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PERFORMANCE CHEMICALS FOR LUBRICANT INDUSTRIES AND MACHINERY & METAL PROCESSING INDUSTRIES

1. **Lubricant Additives**
2. **Base Materials for Polyalkylene Glycol-Type Lubricants**
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6. **Rust Inhibitors**
7. **Water-Soluble Cutting Fluids**
8. **Emulsifiers for Metal Working Oils**
9. **Base Materials for Metal Cleaners**

IMPORTANT :

Before handling these products, refer to the current Safety Data Sheet for recommended protective equipment, and detailed precautionary and hazards information.

SANYO CHEMICAL PRODUCT OUTLINE

1-(1). Lubricant Additives (See page 6.)

Product Name	Principal Component (Product Form)	Uses and Features
ACLUBE P-2100	Methacrylate copolymer (Liquid)	ACLUBE P-2100 is a pour point depressant, suitable for medium-high viscosity base oils. It exhibits high shear stability.
ACLUBE P-4300	Methacrylate copolymer (Liquid)	ACLUBE P-4300 is a pour point depressant, particularly suitable for medium-high viscosity base oils.
ACLUBE P-4070	Methacrylate copolymer (Liquid)	ACLUBE P-4070 is a pour point depressant, particularly suitable for medium base oils.
ACLUBE P-2090	Methacrylate copolymer (Liquid)	ACLUBE P-2090 is a pour point depressant, suitable for medium-high viscosity base oils. It exhibits high shear stability.
ACLUBE P-D3000	Methacrylate copolymer (Liquid)	ACLUBE P-D3000 is a pour point depressant, suitable for medium-high viscosity base oils. It exhibits high dispersibility.
ACLUBE V-1040	Methacrylate copolymer (Liquid)	ACLUBE V-1040 is a viscosity index improver, suitable for ATF*, CVTF**, gear oils and hydraulic fluids. It exhibits high shear stability.
ACLUBE V-4000 V-4020 V-5040	Methacrylate copolymer (Liquid)	These products are viscosity index improvers, suitable for ATF*, gear oils and hydraulic fluids. They exhibit high thickening and low-temperature viscosity properties.
ACLUBE V-2041	Methacrylate copolymer (Liquid)	ACLUBE V-2041 is a viscosity index improver, suitable for ATF*, CVTF**, gear oils and hydraulic fluids. It exhibits high shear stability and low-temperature viscosity properties.
ACLUBE V-5000	Methacrylate copolymer (Liquid)	ACLUBE V-5000 is a viscosity index improver, suitable for engine oils and hydraulic fluids. It exhibits high thickening and low-temperature viscosity properties.
ACLUBE V-1030	Methacrylate copolymer (Liquid)	ACLUBE V-1030 is a viscosity index improver, suitable for gear oils, ATF*, CVTF** and hydraulic fluids. It exhibits high shear stability.
ACLUBE V-3020	Methacrylate copolymer (Liquid)	ACLUBE V-3020 is a viscosity index improver, suitable for ATF*, gear oils and hydraulic fluids. It exhibits high thickening and low-temperature viscosity properties.
ACLUBE V-2000	Methacrylate copolymer (Liquid)	ACLUBE V-2000 is a viscosity index improver, suitable for gear oils, ATF*, CVTF** and hydraulic fluids. It exhibits high shear stability and low-temperature viscosity properties for base oils.
ACLUBE V-D2000 V-D2020	Methacrylate copolymer (Liquid)	These products are viscosity index improvers, suitable for ATF*, gear oils and hydraulic fluids. They exhibit high dispersibility, shear stability and low-temperature viscosity properties for base oils.
ACLUBE V-1001 A-1060 V-1082	Methacrylate copolymer (Liquid)	These products are viscosity index improvers, suitable for ATF, CVTF, gear oils and hydraulic fluids. They exhibit high shear stability, viscosity index improvement and low-temperature viscosity properties.
ACLUBE V-4131	Methacrylate copolymer (Liquid)	ACLUBE V-4131 is a viscosity index improver, suitable for ATF, CVTF, gear oils and hydraulic fluids. It exhibits high viscosity index improvement and low-temperature viscosity.

* Automatic transmission fluids

** Continuously variable transmission fluids

1-(2). Lubricant Additives (See page 6.)

Product Name	Principal Component (Product Form)	Uses and Features
ACLUBE V-5030	Methacrylate copolymer (Liquid)	ACLUBE V-5030 is a viscosity index improver, suitable for engine oils and hydraulic fluids. It exhibits high shear stability and improvement effect of low-temperature properties.
ACLUBE V-D5020 V-D4000	Methacrylate copolymer (Liquid)	These products are viscosity index improvers, suitable for engine oils and hydraulic fluids. They exhibit high dispersibility and improvement effect of low-temperature properties.

2. Base Materials for Polyalkylene Glycol-Type Lubricants

Product Name	Principal Component (Product Form)	Uses and Features
NEWPOL LB Products	Polyoxypropylene glycol monoalkyl ether (Liquid)	These products are polyalkylene glycol-type lubricants used for various purposes including compressor oils, gear oils and grease. They leave no residue after combustion. They cause practically no swelling and no shrinkage of natural or synthetic rubbers. When extremely high heat resistance is required, it is recommended to use NEWPOL LB products containing antioxidants that are suffixed with X as product names. See page 7. NEWPOL LB products: Insoluble in water NEWPOL 50HB products: Soluble in water
NEWPOL 50HB Products	Poly(oxyethylene, oxypropylene) glycol monoalkyl ether (Liquid)	
NEWPOL 75H-90000	Poly(oxyethylene, oxypropylene) glycol (Liquid)	NEWPOL 75H-90000 is polyalkylene glycol-type lubricant used for lithium soap grease as well as high temperature grease compounded with graphite or molybdenum sulfide. It is soluble in water.

3. Base Materials for Water-Soluble Quenchants

Product Name	Principal Component (Product Form)	Uses and Features
NEWPOL 75H-90000	Poly(oxyethylene, oxypropylene) glycol (Liquid)	The recommended concentration: 2−3 wt %. These products help to control the cooling rate of metals to be hardened, including steel. NEWPOL 75H-90000: general-purpose type. NEWPOL NSQ-870: higher viscosity type of NEWPOL 75H-90000. NEWPOL 50HB products: low-viscosity type and resistant to heat deterioration. See page 7. PEG-20000: used for extremely hard steel. NEWPOL V-22F: desirable cooling performance even when used at low concentration.
NEWPOL 50HB Products	Poly(oxyethylene, oxypropylene) glycol monoalkyl ether (Liquid)	
PEG-20000	Polyethylene glycol (Flake)	
NEWPOL NSQ-870	Poly(oxyethylene, oxypropylene) glycol (Liquid)	
NEWPOL V-22F	Poly(oxyethylene, oxypropylene) polyol (Liquid)	

4. Base Materials for Hydraulic Fluids

Product Name	Principal Component (Product Form)	Uses and Features
NEWPOL 75H-90000	Poly(oxyethylene, oxypropylene) glycol (Liquid)	These products are base materials for water-and-glycol type hydraulic fluids. They excel in oiliness and load resistance.
NEWPOL V-10-C	Poly(oxyethylene, oxypropylene) polyol (Liquid)	
NEWPOL NSQ-800	Poly(oxyethylene, oxypropylene) polyol (Liquid)	NEWPOL NSQ-800 is a base material for water-and-glycol type hydraulic fluids. It excels in wear resistance.

5. Materials for Brake Fluids

Product Name	Principal Component (Product Form)	Uses and Features
NEWPOL SBF-200	Polyoxyalkylene glycol monoalkyl ether (Liquid)	NEWPOL SBF-200 is a solvent for brake fluids having a high boiling point. When it is used with NEWPOL SBF-101, the mixture imparts a favorable degree of rubber swelling. Boiling point: higher than 240 ˚C. Kinematic viscosity (-40 ˚C): approx. 1100 mm^2/s
NEWPOL SBF-605	Polyoxyalkylene glycol monoalkyl ether (Liquid)	NEWPOL SBF-605 is a solvent for brake fluids having a high boiling point. It swells rubber to a favorable degree. Boiling point: approx. 253 ˚C. Kinematic viscosity (-40 ˚C): approx. 930 mm^2/s
NEWPOL SBF-650	Polyoxyalkylene glycol monoalkyl ether borate (Liquid)	NEWPOL SBF-650 is a solvent for brake fluids having a high boiling point. The depression of its boiling point is minimally affected by moisture absorption. Boiling point: approx. 258 ˚C. Kinematic viscosity (-40 ˚C): approx. 925 mm^2/s
BFA-3	Proprietary compound (Liquid)	BFA-3 is a package type general-purpose additive for brake fluids with antioxidative and rust preventive properties. The recommended concentration: 2−3 wt % for brake fluids.
NEWPOL GEP-2800	Poly(oxyethylene, oxypropylene) triol (Liquid)	These products are base polymers for brake fluids. NEWPOL GEP-2800: water-soluble base polymer with high viscosity NEWPOL GP-3000: water-insoluble base polymer with high viscosity NEWPOL 50HB products: water-soluble base polymer with low-medium viscosities. See page 7.
NEWPOL GP-3000	Polyoxypropylene triol (Liquid)	
NEWPOL 50HB-260 **50HB-400** **50HB-660**	Poly(oxyethylene, oxypropylene) glycol monoalkyl ether (Liquid)	

6. Rust Inhibitors

Product Name	Principal Component (Product Form)	Uses and Features
DSA	Alkenyl succinic anhydride (Liquid)	DSA is an oil-soluble rust inhibitor, suitable for lubricants, hydraulic fluids, metal working oils, liquid fuels, mineral oils, turbine oils, etc. It has excellent rust preventive and demulsifying properties.
SANHIBITOR 150	Alkenyl succinic acid ester (Liquid)	SANHIBITOR 150 is an oil-soluble rust inhibitor. It imparts excellent rust preventive properties to lubricants such as turbine oils, and fuel oils when used in small amounts.
SANHIBITOR 102	Proprietary anionic surfactant (Liquid)	SANHIBITOR 102 is an oil-soluble rust inhibitor, suitable for turbine oils. Also, it is applicable for lubricants. It has excellent demulsifying properties.
IONET S-80 S-80S	Sorbitan monooleate (Liquid)	These products have excellent rust preventive, lubricating and emulsifying properties. They are effective as additives for rust preventive oils and metal working oils.
SANHIBITOR No.2-1	Proprietary anionic surfactant (Liquid)	SANHIBITOR No.2-1 is a water-soluble and oil-soluble rust inhibitor. It has excellent rust-preventive properties on both ferrous and non-ferrous metals. It produces less foam. The recommended concentration: 0.2−0.5 wt %.
SANHIBITOR No.50	Proprietary nonionic surfactant (Liquid)	SANHIBITOR No.50 is a water-soluble rust inhibitor. It produces less foam and is easily rinsed. It has excellent rust preventive properties and is resistant to heat and alkaline solutions. It is substitutable for alkanol amine. The recommended concentration: 0.2−0.5 wt %.
SANHIBITOR OMA-10	Proprietary anionic surfactant (Liquid)	SANHIBITOR OMA-10 is a water-soluble rust inhibitor, suitable for metal working oils. It prevents rust even on nonferrous metals. The recommended concentration: 0.3−0.5 wt %.

7. Water-Soluble Cutting Fluids

Product Name	Principal Component (Product Form)	Uses and Features
HIGHCLEAN CFK	Proprietary compound mainly composed from anionic surfactant (Liquid)	These products are suitable for light-duty cutting, including aluminum alloy. They exhibit high lubricities, cooling effects, rust preventive properties and putrefaction resistance.
HIGHCLEAN CF-50	Proprietary anionic surfactant (Liquid)	HIGHCLEAN CF-50 is suitable for cutting cast iron. It exhibits high lubricities, cooling effects, rust preventive properties and putrefaction resistance. The working solution does not discolor, because it is rust preventive.
HIGHCLEAN S-7001	Proprietary anionic surfactant (Liquid)	HIGHCLEAN S-7001 is suitable for light-duty cutting of steel and steel alloy. It exhibits high rust preventive properties and putrefaction resistance. The residual fluid is easily washed off from the processed metal parts.

8. Emulsifiers for Metal Working Oils

Product Name	Principal Component (Product Form)	Uses and Features
NAROACTY CL Products	Polyoxyalkylene alkyl ether (Liquid or solid)	NAROACTY CL products are suitable for producing various emulsifiers because they have a wide range of HLB values. Emulsion-type lubricant is produced when they are used with mineral oils. NAROACTY CL-40, CL-50 and CL-70 are applicable as emulsifiers for mineral oils. See page 7.
EMULMIN No. Products	Polyoxyethylene diol higher alkyl ether (Liquid, paste or solid)	EMULMIN No. products are emulsifiers for mineral oils, and fats and oils. EMULMIN 50 and 70 are useful as emulsifiers for mineral oils, while EMULMIN 70, 110 and 140 are suitable as emulsifiers for fats and oils. See page 8.
IONET D Products M Products	Polyoxyethylene diol fatty acid ester (Liquid or solid)	These products are used as emulsifiers and oiliness improvers for metal working oils. They have low toxicity and low irritancy. See page 8.

9. Base Materials for Metal Cleaners

Product Name	Principal Component (Product Form)	Uses and Features
NEWPOL PE Products	Polyoxyethylene polyoxypropylene glycol (Liquid, paste or flake)	NEWPOL PE products are suitable as cleaner bases for spray cleaning. They are stable in a wide pH range, and produce less foam. See page 9.
SEDORAN FF-180 FF-200 FF-210 FF-220	Proprietary nonionic surfactant (Liquid)	These products are suitable as cleaner bases for automatic cleaning, such as jet-cleaning and spray cleaning. They are stable in a wide pH range. They produce less foam and have high detergency and wettability.
SEDORAN SF-506	Proprietary nonionic surfactant (Liquid)	SEDORAN SF-506 is suitable as a base material for acid detergents and alkaline degreasing agents, and as a cleaner base for spray cleaning. It has high detergency and produces less foam.
SEDORAN SNP-112	Proprietary nonionic surfactant (Liquid)	SEDORAN SNP-112 is suitable as a base material for acid detergents and alkaline degreasing agents. It has high detergency, produces less foam, and is easily biodegradable.
SANNONIC Products	Polyoxyalkylene alkyl ether (Liquid)	SANNONIC products are less corrosive to metals, suitable as base materials for acid/alkaline detergents. They are also applicable as oiliness improvers, and emulsifiers for rolling oils and cutting oils. See page 9.
NAROACTY CL Products	Polyoxyalkylene alkyl ether (Liquid or solid)	NAROACTY CL products are less corrosive to metals, and are suitable as base materials for acid/alkaline detergents. They are also applicable as oiliness improvers and emulsifiers for rolling oils and cutting oils. See page 7.

Appendix

1. Typical Properties of ACLUBE Products

Product Name	Appearance (20 ± 5℃)	Color (ASTM)	Density g/cm^3 (15℃)	Kinematic Viscosity mm^2/s (100℃)	Neutralization Number
ACLUBE P-2090	Straw-colored liquid	0.5	0.91	300	0.1
ACLUBE P-2100		0.5	0.91	380	0.1
ACLUBE P-4070		0.5	0.91	470	0.1
ACLUBE P-4300		0.5	0.89	300	0.1
ACLUBE P-D3000		0.5	0.92	550	0.1
ACLUBE V-1001		0.5	0.94	360	0.1
ACLUBE V-1030		0.5	0.92	260	0.1
ACLUBE V-1040		0.5	0.93	510	0.2
ACLUBE A-1060		0.5	0.94	490	0.1
ACLUBE V-1082		0.5	0.92	350	0.1
ACLUBE V-2000		0.5	0.93	640	0.1
ACLUBE V-2041		0.5	0.94	850	0.1
ACLUBE V-3020		0.5	0.93	720	0.2
ACLUBE V-4000		0.5	0.91	830	0.1
ACLUBE V-4020		0.5	0.91	530	0.1
ACLUBE V-4131		0.5	0.88	850	0.1
ACLUBE V-5000		0.5	0.91	1,400	0.1
ACLUBE V-5030		0.5	0.91	1,000	0.2
ACLUBE V-5040		0.5	0.90	1,700	0.1
ACLUBE V-D2000		0.5	0.932	350	0.2
ACLUBE V-D2020		0.5	0.94	350	0.2
ACLUBE V-D4000		1.0	0.90	1,200	0.2
ACLUBE V-D5020		0.5	0.91	1,400	0.1

2. Typical Properties of NEWPOL 50HB Products and NEWPOL LB Products

Product Name	Appearance (20 ± 5℃)	Pour Point ℃	Kinematic Viscosity mm^2/s (40℃)	Flash Point ℃
NEWPOL 50HB-55	Colorless to pale yellow liquid	-65	8	93
NEWPOL 50HB-100		-51	19	183
NEWPOL 50HB-260		-40	51	225
NEWPOL 50HB-400		-37	80	246
NEWPOL 50HB-660		-34	127	225
NEWPOL 50HB-2000		-31	398	233
NEWPOL 50HB-5100		-28	925	251
NEWPOL LB-65		-55	9	148
NEWPOL LB-285		-40	59	217
NEWPOL LB-300X		-40	70	236
NEWPOL LB-385		-37	80	220
NEWPOL LB-400XY		-35	84	215
NEWPOL LB-625		-33	120	222
NEWPOL LB-650X		-29	130	252
NEWPOL LB-1715		-22	335	228
NEWPOL LB-1800X		-22	351	258
NEWPOL LB-3000		-19	610	230

3. Typical Properties of NAROACTY CL Products

Product Name	Appearance (20 ± 5℃)	pH (1 wt % aq soln)	HLB	Cloud Point ℃ (2 wt % aq soln)
NAROACTY CL-20	Colorless to pale yellow liquid	6.5	5.7	< 20
NAROACTY CL-40		6.5	8.9	< 20
NAROACTY CL-50		6.5	10.0	< 20
NAROACTY CL-70		6.5	11.7	< 20
NAROACTY CL-85		6.5	12.6	41
NAROACTY CL-95		6.5	13.1	54
NAROACTY CL-100		6.5	13.3	64
NAROACTY CL-120		6.5	14.1	80
NAROACTY CL-140	White solid	6.5	14.7	93
NAROACTY CL-160		6.5	15.2	99
NAROACTY CL-200		6.5	16.0	> 100
NAROACTY CL-400	White flake	6.5	17.8	> 100

4. Typical Properties of EMULMIN No. Products

Product Name	Appearance (20 ± 5°C)	pH (1 wt % aq soln)	HLB	Cloud Point °C (2 wt % aq soln)
EMULMIN 40	Pale yellow liquid	7.0	8.0	< 20
EMULMIN 50	Straw-colored liquid	6.5	9.0	< 20
EMULMIN 70	Pale straw-colored liquid	5.0	10.8	< 20
EMULMIN 110	Pale yellow liquid to paste	7.0	13.2	78*
EMULMIN 140		7.0	14.2	91
EMULMIN 180	White to pale yellow wax	7.0	15.1	> 100
EMULMIN 200		7.0	15.5	> 100
EMULMIN 240		7.0	16.1	> 100

* 1 wt % aqueous solution

5. Typical Properties of IONET D Products and IONET M Products

Product Name	Principal Component	Appearance (20 ± 5°C)	pH (1 wt % aq soln)	HLB	Cloud Point °C (2 wt % aq soln)
IONET DL-200	Polyoxyethylene dilaurate	Yellow liquid	6.5	6.6	< 20
IONET DO-400	Polyoxyethylene dioleate	Pale yellow liquid	7.0	8.4	< 20
IONET DO-600		Brown liquid	6.0	10.4	< 20
IONET DO-1000		Pale yellow solid	6.5	12.9	35
IONET DS-300	Polyoxyethylene distearate	Pale yellow solid	7.0	7.3	< 20
IONET MO-200	Polyoxyethylene monooleate	Pale straw-colored liquid	7.0	8.4	< 20
IONET MO-400			7.0	11.8	< 20
IONET MO-600			7.0	13.7	53
IONET MS-400	Polyoxyethylene monostearate	Pale yellow solid	7.0	11.9	< 20
IONET MS-1000			6.5	15.7	> 100

6. Typical Properties of NEWPOL PE Products

Product Name	Appearance (20 ± 5°C)	pH (1 wt % aq soln)	Cloud Point °C (1 wt % aq soln)	Foaming Property*			
				0.1 wt % Aq Soln		1.0 wt % Aq Soln	
				Immediate	After 5 min	Immediate	After 5 min
NEWPOL PE-61	Colorless to pale yellow liquid	6.0	24	18	0	9	0
NEWPOL PE-62		6.0	30	21	4	25	5
NEWPOL PE-64	White paste	6.5	59	28	7	34	10
NEWPOL PE-68	White flake	7.0	113	48	12	53	14
NEWPOL PE-71	Colorless to pale yellow liquid	6.0	20	8	0	5	0
NEWPOL PE-74	White paste	6.0	56	30	7	46	8
NEWPOL PE-75		6.0	69	32	13	45	29
NEWPOL PE-78	White flake	7.0	110	48	12	55	15
NEWPOL PE-108		7.0	105	48	12	53	15

* Foam height in mm at 20°C measured using the Ross-Miles method

7. Typical Properties of SANNONIC Products

Product Name	Appearance (20 ± 5°C)	pH (1 wt % aq soln)	HLB	Cloud Point °C (2 wt % aq soln)
SANNONIC FN-80	Colorless to pale yellow liquid	6.5	–	34
SANNONIC FN-100		6.5	–	56
SANNONIC FN-140		6.5	–	81
SANNONIC SS-50	Pale yellow liquid	6.5*1	10.5	< 20
SANNONIC SS-70		6.5*1	12.1	33*2
SANNONIC SS-90		6.5*1	13.2	56*2
SANNONIC SS-120	Colorless liquid	6.5*1	14.5	83*2

*1 5 wt % aqueous solution

*2 1 wt % aqueous solution

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