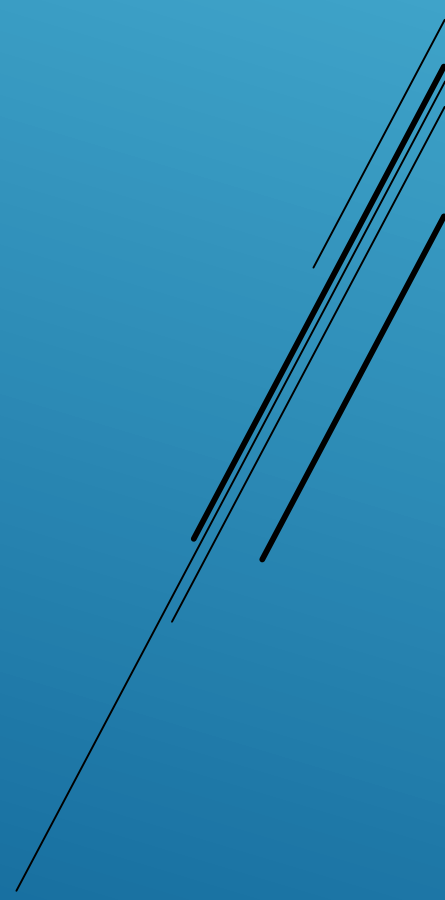




HEAVY DUTY LIQUID DETERGENTS FORMULATIONS



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KCE REFERENCE : D-180

HDL D

STANDARD

DESCRIPTION

- Liquid detergent for laundry machines
- Recommended dosage: 100 mL product / wash

COMPOSITION

	%
SULFONAX®	8.5
LEVENOL® F-200	4.0
EMAL® 270D ⁽¹⁾	5.5
Coconut Fatty Acid	3.5
NaOH (50% solution)	3.0 approx.
Sodium Citrate	2.0
Sodium Chloride	0.5 approx.
Enzymes (Protease, amylase...)	q.s.
Chelating agents	q.s.
Optical brighteners	q.s.
Dyes / Perfume	q.s.
Preservative	q.s.
Opacifier	q.s.
Deionized Water	Up to 100%

(1) 5.5% of EMAL® 270D (SLES at 70% a.m.) can be substituted by 14.3% of EMAL® 227E (SLES at 27% a.m.).

TECHNICAL CHARACTERISTICS

		Kao Method
APPEARANCE (20°C) :	Transparent Viscous Liquid	KCSA-258
VISCOSITY BROOKFIELD (20°C, cPs) :	400 - 500	KCSA-227
pH (100%) :	8.0 – 8.5	KCSA-014
DRY MATTER (%) :	24 approx.	KCSA-092



KCE REFERENCE : D-180

RECOMMENDED OPERATIVE METHOD

- Charge water
- Add NaOH and afterwards add SULFONAX[®] and Coconut Fatty Acid (previously melted), homogenizing the blend after the addition of each component.
- Continue with the addition of Sodium Citrate.
- Check pH and adjust between 6.5 - 7.5, if necessary.
- Continue with the addition of LEVENOL[®] F-200 and EMAL[®] 270D, homogenizing the blend after the addition of each component.
- Add the enzymes following supplier recommendations.
- Continue with the addition of the other additives: chelating agents, preservative, opacifier, optical brighteners, perfume, keeping in mind supplier recommendations.
- Final pH adjustment (8.0 – 8.5 approx.) with NaOH.
- Viscosity adjustment adding Sodium Chloride.
- Adjust weight with Deionized Water to 100%.
- Unload the final product.

COMMENTS

- Ensure that pH is between 7.0 - 8.0 before LEVENOL[®] F-200 addition.
- In case of using enzymes, follow supplier recommendations regarding dosage, enzyme stabilizers and formulation procedure.

COMPONENTS

SULFONAX[®] (Dodecyl Benzene Sulfonic Acid, ≈ 94% a.m.): anionic character. Primary surfactant, highly foaming. Good detergent properties.

LEVENOL[®] F-200 (Glycereth-6 Cocoate, ≈ 100% a.m.): non-ionic character. Mild surfactant that decreases the irritation level of anionic surfactants, increasing performance and dispersion of the dirt. Medium foaming and good hydrotropic properties. Eco-toxicologically friendly. It doesn't need any risk sentences or warnings on its label.

EMAL[®] 270D (Sodium Laureth Sulfate, ≈ 70% a.m.): anionic character. Primary surfactant, highly foaming and detergent.

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KCE REFERENCE : D-027

HEAVY DUTY LIQUID DETERGENT HDL D

DESCRIPTION

- Liquid detergent for laundry machines
- Low foaming power detergent

COMPOSITION

	%
EMAL [®] 227E *	8.5
SULFONAX [®]	11.4
LEVENOL [®] C-201	14.4
Coconut Fatty Acid	3.0
Ethyl Alcohol (EtOH)	7.8
Propylenglycol	3.6
Preservative	q.s.
Dye(s)	q.s.
NaOH 50%	2.4 approx.
TEA 85%	3.0 approx.
Chelating Agent	q.s
Optical Brightner	q.s
Enzymes (protease, amylase,...)	q.s.
Deionized Water	Up to 100%

* 8.5% of EMAL[®] 227E can be replaced by 3.3% of EMAL[®] 270E or EMAL[®] 270D

TECHNICAL CHARACTERISTICS

		Kao Method
APPEARANCE (20°C) :	Transparent liquid	KCS-258
pH (as it is) :	7.5 – 8.5	KCS-014
DRY MATTER (%)	30 around	KCS-092

KCE REFERENCE : D-027

RECOMMENDED OPERATIVE METHOD

- Start the process at room temperature.
- Add the NaOH 50% to the water and then add SULFONAX®. After homogenisation add EMAL® 227E.
- Continue with the addition of Ethyl Alcohol and Propylenglycol..
- Add the non-ionic LEVENOL® C-201 and heat a little bit (40°C approx.) the mixture, to incorporate the Coconut Fatty Acid (melted).
- Adjust the pH (7.5 - 8.5) with TEA 85%.
- Continue with the addition of the other additives: preservative, fragrance, dye (diluted in water), keeping in mind supplier recommendations.
- Adjust weight with deionized water, to 100%
- Unload the final product.

COMPONENTS

Coconut Fatty Acid : anionic character. After neutralisation it performs as detergent (soap) and foam controller agent.

EMAL® 227E (sodium laureth sulfate, ≈ 27% a.m.): anionic character. Primary surfactant, highly foaming and detergent.

LEVENOL® C-201 (glycereth-17 cocoate, ≈ 100% a.m.): non-ionic character. Mild surfactant which decreases the irritation level of anionic surfactants, increasing performance and dispersion of the dirt. Foaming controlled surfactant. Eco-toxicologically friendly. It doesn't need any risk sentences or warnings on its label.

Solvent (ethylenglycol, propylenglycol, etc.): products recommended to maintain the liquidity of the final formula, and to improve the cloud point at low temperature.

SULFONAX® (dodecyl benzene sulfonic acid, ≈ 94% a.m.): anionic character. Primary surfactant, highly foaming. Good detergent properties.

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KCE REFERENCE : D-179

CONCENTRATED HDLD (2x)

DESCRIPTION

- Heavy-Duty liquid detergent for laundry machines
- Concentrated product (2x)
- Recommended dosage: 70 ml product / wash
- Without solvents

COMPOSITION

	%
SULFONAX [□]	10.6
LEVENOL [□] C-301	9.9
EMAL [□] 270D ⁽¹⁾	6.6
Coconut Fatty Acid	3.8
NaOH (50% solution)	2.5 approx.
Triethanolamine (TEA)	3.0
Sodium Citrate	2.0
Optional ingredients:	
Enzymes (Protease, amylase...)	q.s.
Chelating agents	q.s.
Optical brighteners	q.s.
Dyes / Perfume	q.s.
Deionized Water	Up to 100%

(1) 6.6% of EMAL[□] 270D (SLES at 70% a.m.) can be substituted by 17.1% of EMAL[□] 227E (SLES at 27% a.m.).

TECHNICAL CHARACTERISTICS

		Kao Method
APPEARANCE (20°C) :	Transparent Viscous Liquid	KCSA-258
VISCOSITY BROOKFIELD (20°C, cPs) :	400 - 500	KCSA-227
pH (100%) :	8.0 – 8.4	KCSA-014
DRY MATTER (%) :	35 approx.	KCSA-092



KCE REFERENCE : D-179

RECOMMENDED OPERATIVE METHOD

- Start the process at room temperature.
- Add the NaOH (50% solution) and TEA to the water and afterwards add SULFONAX[□] and Coconut Fatty Acid (previously melted).
- Continue with the addition of Citric Acid (50% solution).
- Adjust the pH (7.0 - 8.0) with NaOH (50% solution).
- Continue with the addition of non-ionic LEVENOL[□] C-301 and EMAL[□] 270D.
- Continue with the addition of the other additives: preservative, chelating agents, dye(s), optical brighteners, perfume, keeping in mind supplier recommendations.
- Add the enzymes following supplier recommendations.
- Final pH adjustment (8.0 – 8.2 approx.) with NaOH (50% solution).
- Adjust weight with Deionized Water to 100%.
- Unload the final product.

COMMENTS

- Ensure that pH is between 7.0 - 8.0 before LEVENOL[®] addition.
- In case of using enzymes, follow supplier recommendations regarding dosage, enzyme stabilizers and formulation procedure.

COMPONENTS

SULFONAX[□] (Dodecyl Benzene Sulfonic Acid, ≈ 94% a.m.): anionic character. Primary surfactant, highly foaming. Good detergent properties.

LEVENOL[□] C-301 (Glycereth-7 Cocoate, ≈ 100% a.m.): non-ionic character. Mild surfactant which decreases the irritation level of anionic surfactants, increasing performance and dispersion of the dirt. Medium foaming surfactant. Eco-toxicologically friendly. It doesn't need any risk sentences or warnings on its label.

EMAL[□] 270D (Sodium Laureth Sulfate, ≈ 70% a.m.): anionic character. Primary surfactant, highly foaming and detergent.

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KCE REFERENCE : D-178

Concentrated HDLD (3x)

DESCRIPTION

- Heavy-duty Liquid detergent for laundry machines
- Concentrated product (3x)
- Recommended dosage: 35ml product / wash
- Without solvents

COMPOSITION

	%
SULFONAX [□]	18.2
LEVENOL [□] F-200	16.8
EMAL [□] 270D ⁽¹⁾	11.3
Coconut Fatty Acid	4.3
NaOH (50%)	3.5 approx.
Triethanolamine (TEA)	5.7
Sodium Citrate	2.0
Optional ingredients:	
Enzymes (Protease, amylase...)	q.s.
Chelating agents	q.s.
Optical brighteners	q.s.
Dyes / Perfume	q.s.
Preservative	q.s.
Deionised Water	Up to 100%

(1) 11.3% of EMAL 270D can be replaced by EMAL 270E or by 29.3% approx. of EMAL[□] 227E or EMAL[□] 228D

TECHNICAL CHARACTERISTICS

		Kao Method
APPEARANCE (20°C):	Transparent viscous liquid	KCSA-258
VISCOSITY BROOKFIELD (20°C, cPs):	500 - 600	KCSA-227
pH (as it is):	8.2 – 8.4	KCSA-014
DRY MATTER (%):	55 approx.	KCSA-092



KCE REFERENCE : D-178

RECOMMENDED OPERATIVE METHOD

- Start the process at room temperature.
- Add the NaOH 50% and TEA to the water and afterwards add SULFONAX[□] and Coconut Fatty Acid (previously melted).
- Continue with the addition of Citric Acid (50%).
- Adjust the pH (7.0 - 8.0) with NaOH 50%.
- Continue with the addition of non-ionic LEVENOL[□] F-200 and EMAL[□] 270D.
- Continue with the addition of the other additives: preservative, chelating agents, dyes, optical brighteners, perfume, keeping in mind supplier recommendations.
- Add the enzymes following supplier recommendations.
- Final pH adjustment (8.2 – 8.4 approx.) with NaOH (50%).
- Adjust weight with deionized water to 100%
- Unload the final product.

COMMENTS

- Ensure that pH is between 7.0 - 8.0 before LEVENOL[®] addition.
- In case of using enzymes, follow supplier recommendations regarding dosage, enzymes stabilizers and formulation procedure.

COMPONENTS

SULFONAX[□] (Dodecylbenzene Sulfonic Acid, ≈ 94% a.m.): anionic character. Primary surfactant, highly foaming. Good detergent properties.

LEVENOL[□] F-200 (Glycereth-6 Cocoate, ≈ 100% a.m.): non-ionic character. Mild surfactant that decreases the irritation level of anionic surfactants, increasing performance and dispersion of the dirt. Medium foaming and thickening surfactant. Eco-toxicologically friendly. It doesn't need any risk sentences or warnings on its label.

EMAL[□] 270D (Sodium Laureth Sulfate, ≈ 70% a.m.): anionic character. Primary surfactant, highly foaming and detergent.

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KCE REFERENCE : D-199

HDL D COLOR CARE

DESCRIPTION

- Liquid detergent for laundry machines
- Special product for color protection
- Recommended dosage: 100 mL product / wash

COMPOSITION

	%
SULFONAX®	10.4
EMAL® 270D (1)	4.3
LEVENOL® F-200	3.8
Coconut Fatty Acid	1.6
NaOH (50% solution)	3.0
Sodium Citrate	2.0
Enzymes (Protease, amylase...)	q.s.
Vinylpyrrolidone / Vinylimidazole Copolymer	q.s.
Optical brighteners	q.s.
Chelating agents	q.s.
Opacifier	q.s.
Dyes / Perfume	q.s.
Sodium Chloride	q.s.
Preservative	q.s.
Deionized Water	Up to 100%

(1) 4.3% of EMAL® 270D (SLES at 70% a.m.) can be substituted by 11.1% of EMAL® 227E (SLES at 27% a.m.).

TECHNICAL CHARACTERISTICS

		Kao Method
APPEARANCE (20°C) :	White Liquid	KCSA-258
VISCOSITY BROOKFIELD (20°C, cPs) :	300-400	KCSA-227
pH (100%) :	8.0-8.5	KCSA-014
DRY MATTER (%) :	22 approx.	KCSA-092



KCE REFERENCE : D-199

RECOMMENDED OPERATIVE METHOD

- Charge water at room temperature
- Add NaOH (50%) and afterwards add SULFONAX[®] and Coconut Fatty Acid (previously melted), homogenizing the blend after the addition of each component.
- Continue with the addition of Sodium Citrate.
- Check pH and adjust between 7.0 – 8.0 with NaOH (50%), if necessary.
- Continue with the addition of LEVENOL[®] F-200 and EMAL[®] 270D, homogenizing the blend after the addition of each component.
- Add the enzymes following supplier recommendations.
- Continue with the addition of the other additives: chelating agents, preservative, opacifier, optical brighteners, perfume, keeping in mind supplier recommendations.
- Final pH adjustment (8.0 – 8.5 approx.) with NaOH.
- Viscosity adjustment adding Sodium Chloride.
- Adjust weight with Deionized Water to 100%.
- Unload the final product.

COMMENTS

- Ensure that pH is between 7.0 - 8.0 before LEVENOL[®] F-200 addition.
- In case of using enzymes, follow supplier recommendations regarding dosage, enzyme stabilizers and formulation procedure.

COMPONENTS

SULFONAX[®] (Dodecyl Benzene Sulfonic Acid, ≈ 94% a.m.): anionic character. Primary surfactant, highly foaming. Good detergent properties.

EMAL[®] 270D (Sodium Laureth Sulfate, ≈ 70% a.m.): anionic character. Primary surfactant, highly foaming and detergent.

LEVENOL[®] F-200 (Glycereth-6 Cocoate, ≈ 100% a.m.): non-ionic character. Mild surfactant that decreases the irritation level of anionic surfactants, increasing performance and dispersion of the dirt. Medium foaming and good hydrotropic properties. Eco-toxicologically friendly. It doesn't need any risk sentences or warnings on its label.

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KCE REFERENCE : D-181

Concentrated HDLD (3X)

DESCRIPTION

- Regular Heavy-duty Liquid detergent for laundry machines
- Concentrated product (3X) without solvents
- Recommended dosage: 35 mL product / wash

COMPOSITION

	%
EMAL [□] 270D ⁽¹⁾	11.5
LEVENOL [□] F-200	27.5
Coconut Fatty Acid	8.0
NaOH (50%)	3.5 approx.
Citric Acid (50%)	3.5
Optional ingredients:	
Enzymes (Protease, amylase...)	q.s.
Chelating agents	q.s
Optical brighteners	q.s
Dyes / Perfume	q.s
Opacifier	q.s
Preservative	q.s
Deionised Water	Up to 100%

(1) 11.5% of EMAL[□] 270D can be replaced by EMAL[□] 270E or by 29.8% approx. of EMAL[□] 227E or EMAL[□] 228D

TECHNICAL CHARACTERISTICS

		Kao Method
APPEARANCE (20°C):	Transparent liquid	KCSA-258
VISCOSITY BROOKFIELD (20°C, cPs):	200 - 300	KCSA-227
pH (as it is):	8.5 – 9.0	KCSA-014
DRY MATTER (%):	49 approx.	KCSA-092



KCE REFERENCE : D-181

RECOMMENDED OPERATIVE METHOD

- Charge water.
- Add NaOH and afterwards Coconut Fatty Acid (previously melted).
- Blend may be warmed up to facilitate the solubilisation of fatty acid.
- Continue with the addition of Citric Acid.
- Check pH and adjust between 6.5-7.5, if necessary.
- Continue with the addition of LEVENOL® F-200 and EMAL® 270D, homogenizing the blend after the addition of each component.
- Add the enzymes following supplier recommendations.
- Continue with the addition of the other additives: chelating agents, preservative, , opacifier, optical brighteners, perfume, keeping in mind supplier recommendations.
- Final pH adjustment (8.5 – 9.0 approx.) with NaOH.
- Adjust weight with deionized water to 100%.
- Unload the final product.

COMMENTS

- Ensure that pH is between 7.0 - 8.0 before LEVENOL® F-200 addition.
- In case of using enzymes, follow supplier recommendations regarding dosage, enzymes stabilizers and formulation procedure.

COMPONENTS

LEVENOL[□] F-200 (Glycereth-6 Cocoate, ≈ 100% a.m.): non-ionic character. Mild surfactant that decreases the irritation level of anionic surfactants, increasing performance and dispersion of the dirt. Medium foaming and thickening surfactant. Eco-toxicologically friendly. It doesn't need any risk sentences or warnings on its label.

EMAL[□] 270D (Sodium Laureth Sulfate, ≈ 70% a.m.): anionic character. Primary surfactant, highly foaming and detergent.

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KCE REFERENCE : D-182

NON LABELLED HDLD

DESCRIPTION

- Regular Heavy-Duty liquid detergent for laundry machines
- Non Labelled
- Recommended dosage: 100 mL product / wash

COMPOSITION

COMPOSITION	%
EMAL [□] 270D ⁽¹⁾	4.9
LEVENOL [□] F-200	12.0
AMIDET [□] N	3.0
Coconut Fatty Acid	3.5
NaOH (50% solution)	1.5 approx.
Citric Acid (50% solution)	3.5
Sodium Chloride	1.0 approx.
Optional ingredients:	
Enzymes (protease, amylase...)	q.s.
Chelating agents	q.s.
Optical brighteners	q.s.
Dyes / Perfume	q.s.
Opacifier	q.s.
Preservative	q.s.
Deionized Water	Up to 100%

(1) 4.9% of EMAL[□] 270D (SLES at 70% a.m.) can be substituted by 12.7% of EMAL[□] 227E (SLES at 27% a.m.).

TECHNICAL CHARACTERISTICS

		Kao Method
APPEARANCE (20°C) :	Transparent Liquid	KCSA-258
VISCOSITY BROOKFIELD (20°C, cPs) :	100 - 200	KCSA-227
pH (100%) :	8.0 – 8.5	KCSA-014
DRY MATTER (%) :	26 approx.	KCSA-092



KCE REFERENCE : D-182

RECOMMENDED OPERATIVE METHOD

- Charge water.
- Add NaOH and afterwards Coconut Fatty Acid (previously melted).
- Blend may be warmed up to facilitate the solubilization of fatty acid.
- Continue with the addition of Citric Acid.
- Check pH and adjust between 6.5 - 7.5, if necessary.
- Continue with the addition of LEVENOL® F-200, EMAL® 270D and AMIDET® N, homogenizing the blend after the addition of each component.
- Add the enzymes following supplier recommendations.
- Continue with the addition of the other additives: chelating agents, preservative, opacifier, optical brighteners, perfume, keeping in mind supplier recommendations.
- Final pH adjustment (8.0 – 8.5 approx.) with NaOH.
- Viscosity adjustment adding Sodium Chloride.
- Adjust weight with Deionized Water to 100%.
- Unload the final product.

COMMENTS

- Ensure that pH is between 7.0 - 8.0 before LEVENOL® F-200 addition.
- In case of using enzymes, follow supplier recommendations regarding dosage, enzyme stabilizers and formulation procedure.

COMPONENTS

EMAL[□] 270D (Sodium Laureth Sulfate, ≈ 70% a.m.): anionic character. Primary surfactant, highly foaming and detergent.

LEVENOL[□] F-200 (Glycereth-6 Cocoate, ≈ 100% a.m.): non-ionic character. Mild surfactant that decreases the irritation level of anionic surfactants, increasing performance and dispersion of the dirt. Medium foaming and thickening surfactant. Ecotoxicologically friendly. It doesn't need any risk sentences or warnings on its label.

AMIDE[□]_T N (PEG-4 Rapeseedamide, ≈ 95% a.m.): non-ionic character. It acts as a viscosity modifier allowing to reduce the quantity of added NaCl. Nitrosamines free thickener. It improves the quality of the foam and avoids the excessive degreasing effect and the irritation of the anionic surfactants on the skin. Multi-functional surfactant. (*previous name: AMINOL N*)

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KCE REFERENCE : D-026

HEAVY DUTY LIQUID DETERGENT HDLD

DESCRIPTION

- Liquid detergent for laundry machines
- Low foaming detergent
- Biodegradable product and environmentally friendly

COMPOSITION

	%
EMAL [®] 227E ⁽¹⁾	31.7
ALFANOX [®] 46	11.4
LEVENOL [®] C-201	10.4
ICTEOL K-50	14.6
Ethyl Alcohol (EtOH)	4.2
Propylenglycol	5.2
Preservative	q.s.
Dye(s)	q.s.
pH modifier	q.s.
Chelating Agent	q.s.
Optical Brightner	q.s.
Enzymes (protease, amylase,...)	q.s.
Deionised Water	Up to 100%

(1) 31.7% of EMAL[®] 227E can be replaced by 12% of EMAL[®] 270E

TECHNICAL CHARACTERISTICS

		Kao Method
APPEARANCE (20°C) :	Transparent liquid	KCSA-258
pH (100%) :	7.5 - 8.5	KCSA-014
DRY MATTER (%) :	31 aprox.	KCSA-092



KCE REFERENCE : D-026

RECOMMENDED OPERATIVE METHOD

- Process at room temperature.
- Add ALFANOX[®] 46 and EMAL[®] 227E to the water. Stir after each addition.
- Continue with the addition of ethyl alcohol and propylenglycol.
- Add the non-ionic LEVENOL[®] C-201 and the ICTEOL[®] K-50.
- Continue with the addition of the other additives: preservative, fragrance, dye(s) (diluted in water), keeping in mind supplier recommendations.
- Adjust pH.
- Adjust weight with deionized water, to 100%
- Unload the final product.

COMPONENTS

ALFANOX[®] 46 (Sodium α -Olefin Sulphonate, \approx 37% a.m.): anionic character. Primary surfactant. It increases foam volume and improves dispersion of the dirt.

EMAL[®] 227E (Sodium Laureth Sulfate, \approx 27% a.m.): anionic character. Primary surfactant, highly foaming and detergent.

ICTEOL[®] K-50 (Potassium Oleate, \approx 50% a.m.): anionic character. Detergent soap and foam controller.

LEVENOL[®] C-201 (Glycereth-17 Cocoate, \approx 100% a.m.): non-ionic character. Mild surfactant. It decreases the irritation level of anionic surfactants, increasing performance and dispersion of the dirt. Foaming controlled surfactant. Eco-toxicologically friendly. It doesn't need any risk sentences or warnings on its label.

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