



#### FOR YOUR PROTECTION

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## Kao Corporation

Address : 1-3, Bunka, 2-chome, Sumida-ku, Tokyo 131-8501, Japan

Tel : +81-3-5630-7700 Fax : +81-3-5630-7889

URL : <http://chemical.kao.com/index.html> E-mail : [chemical@kao.co.jp](mailto:chemical@kao.co.jp)



# SURFACTANTS

# Kao Chemical Division Offers

## Versatile surfactants for :

-Acouring	-Anticaking
-Antistaticity	-Cleaning
-Defoaming	-Detergent
-Disinfection	-Dispersion
-Emulsification	-Floatation
-Foaming	-Lubrication
-Pearling	-Penetration
-Softening	-Wetting

## Notes:

1) For packing  
The abbreviations for packing are as follows:

BG .....	Multiply paper bag
CN .....	Square tin can
PC .....	Packing case
DM .....	Lined steel drum

2) For the colum of "Remarks"

The abbreviations are identified as follows:

F .....	Products publicly announced as food additive
JP .....	Products approved by the Japanese Pharmacopoeia

C .....	Products meeting the Japanese Standard of Cosmetic Ingredients (JSCI)
V .....	Products approved for use in PVC for food contact applications by JHPA (The Japan Hygienic PVC Association.)

PS .....	Products approved for use in polyolefin and styrene plastics for food contact applications, by the JHOSPA (The Japan Hygienic Olefin and Styrene Plastics Association.)
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# 1 Anionic Surfactants

## 1-1 Alkyl sulfates

Product name	Chemical composition	Chemical structure	Form at room temp.	Active or solid (approx.%)	
EMAL 0	Sodium lauryl sulfate (High purity product)	RO-SO <sub>3</sub> M [ M:Na, NH(CH <sub>2</sub> CH <sub>2</sub> OH) <sub>3</sub> , NH <sub>4</sub> ]	White, powder	99	
EMAL 10G	Sodium lauryl sulfate		White, granule	98	
EMAL 2F PASTE			Light yellow, clear viscous liquid	30	
EMAL 2FG			White, granule	98	
EMAL 2F-30			Light yellow, clear viscous liquid	30	
EMAL 40 PASTE	Sodium fatty alcohol sulfate		Light yellow, paste	30	
EMAL 40 POWDER			White, powder	37	
EMAL TD	Triethanolamine lauryl sulfate		Light yellow, liquid	40	
LATEMUL AD-25	Ammonium lauryl sulfate		Light yellow, liquid	24	

Product name	Characteristics and benefits	Main application	Packing and net weight(kg.)	Remarks
EMAL 0	High foaming for use in shampoo and dentifrice formulation.	Foaming agent, Detergent, and Dispersant for pharmaceuticals and cosmetics.	15 PC	C, PS
EMAL 10G			20 BG	PS
EMAL 2F PASTE			18 CN	PS
EMAL 2FG	Excellent biodegradability and stability in emulsion polymerization of PVC paste resin and SBR latex due to low content of inorganics.	Emulsifier for emulsion polymerization of synthetic rubber and resin.	20 BG	PS
EMAL 2F-30			18 CN, 200 DM	
EMAL 40 PASTE	Strong cleaning ability (Good hands after washing). Strong wetting and penetrating. High biodegradability.	Scouring and soaping agent for textile. Wetting agent for agrochemical. Additive for fertilizer.	20 PC	
EMAL 40 POWDER			10 BG	
EMAL TD	Good foaming especially with oily soil. Soft hands after shampooing.	Liquid detergent base. Shampoo base.	18 CN, 200 DM	C
LATEMUL AD-25	Prepare fine and dense bubbles. Good compatible with various additives.	Emulsifier for synthetic resin emulsion polymerization.	17 CN, 180 DM	C

## 1-2 Polyoxyethylene alkyl ether sulfates

Product name	Chemical composition	Chemical structure	Form at room temp.	Active or solid (approx.%)
EMAL 20C	Sodium polyoxyethylene lauryl ether sulfate		Light yellow, liquid	25
EMAL E-27C			Light yellow, liquid	27
EMAL 270J			Light yellow, viscous liquid	70
EMAL 20CM	Sodium polyoxyethylene alkyl ether sulfate		Light yellow, liquid	25
EMAL D-3-D			Light yellow, liquid	26
EMAL D-4-D			Light yellowish brown, liquid	35
LATEMUL E-118B			Light yellow, liquid	26
LATEMUL E-150			Light yellowish brown, liquid	33
LATEMUL WX			Light yellow, liquid	26
LEVENOL WX			Light yellow, liquid	26
EMAL 20T			Light yellow, liquid	40

Product name	Characteristics and benefits	Main application	Packing and net weight(kg.)	Remarks
EMAL 20C	Suitable as liquid shampoo base. Good cleansing ability at lower concentration. High foaming. Low order of skin irritation.	Foaming agent for pharmaceuticals and cosmetics. Base for liquid detergent. Base for shampoos.	18 CN, 200 DM	C
EMAL E-27C			18 CN, 200 DM	C
EMAL 270J			210 DM	C
EMAL 20CM			18 CN, 200 DM	C
EMAL D-3-D	Provide a good stability of emulsion polymerization. Good foam ability, good bubble.	Emulsifier for emulsion polymerization. Foaming agent.	18 CN, 200 DM	
EMAL D-4-D			210 DM	
LATEMUL E-118B	Good biodegradability emulsifier. Good polymerization stability to polyvalent cation of vinyl acetate and acryl acid ester polymerization.	Emulsifier for synthetic resin emulsion polymerization.	18 CN, 200 DM	
LATEMUL E-150			18 CN, 200 DM	
LATEMUL WX			18 CN	V
LEVENOL WX	Efficient in wetting, emulsification and dispersion. One bath dyeing can be done.	Emulsifier, Dispersant, Dyeing auxiliary.	18 CN	V
EMAL 20T	High stability to polycations.	Foaming agent and detergent for pharmaceuticals and cosmetics.	18 CN, 200 DM	C

### 1-3 Alkylbenzene sulfonates, Other sulfonates

Product name	Chemical composition	Chemical structure	Form at room temp.	Active or solid (approx.%)	
NEOPELEX GS	Alkyl benzene sulfonic acid		Brown, viscous liquid	>96	
NEOPELEX G-15	Sodium dodecyl benzene sulfonate (Soft type)		Light yellow, liquid	16	
NEOPELEX G-25			Clear yellow, viscous liquid	26	
NEOPELEX G-65			Light yellow, paste	65	
NEOPELEX NO.6F POWDER	Dodecyl benzene sulfonate (Soft type)		White, powder	60	
PELEX NB-L	Sodium alkyl naphthalene sulfonate		Tan, liquid	35	
PELEX OT-P	Sodium dialkyl sulfosuccinate		Clear, liquid	70	
PELEX TR			Light yellow, clear liquid	70	
PELEX CS			White, solid	45	
PELEX TA			Light yellow, paste	35	
PELEX SS-L	Sodium alkyl diphenyl ether disulfonate		Yellowish brown, liquid	50	
PELEX SS-H			Yellowish brown, liquid	50	
LATEMUL PS	Sodium alkane sulfonate	R-SO3Na	Light yellow, liquid	40	

Product name	Characteristics and benefits	Main application	Packing and net weight(kg.)	Remarks	
NEOPELEX GS	Acid type.	Industrial detergent, Versatile wetter, Emulsifier for polymerization. Base for laundry detergent.	18 CN, 200 DM		
NEOPELEX G-15	Efficient in cleansing mineral oil soil. Excellent wetting and penetrating. Good biodegradability.		18 CN, 200 DM		
NEOPELEX G-25			Bulk		
NEOPELEX G-65			20 PC		
NEOPELEX NO.6F POWDER			10 BG	PS	
PELEX NB-L	Efficient in wetting and penetrating. Chemical stability against hard water, alkali and salt.	Wetting and penetrating agent.	18 CN, 200 DM	PS	
PELEX OT-P	Amphipatic property. Good wetting and penetrating property.	Wetting and penetrating agent. Emulsifier for emulsion polymerization.	18 CN, 200 DM	V, PS	
PELEX TR			17 CN		
PELEX CS	Emulsion of high interfacial tension is obtained.		18 CN	PS	
PELEX TA	High foaming and homogenous foams at high temperature.	Foam controller for latex.	190 DM		
PELEX SS-L	Low foaming in emulsion polymerization. Improved mechanical stability of latex. Low order of coagulation by latex.	Emulsifier for emulsion polymerization.	18 CN, 200 DM	PS	
PELEX SS-H			18 CN, 200 DM	PS	
LATEMUL PS	High resistance to hydrolysis. High biodegradability.	Emulsifier for the emulsion polymerization of PVC and PVDC.	18 CN, 180 DM	PS	

### 1-4 Reactive anionic surfactant

Product name	Chemical composition	Chemical structure	Form at room temp.	Active or solid (approx.%)
LATEMUL PD-104	Special anionic surfactant	$\text{CH}_2-\text{CH}_2-\text{C}(\text{CH}_3)=\text{CH}_2-\text{O}-(\text{A}_1\text{O})_m-(\text{A}_1\text{O})_n-\text{SO}_3\text{NH}_4^+$	Light yellow, liquid	20

Product name	Characteristics and benefits	Main application	Packing and net weight(kg.)	Remarks
LATEMUL PD-104	Emulsifier for soap free emulsion latex. Can be used as the polymer modifiers.	Emulsifier for synthetic resin emulsion polymerization. Modifier for synthetic resin emulsion.	18 CN, 200 DM	

## 1-5 Fatty acid salts

Product name	Chemical composition	Chemical structure	Form at room temp.	Active or solid (approx.%)
NS SOAP	Sodium soap of partially hydrogenated tallow fatty acid	RCOONa	White, needle	90
SS-40N	Sodium soap of stearic acid		White, flake	87
KS SOAP	Potassium soap of partially hydrogenated tallow fatty acid	RCOOK	White, flake	90
OS SOAP	Potassium soap of oleic acid		Light yellow, clear liquid	16
FR-14	Potassium soap of castor oil		Light yellow, clear liquid	21
FR-25			Light yellow, clear liquid	33

Product name	Characteristics and benefits	Main application	Packing and net weight(kg.)	Remarks
NS SOAP	Refined soap for emulsion polymerization of synthetic rubber and resin.	Emulsifier for emulsion polymerization of synthetic rubber and resin.	20 BG	PS
SS-40N			20 BG	
KS SOAP			20 BG	PS
OS SOAP			200 DM	PS
FR-14	Good foaming and foam stability.	Foaming agent, for foam rubber.	18 CN	PS
FR-25			18 CN, 200 DM	PS

## 1-6 Other Anionic surfactants

Product name	Chemical composition	Chemical structure	Form at room temp.	Active or solid (approx.%)
ELEC F	Potassium salt of polyoxyethylene alkyl ether phosphate	$\text{RO}-(\text{CH}_2\text{CH}_2\text{O})_n \overset{\text{O}}{\underset{\text{OH}}{\text{P}}} \text{-OK}$	Light yellow, paste	70
LATEMUL ASK	Special carboxylic acid type surfactant	$\text{R}-\overset{\text{CH}_2\text{COOK}}{\text{CH}-\text{COOK}}$	Light tan-colored, liquid	28

Product name	Characteristics and benefits	Main application	Packing and net weight(kg.)	Remarks
ELEC F	Applicable to various fabrics. Can be used with anionic or nonionic oiling agent.	Versatile antistatic agents.	15 CN	
LATEMUL ASK	Low level of addition suffices in emulsion polymerization. Good salting out property. Imparts good latex stability.	Emulsifier for the emulsion polymerization of ABS and SBR.	18 CN, 200 DM	

## 1-7 Naphthalene sulfuric acid formaldehyde condensates

Product name	Chemical composition	Chemical structure	Form at room temp.	Active or solid (approx.%)
DEMOL N	Sodium $\beta$ -naphthalene sulfonate formaldehyde condensate		Light tan-colored, powder	100
DEMOL NL			Dark brown, liquid	41
DEMOL RN			Brown, powder	100
DEMOL RN-L			Dark brown, liquid	41
DEMOL T			Light tan-colored, powder	100
DEMOL T-45			Dark brown, liquid	45

Product name	Characteristics and benefits	Main application	Packing and net weight(kg.)	Remarks
DEMOL N	High purity product  Dispersants for versatile uses. Base for spreader of agricultural chemicals.	Dispersants for synthetic rubbers and resins in emulsion polymerization. Dyeing auxiliaries. Dispersing and wetting agents of paper processing aids.	20 BG	
DEMOL NL			20 CN, 200 DM	
DEMOL RN			20 BG	
DEMOL RN-L			20 CN	
DEMOL T			20 BG	
DEMOL T-45			200 DM	

## 1-8 Other Polymeric surfactants

Product name	Chemical composition	Chemical structure	Form at room temp.	Active or solid (approx.%)
DEMOL MS	Sodium arylsulfonate formaldehyde condensate	-	Brown, powder	100
DEMOL SN-B			Brown, powder	95
DEMOL SS-L			Dark Brown, liquid	30
DEMOL SC-30			Dark Brown, liquid	30
DEMOL EP	Special polycarboxylate type surfactant	-	Yellowish brown, liquid	25
POIZ 520			Light yellow, viscous liquid	40
POIZ 521				40
POIZ 530				40
POIZ 532A				40
HOMOGENOL L-18	Special polycarboxylate type surfactant	-	Light yellowish brown, liquid	40
HOMOGENOL L-1820				20
HOMOGENOL L-100	Special polymer type surfactant	-	Clear, liquid	-

Product name	Characteristics and benefits	Main application	Packing and net weight(kg.)	Remarks
DEMOL MS	High dispersibility to dyes and pigments at high temperature. DEMOL SN-B is especially suited for dispersing liquid dyes.	Dispersants especially for dyes, pigments, agricultural chemicals, etc. Dispersants for use in high temperature dyeing.	20 BG	
DEMOL SN-B			20 BG	
DEMOL SS-L			18 CN, 200 DM	
DEMOL SC-30			200 DM	
DEMOL EP	High performance in dispersing inorganics such as titan dioxide and clay in aqueous system.	Dispersants for use in paints. Dispersants for use in emulsion polymerization.	18 CN, 200 DM	
POIZ 520	High dispersibility in aqueous system for versatile inorganics, especially for calcium carbonate and ferrite.	Dispersants for filler and pigments for paints in aqueous system.	20 CN, 250 DM	
POIZ 521			20 CN, 250 DM	
POIZ 530			20 CN, 250 DM	
POIZ 532A			18 CN, 200 DM	
HOMOGENOL L-18	Improvement of dispersibility to pigments in oil phase. Inhibition of pigment flashing. Improvement of luster of paint. Antistaticity in printing.	Dispersants in oil system for use in paints, printing inks, etc. Diluent to be used is MIBK for the both types.	15 CN	Contain MIBK
HOMOGENOL L-1820			15 CN	Contain Toluene
HOMOGENOL L-100			15 CN, 160 DM	Contain Xylene

## 2 Nonionic Surfactants

### 1-5 Polyoxyethylene alkyl ethers

Product name	Chemical composition	Chemical structure	Form at room temp.	Cloud point (°C)	HLB
EMULGEN 102KG	Polyoxyethylene lauryl ether	$\text{RO}-(\text{CH}_2\text{CH}_2\text{O})_n-\text{H}$	Light yellow, liquid	–	6.3
EMULGEN 103			Clear liquid	–	8.1
EMULGEN 104P			Clear liquid	–	9.6
EMULGEN 105			Light yellow, liquid	–	9.7
EMULGEN 106			Light yellow, liquid	–	10.5
EMULGEN 108			Light yellow, liquid	40	12.1
EMULGEN 109P			Light yellow, liquid	83	13.6
EMULGEN 120			Light yellow, liquid	98	15.3
EMULGEN 123P			White, solid	>100	16.9
EMULGEN 130K			White, flake	>100	18.1
EMULGEN 147			Light yellow, solid	>100	16.3
EMULGEN 150			Light yellow, solid	>100	18.4
EMULGEN 210P	Polyoxyethylene cetyl ether	Polyoxyethylene stearyl ether	Light yellow, solid	–	10.7
EMULGEN 220			Light yellow, solid	98	14.2
EMULGEN 306P			Light yellow, wax	–	9.4
EMULGEN 320P			White, solid	91	13.9
EMULGEN 350			White, solid	>100	17.8
EMULGEN 404	Polyoxyethylene oleyl ether	$\text{RO}-(\text{CH}_2\text{CH}_2\text{O})_n-\text{H}$	Light yellow, liquid	–	8.8
EMULGEN 408			Light yellow, liquid	–	10.0
EMULGEN 409PV			Light yellow, liquid	55	12.0
EMULGEN 420			Light yellow, solid	91	13.6
EMULGEN 430			Light tan-colored solid	>100	16.2
EMULGEN 705			Light yellow, liquid	–	10.5
EMULGEN 707			Light yellow, liquid	33	12.1
EMULGEN 709			Light yellow, liquid	56	13.3
EMULGEN 1108	Polyoxyethylene alkyl ether	$\text{RO}-(\text{CH}_2\text{CH}_2\text{O})_n-\text{H}$	Colorless to light yellow, liquid	66	13.5
EMULGEN 1118S-70			Colorless to light yellow, liquid	>100	16.4
EMULGEN 1135S-70			Colorless to light yellow, liquid	>100	17.9
EMULGEN 1150S-60			Colorless to light yellow, liquid	>100	18.5
EMULGEN 2020G-HA	Polyoxyethylene octyldodecyl ether		Light yellow, solid	–	13.0
EMULGEN 2025G			Light yellow, solid	–	15.7
EMULGEN 4085	Polyoxyethylene myristyl ether		White, solid	>100	18.9

Product name	Characteristics and benefits	Main application	Packing and net weight(kg.)	Remarks
EMULGEN 102KG	Good solubility in oil, Good emulsifiability for oils.	Oil soluble emulsifier.	16 CM	
EMULGEN 103		Emulsifier for cosmetics.	180 DM	
EMULGEN 104P		Oil soluble emulsifier.	17 CN, 180 DM	C, PS
EMULGEN 105		Versatile emulsifier.	17 CN, 180 DM	PS
EMULGEN 106	Efficient in wetting and penetrating.	Emulsifier for cosmetics and penetrating.	17 CN, 190 DM	C, PS
EMULGEN 108		Detergent for general uses.	17 CN, 180 DM	PS
EMULGEN 109P		Emulsifier for emulsion polymerization.	17 CN	C
EMULGEN 120	Suitable for emulsion polymerization of PVAc and acrylic monomers.	Emulsifier for emulsion polymerization.	18 CN 200 DM	PS
EMULGEN 123P	Emulsifier to prepare O/W type emulsion.	Emulsifier for cosmetics and pharmaceuticals.	18 CN	C, PS
EMULGEN 130K	Suitable for emulsion polymerization of PVAc and acrylic monomers.	Emulsifier for emulsion polymerization.	20 PC	
EMULGEN 147		Emulsifier for cosmetics and waxes.	18 CN	PS
EMULGEN 150		Emulsifier for cosmetics and waxes.	18 CN, 200 DM	
EMULGEN 210P	Good emulsifiability for mineral oils and waxes.	Emulsifier for cosmetics and leather tanning.	17 CN	C, PS
EMULGEN 220		Emulsifier for cosmetics and waxes.	17 CN	C, PS
EMULGEN 306P		Emulsifier for cosmetics and waxes.	16 CN	C, PS
EMULGEN 320P		Emulsifier for cosmetics and waxes.	17 CN, 180 DM	C, PS
EMULGEN 350		Emulsifier for cosmetics and waxes.	18 CN	
EMULGEN 404	Good solubility in oil. Good emulsifiability for mineral oils.	Antistatic agent, Defoamer.	17 CN	PS
EMULGEN 408		Versatile emulsifier.	17 CN	PS
EMULGEN 409PV	Emulsifier to prepare O/W type emulsion.	Emulsifier for cosmetics.	17 CN	C
EMULGEN 420	Suitable for emulsion polymerization, Emulsifier for waxes.	Emulsifier for emulsion polymerization, Emulsifier for waxes.	17 CN	C, PS
EMULGEN 430		Emulsifier for emulsion polymerization, Level dyeing agent.	18 CN	PS
EMULGEN 705	Good solubility in oil. Good emulsifiability for oils.	Emulsifier for mineral oils. Emulsifier for water-soluble cutting oil.	17 CN, 200 DM	PS
EMULGEN 707	Good biodegradability. Good moist and penetrating effect.	Emulsifier for cosmetics. Wetting and penetrating agent, general emulsifier.	18 CN, 200 DM	PS
EMULGEN 709		Emulsifier for cosmetics. Wetting and penetrating agent, general emulsifier.	18 CN, 200 DM	PS
EMULGEN 1108	Suitable for emulsion polymerization.	Emulsifier for emulsion polymerization.	18 CN, 190 DM	
EMULGEN 1118S-70			18 CN, 200 DM	
EMULGEN 1135S-70			18 CN, 200 DM	
EMULGEN 1150S-60			19 CN, 220 DM	
EMULGEN 2020G-HA	Superior in dissolution of the oil.	Emulsifier for cosmetics.	18 CN	C
EMULGEN 2025G		Emulsifier for cosmetics.	17 CN	C
EMULGEN 4085	Suitable for emulsion polymerization of PVAc and acrylic monomers.	Emulsifier for emulsion polymerization.	20 PC	

## 2-2 Polyoxyalkylene derivatives

Product name	Chemical composition	Chemical structure	Form at room temp.	Cloud point (°C)	HLB
EMULGEN LS-106	Polyoxyalkylene alkyl ether	$\text{RO}-(\text{CH}_2\text{CH}_2\text{O})_m(\text{CH}_2\text{CH}_2\text{O})_n\text{H}$	Clear to light yellow, liquid	34	12.5
EMULGEN LS-110			Clear to light yellow, liquid	73	13.4
EMULGEN LS-114			Clear to light yellow, liquid	88	14.0
EMULGEN MS-110			Clear to light yellow, liquid	55	12.7
EMULGEN A-60	Polyoxyethylene distyrenated phenyl ether	$\text{O}-(\text{CH}_2\text{CH}_2\text{O})_m(\text{CH}_2\text{CH}_2\text{O})_n\text{H}$	Light yellow, liquid	61	12.8
EMULGEN A-90			Light yellow, liquid	90	14.5
EMULGEN A-500			White, solid	>100	18.0
EMULGEN B-66	Polyoxyethylene tribenzyl phenyl ether	$\text{O}-(\text{CH}_2\text{CH}_2\text{O})_m(\text{CH}_2\text{CH}_2\text{O})_n\text{H}$	Brown, liquid	66	13.2
EMULGEN PP-290	Polyoxyethylene polyoxypolypropylene glycol *MW (approx.) : 8,000	$\text{HO}-(\text{CH}_2\text{CHO})_m(\text{CH}_2\text{CH}_2\text{O})_n\text{H}$	White, flake	>100	-

Product name	Characteristics and benefits	Main application	Packing and net weight(kg.)	Remarks
EMULGEN LS-106	Efficient in cleaning ability. Suitable for high concentrated detergent. Improved the fluidity at low temperature.	Detergent for general uses.	17 CN, 200 DM	
EMULGEN LS-110			18 CN, 200 DM	
EMULGEN LS-114			18 CN, 210 DM	
EMULGEN MS-110			18 CN, 200 DM	
EMULGEN A-60	Low foaming dispersant for pigments in paints.	Low foaming wetting and penetrating. Good affinity with versatile pigments.	18 CN, 200 DM	PS
EMULGEN A-90			18 CN	PS
EMULGEN A-500			20 BG	
EMULGEN B-66			18 CN	
EMULGEN PP-290	Low foaming.	Low foaming detergent. Emulsifier for emulsion polymerization.	20 BG	

## 2-3 Reactive nonionic surfactant

Product name	Chemical composition	Chemical structure	Form at room temp.	Cloud point (°C)	HLB
LATEMUL PD-420	Polyoxyalkylene alkenyl ether	$\text{CH}_2-\text{CH}_2-\text{C}(\text{CH}_3)=\text{CH}_2$ $\text{O}-(\text{A}_1\text{O})_m(\text{A}_2\text{O})_n\text{H}$	White, solid	83	12.6
LATEMUL PD-430			White, solid	95	14.4
LATEMUL PD-430S			Clear to light yellow, liquid	95	14.4
LATEMUL PD-450			White, solid	>100	16.2

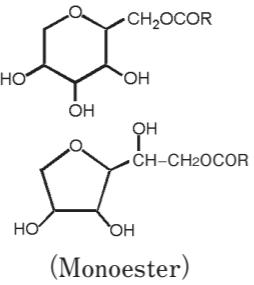
Product name	Characteristics and benefits	Main application	Packing and net weight(kg.)	Remarks
LATEMUL PD-420	Good polymerization stability. Provide rich soap emulsion by high co-polymerization ratio with resins. Excellent polymerization stability combination with anionic surfactants.	Emulsifier and modifier for emulsion polymerization.	18 CN	
LATEMUL PD-430			18 CN	
LATEMUL PD-430S			18 CN	
LATEMUL PD-450			18 CN	

## 2-4 Sorbitan fatty acid esters (General use)

Product name	Chemical composition	Chemical structure	Form at room temp.	HLB
RHEODOL SP-L10	Sorbitan monolaurate	<p>(Monoester)</p>	Light brown, liquid	8.6
RHEODOL SP-P10	Sorbitan monopalmitate		Yellowish brown, beads	6.7
RHEODOL SP-S10V	Sorbitan monostearate		Light yellow, beads	4.7
RHEODOL SP-S20	Sorbitan distearate		Light yellow, flake	4.4
RHEODOL SP-S30V	Sorbitan tristearate		Light yellow, beads	2.1
RHEODOL SP-O10V	Sorbitan monooleate		Yellowish brown, liquid	4.3
RHEODOL SP-O30V	Sorbitan trioleate		Yellowish brown, liquid	1.8
RHEODOL SUPER SP-L10	Sorbitan monolaurate		Light yellow, liquid	8.6
RHEODOL AS-10V	Sorbitan monostearate		Light yellow, solid	4.7
RHEODOL AO-10V	Sorbitan monooleate		Light yellow, liquid	4.3
RHEODOL AO-15V	Sorbitan sesquioleate		Light yellow, liquid	3.7

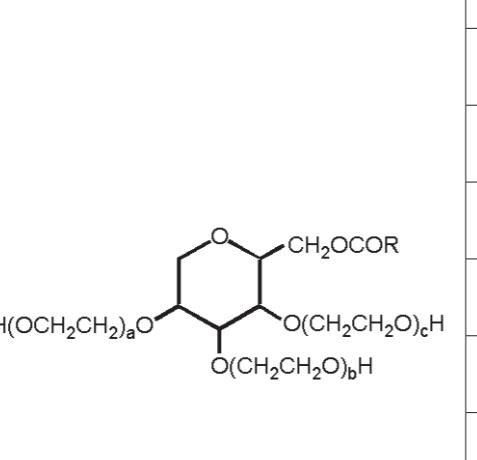
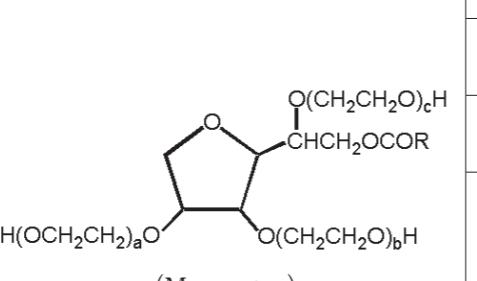
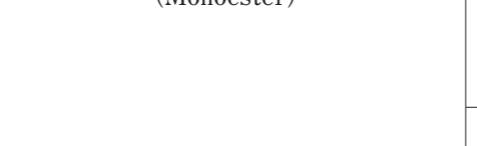
Product name	Characteristics and benefits	Main application	Packing and net weight(kg.)	Remarks
RHEODOL SP-L10	Highly lipophilic emulsifiers. Good O/W emulsion is obtained by combined use with RHEODOL TW series products.	Emulsifiers for cosmetics. Emulsifiers and dispersants for the preparation of printing inks, printing pastes, paints, etc.	17 CN, 200 DM	C, PS
RHEODOL SP-P10			20 PC	C, PS
RHEODOL SP-S10V			20 PC	C, PS
RHEODOL SP-S20			20 BG	PS
RHEODOL SP-S30V			20 PC	C
RHEODOL SP-O10V			17 CN, 200 DM	C, PS
RHEODOL SP-O30V			17 CN, 190 DM	C, PS
RHEODOL SUPER SP-L10			17 CN, 200 DM	C
RHEODOL AS-10V	Suitable for emulsification in the preparation of cosmetics. RHEODOL AO-15 can prepare good W/O emulsion by single use.	Emulsifiers for the preparations of pharmaceuticals and cosmetics.	20 PC	C
RHEODOL AO-10V			17 CN	C
RHEODOL AO-15V			17 CN, 200 DM	C

## 2-5 Sorbitan fatty acid esters (Food additive)

Product name	Chemical composition	Chemical structure	Form at room temp.	HLB
EMASOL L-10V	Sorbitan monolaurate	 (Monoester)	Light brown, liquid	8.6
EMASOL P-10V	Sorbitan monopalmitate		Yellowish brown, beads	6.7
EMASOL S-10V	Sorbitan monostearate		Light yellow, beads	4.7
EMASOL O-10V	Sorbitan monooleate		Yellowish brown, liquid	4.3

Product name	Characteristics and benefits	Main application	Packing and net weight(kg.)	Remarks
EMASOL L-10V	Publicly approved food additive. Emulsifiers for the preparations of whip cream, coffee whitener and caramel. Emulsifiers and foaming agents for flour paste.	Emulsifiers for foods.	17 CN	F, V
EMASOL P-10V			10 PC, 20 PC	F
EMASOL S-10V			10 PC, 20 PC	F, V
EMASOL O-10V			17 CN	F

## 2-6 Polyoxyethylene sorbitan fatty acid esters

Product name	Chemical composition	Chemical structure	Form at room temp.	HLB
RHEODOL TW-L120	Polyoxyethylene sorbitan monolaurate	 (Monoester)	Light yellow, liquid	16.7
RHEODOL TW-L106			Light yellow, liquid	13.3
RHEODOL TW-P120			Light yellow, liquid	15.6
RHEODOL TW-S120V			Light yellow, liquid	14.9
RHEODOL TW-S106V	Polyoxyethylene sorbitan monostearate	 (Monoester)	White, solid	9.6
RHEODOL TW-S320V			White, solid	10.5
RHEODOL TW-O120V			Light yellow, liquid	15.0
RHEODOL TW-O106V			Light yellowish brown, liquid	10.0
RHEODOL TW-O320V	Polyoxyethylene sorbitan trioleate	 (Monoester)	Yellowish brown, liquid	11.0
RHEODOL TW-IS399C			Light yellow, solid	-
RHEODOL SUPER TW-L120			Light yellow, liquid	16.7

Product name	Characteristics and benefits	Main application	Packing and net weight(kg.)	Remarks
RHEODOL TW-L120	Highly hydrophilic emulsifier, dispersant and solubilizer of oils. Desired HLB value is obtainable by the combinations with low hydrophilic emulsifiers (RHEODOL SP, RHEODOL A and RHEODOL M series).  Emulsifiers for the preparations of pharmaceuticals and cosmetics. Stabilizers for emulsion polymerization.		18 CN, 200 DM	C, V, PS
RHEODOL TW-L106			18 CN	
RHEODOL TW-P120			18 CN, 200 DM	C, PS
RHEODOL TW-S120V			18 CN	C, V, PS
RHEODOL TW-S106V			18 CN, 200 DM	C
RHEODOL TW-S320V			18 CN, 200 DM	C, PS
RHEODOL TW-O120V			18 CN, 200 DM	C, V, PS
RHEODOL TW-O106V			18 CN	C
RHEODOL TW-O320V			18 CN, 200 DM	C, PS
RHEODOL TW-IS399C	Hydrophilic emulsifier and dispersant, solubilizer for aroma chemicals and oils. Excellent emulsifier having suitable HLB combination with lipophilic emulsifiers like RHEODOL AS, AO, SP series.	Emulsifiers for pharmaceuticals and cosmetics. Viscosity modifier for pharmaceuticals and cosmetics.	18 CN	C
RHEODOL SUPER TW-L120	Improved color and odor of RHEODOL TW-L120. Lubricant for synthetic resin. Emulsifier and dispersant for color materials. Antifogging agent for synthetic resin films. Defoaming agent. Emulsifier for silicone resin.	Emulsifier for pharmaceuticals and cosmetics. Lubricant for synthetic resin. Emulsifier and dispersant for color materials. Antifogging agent for synthetic resin films. Defoaming agent. Emulsifier for silicone resin.	18 CN, 200 DM	C, V

## 2-7 Polyoxyethylene sorbitol fatty acid esters

Product name	Chemical composition	Chemical structure	Form at room temp.	HLB
RHEODOL 430V	Polyoxyethylene sorbitol tetraoleate	CH <sub>2</sub> O-(CH <sub>2</sub> CH <sub>2</sub> O) <sub>a</sub> -CO-C <sub>17</sub> H <sub>33</sub> CHO-(CH <sub>2</sub> CH <sub>2</sub> O) <sub>b</sub> -CO-C <sub>17</sub> H <sub>33</sub> CHO-(CH <sub>2</sub> CH <sub>2</sub> O) <sub>c</sub> -CO-C <sub>17</sub> H <sub>33</sub> CHO-(CH <sub>2</sub> CH <sub>2</sub> O) <sub>d</sub> -CO-C <sub>17</sub> H <sub>33</sub> CHO-(CH <sub>2</sub> CH <sub>2</sub> O) <sub>e</sub> -H CH <sub>2</sub> O-(CH <sub>2</sub> CH <sub>2</sub> O) <sub>f</sub> -H	Light yellow, liquid	10.5
RHEODOL 440V			Light yellow, liquid	11.8
RHEODOL 460V			Light yellow, paste	13.8

Product name	Characteristics and benefits	Main application	Packing and net weight(kg.)	Remarks
RHEODOL 430V	Suitable for emulsifying much polar oils such as vegetable oils and esters.	Emulsifiers for the preparations of cosmetics.	17 CN	C
RHEODOL 440V			17 CN, 180 DM	C
RHEODOL 460V			17 CN	C

## 2-8 Glycerol fatty acid esters (General use)

Product name	Chemical composition	Chemical structure	Form at room temp.	HLB
RHEODOL MS-50	Glycerol monostearate	CH <sub>2</sub> O-CO-R CHOH CH <sub>2</sub> OH (Monoester)	White, powder	2.8
RHEODOL MS-60			White, powder	3.5
RHEODOL MO-60	Glycerol monooleate		Light yellow, liquid	2.8
RHEODOL MS-165V	Glycerol monostearate (Self-emulsifying)		White, flake	11.0

Product name	Characteristics and benefits	Main application	Packing and net weight(kg.)	Remarks
RHEODOL MS-50	Highly lipophilic emulsifiers. O/W type emulsion is obtained by the combinations with RHEODOL TW series emulsifiers which are hydrophilic.	Emulsifiers for the preparations of pharmaceuticals and cosmetics.	20 PC	C
RHEODOL MS-60			10 PC	C
RHEODOL MO-60			17 CN	
RHEODOL MS-165V			20 PC	C

## 2-9 Glycerol fatty acid esters (Food additive)

Product name	Chemical composition	Chemical structure	Form at room temp.	HLB
EXCEL S-95	Molecular distilled monoglyceride (rich in monostearate)	CH <sub>2</sub> O-CO-R CHOH CH <sub>2</sub> OH (Monoester)	White, grain powder	3.8
EXCEL VS-95	Molecular distilled monoglyceride (rich in monostearate from vegetable oils)		White, grain powder	3.8
EXCEL O-95R	Molecular distilled monoglyceride (rich in monooleate from vegetable oils)		White, solid	3.5
EXCEL 200	Mono and diglyceride (rich in stearate and oleate)		White, granular powder	3.5
EXCEL 122V	Mono and diglyceride (rich in oleate and stearate)		White, paste	3.5
EXCEL P-40S	Mono and diglyceride (rich in stearate)		White, powder	-

Product name	Characteristics and benefits	Main application	Packing and net weight(kg.)	Remarks
EXCEL S-95	High purity products. Effective at a lower level of use. Mild taste. Good stability.	Emulsifiers for foods.	10 PC	F, PS
EXCEL VS-95			10 PC	F
EXCEL O-95R			15 PC	F
EXCEL 200	Suitable for ; Anti-staling of bread, prepared mix, etc. Emulsification for the preparations of margarine and shortening. Emulsification and dispersion for the preparation of peanut butter.	Emulsifiers for foods. Anti-staling of bread, prepared mix, etc.	10 PC	F, PS
EXCEL 122V			15 PC	F, PS
EXCEL P-40S			10 PC	F, PS

## 2-10 Polyoxyethylene fatty acid esters

Product name	Chemical composition	Chemical structure	Form at room temp.	HLB	
EMANON 1112	Polyethyleneglycol monolaurate	RCO-O-(CH <sub>2</sub> CH <sub>2</sub> O) <sub>n</sub> H RCO-O-(CH <sub>2</sub> CH <sub>2</sub> O) <sub>n</sub> COR	Light yellow, liquid	13.7	
EMANON 3199V	Polyethyleneglycol monostearate		Light yellowish white, flake	19.4	
EMANON 3299V	Polyethyleneglycol distearate		Light yellowish white, flake	18.9	
EMANON 3299RV			Light yellowish white, flake	19.2	
EMANON 4110	Polyethyleneglycol monooleate		Light yellow, liquid	11.6	

Product name	Characteristics and benefits	Main application	Packing and net weight(kg.)	Remarks
EMANON 1112	Emulsifiers based on highly hydrophilic esters.  Excellent thickener which is effective for the preparation of liquid cosmetics and printing pastes for textiles.  Emulsifiers based on highly hydrophilic esters.	Versatile emulsifiers (Pharmaceuticals, cosmetics, printing pastes, emulsion polymerization ).	17 CN	C, PS
EMANON 3199V			20 BG	C, PS
EMANON 3299V			20 BG	C, PS
EMANON 3299RV			20 BG	C
EMANON 4110			17 CN, 200 DM	PS

## 2-11 Polyoxyethylene hydrogenated castor oils

Product name	Chemical composition	Chemical structure	Form at room temp.	HLB
EMANON CH-25	Polyoxyethylene hydrogenated castor oil	$\begin{array}{c} \text{CH}_2\text{O}-\text{CO}-(\text{CH}_2)_{10}-\text{CH}(\text{CH}_2)_5-\text{CH}_3 \\   \\ \text{CHO}-\text{CO}-(\text{CH}_2)_{10}-\text{CH}(\text{CH}_2)_5-\text{CH}_3 \\   \\ \text{CH}_2\text{O}-\text{CO}-(\text{CH}_2)_{10}-\text{CH}(\text{CH}_2)_5-\text{CH}_3 \\   \\ \text{O}-(\text{CH}_2\text{CH}_2\text{O})_n\text{H} \end{array}$	Light yellow, vaseline-like	10.7
EMANON CH-40			White, paste	12.5
EMANON CH-60(K)			White, paste	14.0
EMANON CH-80			White, solid	15.0

Product name	Characteristics and benefits	Main application	Packing and net weight(kg.)	Remarks
EMANON CH-25	High security surfactant to skin. Solubilizer especially for oil soluble material into water.	Emulsifiers for the preparations of pharmaceuticals and cosmetics.	18 CN, 200 DM	C
EMANON CH-40			15 CN, 200 DM	C
EMANON CH-60(K)			18 CN	C
EMANON CH-80			200 DM	C

## 2-12 Polyoxyethylene alkyl amines, Alkanolamides

Product name	Chemical composition	Chemical structure	Form at room temp.	HLB
AMIET 102	Polyoxyethylene alkyl amine	$\begin{array}{c} (\text{CH}_2\text{CH}_2\text{O})_n\text{H} \\   \\ \text{R}-\text{N} \\   \\ (\text{CH}_2\text{CH}_2\text{O})_m\text{H} \end{array}$	Yellow, liquid	6.3
AMIET 105			Yellowish brown, liquid	9.8
AMIET 105A			Brown, liquid	10.8
AMIET 302			Yellowish white, solid	5.1
AMIET 320			Yellowish brown, soft solid	15.4
AMINON L-02	Lauric acid diethanol amide	$\begin{array}{c} \text{CH}_2\text{CH}_2\text{OH} \\   \\ \text{R}-\text{CO}-\text{N} \\   \\ \text{CH}_2\text{CH}_2\text{OH} \end{array}$	White, solid	5.5
AMINON PK-02S	Fatty acid alkanol amide		Light yellow, liquid	5.8

Product name	Characteristics and benefits	Main application	Packing and net weight(kg.)	Remarks
AMIET 102	High adsorption in aqueous system.	Antistatic agent. Emulsifier. Dispersant.	16 CN, 180 DM	
AMIET 105			17 CN	
AMIET 105A			180 DM	
AMIET 302			180 DM	
AMIET 320			18 CN, 200 DM	
AMINON L-02	Excellent suds boosting, suds stabilizing etc., when used with other surfactants in shampoo and detergent.	Suds boosters for shampoo and detergent. Suds stabilizers for shampoo and detergent.	16 CN	C
AMINON PK-02S			18 CN	C

### 3 Cationic Surfactants

#### 3-1 Alkyl amine salts

Product name	Chemical composition	Chemical structure	Form at room temp.	Active or solid (approx.%)
ACETAMIN 24	Coconut alkyl amine acetate	[ R-NH <sub>3</sub> <sup>+</sup> ] [ CH <sub>3</sub> COO <sup>-</sup> ]	White, solid	>98
ACETAMIN 86	Stearyl amine acetate		Light yellow, flake	>99

Product name	Characteristics		Main application	Packing and net weight(kg.)	Remarks
	Pour point(°C)	Moisture(%)			
ACETAMIN 24	40~60	2 max.	Mineral flotation aids. Surface treating agents for pigments. Anticaking agents for fertilizers.	14 CN	
ACETAMIN 86	61~75	1 max.		20 BG	

#### 3-2 Quaternary ammonium salts

Product name	Chemical composition	Chemical structure	Form at room temp.	Active or solid (approx.%)
QUARTAMIN 24P	Lauryl trimethyl ammonium chloride		Clear, liquid	27
QUARTAMIN 86P CONC.	Stearyl trimethyl ammonium chloride		White, solid	63
QUARTAMIN 60W	Cetyl trimethyl ammonium chloride		Light yellow, liquid	30
QUARTAMIN 86W	Stearyl trimethyl ammonium chloride		Light yellow, liquid	28
QUARTAMIN D-86P	Distearyl dimethyl ammonium chloride		Light yellowish white, paste	75
SANISOL C	Alkylbenzyl dimethyl ammonium chloride		Clear, liquid	50
SANISOL B-50			Clear, liquid	50

Product name	Characteristics and benefits	Main application	Packing and net weight(kg.)	Remarks
QUARTAMIN 24P	Cationic surfactant for general use. Suitable for hair rinse base.	Antistatic agents. Emulsifiers - Dispersants. Dyeing auxiliaries. Surface treating agents. Hair rinse bases.	16 CN, 160 DM	C
QUARTAMIN 86P CONC.			15 CN	C
QUARTAMIN 60W	Suitable for hair rinse base.	Hair rinse bases.	17 CN	C
QUARTAMIN 86W			17 CN	C
QUARTAMIN D-86P	Suitable for textile softening and hair rinse base.	Softening agents for textile. Hair rinse base.	15 CN, 160 DM	C
SANISOL C	Water soluble benzalkonium type disinfectant and fungicide.	Disinfectant and fungicide listed in Japanese Pharmacopoeia.	18 PC, 100 DM	JP, PS
SANISOL B-50			18 PC, 100 DM	C, PS

### 4 Amphoteric Surfactants

#### 4-1 Alkyl betaines and Amine oxide

Product name	Chemical composition	Chemical structure	Form at room temp.	Active or solid (approx.%)
AMPHITOL 20BS	Lauryl betaine		Light yellow, liquid	31
AMPHITOL 24B			Light yellow, liquid	26
AMPHITOL 86B	Stearyl betaine		White, paste	26
AMPHITOL 20YB	Lauryl imidazolinium betaine		Light yellowish brown, liquid	40
AMPHITOL 20N	Lauryl dimethyl amine oxide		Light yellow, liquid	35

Product name	Characteristics and benefits	Main application	Packing and net weight(kg.)	Remarks
AMPHITOL 20BS	When used as shampoo base, they show: • Low irritancy to skin and eyes. • High and stable foaming. • Soft hands after shampooing. • Good affinity with other types of surfactants.	Shampoo bases. Antistatic agents. Fulling and milling of wool.	17 CN, 200 DM	C
AMPHITOL 24B			17 CN, 200 DM	C
AMPHITOL 86B			15 CN	C
AMPHITOL 20YB	Low irritation to skin and eyes.	Base for low irritation shampoo.	17 CN, 180 DM	C
AMPHITOL 20N	Foam and detergency improver. Suitable for reducing skin irritation.	Additive for dishwashing detergent.	16 CN, 180 DM	C