

# METALWORKING, LUBRICANTS, & FUEL ADDITIVES

Dover Chemical, a leading chemical producer, offers one of the widest arrays of metalworking, lubricant & fuel additives available in the lubricants industry. Our core product line of extreme pressure (EP) additives answers the lubrication requirement needed in modern machining or driveline applications.

Dover is the sole chemical producer capable of delivering the full suite of S, Cl, P & synthetic EP additives. Our lubricant additives for MWF are both oil-soluble as well as water-soluble. Our S & P EP additives in driveline applications are important AO supplements. Dover Chemical also produces several supporting chemistries including corrosion inhibition, paraffin and asphaltene inhibition, pour point depression, dispersion, detergents, AO/AW, wetting, emulsifiers, and alkalinity sources which find use in metalworking, lubrication, fuel additives and oilfield & refinery production. Also, we have fully formulated MWF packages to allow for off the shelf solutions.

## EXTREME PRESSURE ADDITIVES SULFUR ADDITIVES

Product	Vis @ 100°F, SUS	Vis @ 40°C, cS	Vis @ 210°F, SUS	Vis @ 100°C, cS	% Sulfur	% Active	Neut #	Flash Point, °F	Description
<b>LARD OILS AND ESTERS – NON STAINING TO COPPER</b>									
Base 10SE	102	21	42.5	9	10	0	8	400	Sulfurized methyl ester
Maysperm 2011LV	1750	370	200	40	10.5	0	9	400	Sulfurized lard/ester
Mayco Base 1351	1775	375	175	35	10.5	0	7	400	Sulfurized lard/olefin
Maysperm 2011	3500	750	300	55	10.5	0	11	425	Sulfurized lard oil
Mayco Base 1210	5500	1150	425	85	10.5	0	12	440	Sulfurized lard oil
Base 10L	6100	1155	425	85	10	0	25	350	Sulfurized fatty cmpd
<b>LARD OILS AND ESTERS – STAINING TO COPPER</b>									
Base 12SE	110	20	40	5	13	3	4	350	Sulfurized methyl ester
Mayco Base 4220	650	135	80	15	18	6	1	410	Sulfurized esters
Mayco Base 1362	2900	575	245	50	17.5	6	8	400	Sulfurized lard/olefin
Mayco Base 1217LV	5000	1050	335	75	17	6	10	400	Sulfurized lard/ester
Base 14L	9000	1700	525	120	13	3	26	350	Sulfurized fatty cmpd
Mayco Base 1214G	9500	2300	650	140	16.5	6	11	420	Sulfurized lard oil
<b>OLEFINS – STAINING TO COPPER</b>									
Mayco Base 1535	400	90	69	11	31	20	0	360	Sulfurized hydrocarbon
Mayco Base 1540	500	100	70	15	38.5	27	0	360	Sulfurized hydrocarbon

# EXTREME PRESSURE ADDITIVES (CONT.)

## CHLORINE ADDITIVES

Product	Color Gardner	Chlorine Content, % by Wt.	Specific Gravity @ 25°C	Viscosity Poise @ 77°F	Viscosity SUS @ 210°F	Density Pounds per Gallon	Volatility % Loss, 24hrs @ 100°C	Stability JQD %HCL, 4hrs @175°C	Flash Point F (Cleveland Open Cup)
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### VERY LONG-CHAIN CHLORINATED ALKANES, C21+

Paroil CW-50AO	1	46.6	1.220	110.0	282	10.2	0.03	0.25	392
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### MEDIUM-CHAIN CHLORINATED ALKANES, C14; C14-16

Paroil 10-NR	<1	40.1	1.102	0.4	37	9.2	0.8	0.2	>350
Paroil 152	1	51.9	1.270	15.0	69	10.6	0.9	0.3	>450
Paroil 54-NR	1	55.3	1.294	17.8	75	10.8	N/A	0.2	>450
Paroil 58-NR	2	59.0	1.380	300.0	176	11.5	0.5	0.3	>450
Paroil 63-NR	1	63.6	1.439	450.0	314	12.0	0.5	0.2	>450

### CHLORINATED LUBRICANTS

DA-8527	3	29			110			4	
Doverguard E-35	<2	35	1.16			9.6			

### ACID SCAVENGERS

Doverflex 100		N/A	0.99 (60°F)			8.25	N/A	N/A	590	ESO Chlorinated Stain Inhibitor
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## PHOSPHORUS ADDITIVES - EXTREME PRESSURE, ANTI-WEAR, ANTI-OXIDANT

Product	Vis @ 100°F, SUS	Vis @ 210°F, SUS	% Phos	Acid #	EP	AO	AW	Comments
Mayfree 2033	3,500	215	4	110	x		x	Phosamide
Mayfree 133	44,000	750	4	155	x		x	Phosamide
Doverphos EP-425	1,260	91	4.3	< 1	x	x	x	Polymeric Phosphite Ester
Doverphos 253	148	-	5.3	10	x	x	x	Di-Oleoyl Hydrogen Phosphite Ester
Doverphos 54	140	-	5.3	< 1		x	x	Tri-Alkyl Phosphite Ester
Mayphos 45	90,000	1,750	5.4	200	x			Ethoxylated Phosphate Ester
EM 706	1,550	155	5.5	157	x			Alkyl Phosphate Ester
Maylube S-830	1,500	-	1.2	72	x			Water Soluble Phosphate Ester Booster
Doverlube NCL-2	9300	470	3	150	x		x	Phosphorus Package

## SYNTHETIC LUBRICANTS

Product	Vis @ 100°F, SUS	Vis @ 210°F, SUS	Acid #	Color (ASTM)	Comments
Doverlube NCEP	300	-	10	> 5	S&P free Vegetable oil based EP (1.5% N by wt.)
Doverlube 31700	17,000	1150	5	3.5	Polymeric Ester
Maylube S-003	300	-	20	5	Water Soluble Ester pkg. that brightens surface finish
Lube Booster II	2300	-	65	4	Water Soluble Polymer
Inversol 140	7600	600	15	3.5	Complexed Ester; cloud point at 140F
Inversol 170	7500	600	14	3.5	Complexed Ester; cloud point at 170F
Maylube E-112	105	32	9	2.0	NPG Ester, Suitable HP Aluminum cutting
Maylube E-101	95	35	2	0.5	Tridecyl Stearate Ester, Suitable Aluminum Machining
Maylube E-190	43	32	1.5	0.5	Synthetic Ester, Excellent Wetting, light duty stamping and finning

## PACKAGES & / OR DUAL EP

Product	Vis @ 100°F, SUS	Vis @ 210°F, SUS	Acid #	% Phos	% Chlorine	% Sulfur	% Active	Comments
Maychlor 1010	900	170	1	-	10	10	3.5	Sulfur-chlorinated fatty additive
Maychlor HV-Lite	18,000	1,200	5	-	6	6	0	Light colored sulfur-chlorinated fatty additive
Mayco Base 930	3,800	150	-	-	31	9	3.2	Stainless steel cold heading additive
Mayco Base CF-95	350	65	4	-	-	4.5	1.5	Sulfurized sulphonate
Mayco Base CF-74	550	95	2	-	-	2.5	0	Sulfurized sulphonate

## CORROSION INHIBITORS & PH BUFFERS

### AMINE BORATE CORROSION INHIBITORS

Product	Vis @ 100°F, SUS	Boron %	Acid #	TBN	Comments
Synkad 204	4400	4.1	NR	370	High performance Boramide
Synkad 202	6300	4.4	NR	420	Cost effective Boramide
Synkad 3100	3800	4.4	NR	400	Cost effective mixed Amine Borate

### FATTY ACID BASED CORROSION INHIBITORS

Product	Vis @ 100°F, SUS	Alkalinity	Acid #	TBN	Comments
Mayco Base RP 8708	90	22	16	240	Excellent rust protection and hard water stability
Mayco Base RP 8765	176	20	185	236	Provides excellent rust protection plus lubricity
Synkad 828	215	22	155	250	DEA-free Carboxylic acid condensate

### FATTY ACID BASED CORROSION INHIBITOR

Product	Appearance	SG @ 25°C	Imidazoline %	TBN	Comments
Doverhib CI 181TO	Dark amber liquid	0.985	65	230	TOFA Imidazoline Corrosion Inhibitor

## EMULSIFIERS, DISPERSANTS & DETERGENTS

### ALKANOLAMIDES

Product	Vis @ 100°F, SUS	pH @ 1%	Acid #	TBN	Mol Ratio	Comments
Emulamid FO5DF	2,000	9.2	4	140	2:1	Fatty DIPA Amide
EM 996	1,060	9.5	28	144	2:1	Tall Oil DIPA Amide
EM 980	2,800	9.7	50	180	2:1	Fatty Amide
Emulamid 2C22	1,100	9.8	30	165	2:1	Coco Amide
Emulamid 1O23	950	9.5	5	50	1:1	Fatty DIPA Amide
Emulamid 2O32G	1,520	8.9	50	150	2:1	Non-DEA alkanolamide, good corrosion inhibition and emulsion stability

### PIBSA & PIBSI

Product	Physical Form	Acid Value, mgKOH/g	Free Maleic Acid, %	Viscosity, cSt @ 100°C	Hydrolysis, %
Dovermulse H-1000	Viscous dark amber/brown liquid	54	<0.5	470	≤5.0
Dovermulse H-1013P	Viscous amber liquid	50	0.25	290	≤5.0
Dovermulse H-1020P	Viscous amber liquid	46	0.25	220	≤5.0
Dovermulse H-1035N	Viscous amber liquid	34	0.25	74	≤5.0
Dovermulse H-1335P	Viscous amber liquid	29	0.25	140	≤5.0
Dovermulse H-2300	Viscous amber liquid	24	<0.5	2,300	≤5.0

Product	Physical Form	TBN	% N	Viscosity, cSt @100°C	Specific Gravity
Doversperse H-1015P	Viscous dark amber/brown liquid	77	3.2	450	0.92
Doversperse H-1035P	Viscous dark amber/brown liquid	62	2.2	160	0.91
Doversperse H-1335P	Viscous amber liquid	26	1.2	252	0.908

### EMULSIFIER BASES AND COUPLERS

Product	Vis @ 100°F, SUS	Acid Value	Appearance	Comments
Base 7800	8,000	23	Amber-brown liquid	Emulsifier base for naphthenic and paraffinic basestocks
Base 8000P	7,700	24	Amber-brown liquid	Emulsifier base for paraffinic basestocks
Base 1142PB	6,500	50	Amber-brown liquid	PIBSA based emulsifier base for Group II & III basestocks
EM 40	530	5	Yellow liquid	Modified glycerol monotallate
EM 600	310	7	Yellow liquid	Co-emulsifier for semi-synthetics and soluble oils

## POUR POINT DEPRESSANTS

### HYDROCARBON

Product	Vis @ 100°C, cSt	Pour Point °C	Flash Point (COC)	Chlorine %	Color (G)	Comments
Keil-Flo 150	70	-35	182°C (360°F)	0	14	50% active pour point depressant
Keil-Flo 195	890	-40	204°C (400°F)	0	14	95% active pour point depressant

## MWF PACKAGES

### SEMI-SYNTHETIC CONCENTRATES

Product	Vis @ 100°F, SUS	Vis @ 40°C, cS	pH @ 5%	Acid #	Alkalinity	Comments
Maysol SSD-50	800	170	9.5	25	10	50/50 (product/water); Boron-free; General Purpose
Maysol HOSS	1500	325	9.4	60	12	50/50 (product/water); High Oil Content; EP-fortified

### SYNTHETIC COOLANTS

Product	PH (neat)	pH @ 5%	Acid #	Alkalinity	Comments
Maysyn S-168	8.7	8.3	50	8	Ready-to-Relabel HD Machining & Grinding on Ferrous and Nonferrous
Maysyn S-122	9.7	9.3	73	17	Cut 60/40 (water/product) for medium duty machining of Ferrous alloys

# SERVICE | Focusing Extraordinary Resources on Customer Needs

**Dover Chemical Corporation** is uniquely equipped to provide timely solutions to your needs for chlorinated alkanes, organophosphites, flame retardants, antioxidants, metalworking, lubricants, fuel additives and drilling-fluid additives.

Total Quality is assured from product development through actual production. Our research center, with state-of-the-art equipment, is able to develop new products to perform to your specifications. This modern facility, complimented by our ISO 9001 certification, means consistent, continuing conformance to your ever-changing needs.

Demanding “just-in-time” delivery schedules are not a problem with Dover Chemical. We are dedicated to anytime delivery – nights, days, weekends, whenever you need our products—allowing you to eliminate costly inventory warehousing while still meeting your own production requirements.

**The bottom line of our customer service advantage is our people. People with the knowledge and flexibility to make sure you obtain the timely chemical solutions you need.**



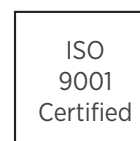
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