

Castrol®

**PRODUCT
SELECTION
GUIDE**

CONFIDENTIAL

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DO NOT FORWARD OR SHARE

Rev 7, March 2024

Castrol Product Selection Guide

CONFIDENTIAL - For Authorized Castrol Distributor Use Only - DO NOT FORWARD OR SHARE - Rev 7, March 2024

fka = formerly known as

G-Grind; M-General Machining; R-Ream; T-Cut Tap; F-Form Tap; D-Gundrill; B-Broach; H-Hone; C-Consult Engineering

CUTTING & GRINDING - WATER MISCIBLE

Product	Description	CHEMISTRY										METALS / APPLICATIONS												
		Mineral Oil %	Ester %	Sulfur	Phosphorus	Chlorides	Boron	Secondary Amines	TEA	MEA	pH range @ 5%, new	Refractometer Factor (conc= brix x factor)	Hard Water Range, gpg	Cast iron (grey iron, ductile iron)	Nodular iron	Low carbon steels, CGI,	Alloy steels, Stainless	Aluminum (auto, cast, 300 series)	Aluminum (aerosp, 6000/7000 series)	Titanium alloys	Nickel (Inconel, Rene, Hastalloy, Waspalloy)	Copper alloys	Magnesium alloys	Carbon Fiber, Plastics

SOLUBLES / SEMI-SYNTHETICS

Almaredge series - soluble oils for general purpose machining

Almaredge 70 (fka Safety-Cool 70)	High oil, low cost, soluble oil.	60-80	0-5	N	N	N	N	N	Y	N	9.8 - 10.4	1.0	5 - 25	G,M,R,T ,D	G,M		M,T				C		
Almaredge 420 (fka Cooledge 420)	General purpose soluble oil designed primarily for yellow metals.	60-80	0-5	N	N	N	N	N	Y	N	8.2 - 8.8	0.9	5 - 25		G,M		G,M				M,T		

XBB series - long life fluids, free of boron and biocide

Hysol SL 30 XBB	Free of boron & secondary amines for ferrous metals. GM LS2 approved.	20-40	0-5	N	Y	N	N	N	Y	N	9.6 - 9.9	1.3	3 - 46	G,M,R,T ,D,B	G,M,R,T	G,M		C			C		
Hysol SL 36 XBB	Multi-metal machining fluid especially suited for soft water	20-40	0-5	N	Y	N	N	Y	Y	Y	9.1 - 9.5	1.2	3 - 23	G,M,R,T ,D,B	G,M,R,T	G,M	G,M				C		
Hysol SL 45 XBB	Boeing approved. Cutting fluid designed for aerospace machining.	40-60	5-10	N	Y	N	N	N	Y	N	9.1 - 9.5	1.1	7 - 35	C	G,M,R,T ,D,B	G,M,R,T	G,M,R,T ,F,D	G,M,R,T ,F	G,M,R,T	G,M,R,T	C		
Hysol SL 50 XBB	Heavy duty, multi-metal, long-lasting fluid with no boron.	40-60	0-5	N	Y	N	N	Y	N	N	9.7 - 10.0	1.0	3 - 58	C	G,M,R,T ,D,B	G,M,R,T	G,M,R,T ,F,D	G,M,R,T ,F	M,R	M	C	C	
Alusol SL 51 XBB	Heavy duty, multi-metal fluid for hard water and aluminum with high silicon.	40-60	5-10	N	Y	N	N	N	Y	Y	9.3 - 9.8	1.0	5 - 100	C	G,M,R,T ,F,D,B	G,M,T,D	M,T,R,D	M,T	G,M	M,T	G,M,T,F, H	M	
Alusol SL 61 XBB (fka Alusol RBF)	Heavy duty fluid with outstanding performance on aluminum alloys.	30-50	10-20	N	Y	N	N	Y	N	Y	8.8 - 9.5	1.0	5 - 40	M,R,T,D, B,H	G,M,R,T ,F,D,B	G,M,R,T ,D,B	G,M,R,T ,F,D,B,H	G,M,R,T ,F,D,B	G,M	G,M	C		
Alusol SL 78 XBB	High perf, multi-metal, excellent alum finishes. GM LS2 approved.	30-50	10-20	N	N	N	N	N	Y	N	9.6 - 10.1	1.1	5 - 35	C	G,M,R,T ,F,D,B	G,M,R,T ,D,B	G,M,R,T ,F,D,B,H	G,M,R,T ,F,D,B	G,M	G,M	C		

Hysol MB series - great all-around performance and value

Hysol MB 10	Light duty, low oil, coolant with excellent bioresistance.	10-20	0-5	N	Y	N	Y	Y	Y	N	9.2 - 9.8	2.1	5 - 40	G,M,R,T	G,M	C	C		C				
Hysol MB 20	Medium duty, medium oil coolant with excellent bioresistance.	20-40	0-5	N	Y	N	Y	Y	Y	N	9.2 - 9.8	1.7	5 - 40	G,M,R,T ,D,B	G,M,R,T	G,M	G,M						
Hysol MB 50	Heavy duty, high oil coolant with excellent bioresistance.	40-60	0-5	N	Y	N	Y	Y	Y	N	9.3 - 9.8	1.1	5 - 40	C	G,M,R,T ,D,B	G,M,R,T	G,M,R,T ,F,D	G,M,R,T ,F	M,R	M	C	C	

Hysol series - variety of fluids covering many applications

Hysol 11 FF (fka WA 0122 SC)	Fit-for-purpose, light duty, low oil semi-synthetic coolant.	10-20	0-5	N	Y	N	Y	Y	Y	Y	9.4	2.7	5 - 35	G,M,R,T	G,M								
Hysol AMG	Heavy duty, hard water stable fluid with good EP perf for steel.	40-60	5-10	Y	Y	N	Y	N	N	N	9.1 - 9.7	1.0	5 - 115	C	G,M,R,T ,F,D,B	G,M,T,D	M,T,R,D	M,T		M,T		M	
Hysol 6519 (fka Clearedge 6519)	Multi-metal, medium oil coolant. Bombardier approved.	20-40	0-5	N	Y	N	Y	N	Y	N	9.1 - 9.7	1.4	5 - 40	C	G,M,R,T ,F	G,M,T	G,M,T	G,M			M	C	
Hysol 6754 (fka Superedge 6754)	High oil, low cost fluid with excellent aluminum finishes.	40-60	5-10	N	N	N	N	Y	Y	N	9.4 - 10.4	1.0	5 - 35	C	G,M,R,T ,B	G,M,R,T	G,M,R,T ,F,D	G,M,R,T ,F		M			

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SYNTHETICS

Oil Rejecting - Ferrous Machining

Syntilo 9902	Light duty synthetic for ferrous and glass grinding.	0	0	N	N	Y	Y	N	Y	Y	8.5 - 9.0	2.3	0 - 35	G,M	G,M	G								C
Syntilo 9730	Light to medium duty w/ boundary lube. GM LS2 approved.	0	0	N	N	Y	Y	N	Y	N	8.8 - 9.2	2.3	0 - 35	G,M,R,B ,T,D	G,M,T	G,M			G					
Syntilo 9930	Light to medium duty synthetic for ferrous materials.	0	0	N	N	Y	Y	N	Y	Y	8.9 - 9.4	2.3	0 - 35	G,M	G,M	G,M								
Syntilo 9930 BF	Light to medium duty synthetic for ferrous materials. Boron-free.	0	0	N	N	Y	N	N	Y	Y	8.5 - 9.1	2.3	0 - 35	G,M	G,M	G,M								
Syntilo 75 EF	Medium duty synthetic. Excellent compatibility with paint & elastomers.	0	5-10	N	N	N	N	N	Y	N	9.5 - 10.5	2.3	3 - 35	G,M,T,D ,R,B,H	G,M,T,D ,R,B	G,M	G,M	G,M,T						
Syntilo 9926	Medium duty synthetic for ferrous materials.	0	0	N	N	Y	Y	N	Y	Y	8.5 - 8.9	2.2	0 - 35	G,M,R,B ,T,D	G,M,T	G,M								
Syntilo 9904	Medium to heavy duty synthetic for ferrous materials.	0	0	N	N	Y	Y	Y	Y	N	8.8 - 9.2	1.8	0 - 35	G,M,T,D ,R,B,H	G,M,T,D ,R,B	G,M,T,D ,B								
Syntilo 9954	Heavy duty synthetic for ferrous materials.	0	0	N	N	Y	Y	N	Y	Y	8.0 - 8.8	1.4	0 - 30	G,M,T,D ,R,B,H	G,M,T,D ,R,B,F	G,M,T,D ,B,F			G,M	G,M				
Syntilo 9974	Heavy duty synthetic for ferrous materials. Good hard water stability.	0	0	N	N	Y	Y	Y	Y	N	8.7 - 9.3	1.4	0 - 35	G,M,T,D ,R,B,H	G,M,T,D ,R,B,F	G,M,T,D ,B,F			G,M	G,M				
Syntilo MR 9974 BF	Boron-free and primary amine-free version of 9974. GM LS2 approved.	0	0	N	N	Y	N	N	Y	N	9.0 - 9.8	1.4	0 - 35	G,M,T,D ,R,B,H	G,M,T,D ,R,B,F	G,M,T,D ,B,F			G,M	G,M				

Oil Rejecting - Multi-Metal Machining

Syntilo 9828	Boeing & Bombardier approved; composite fiber machining. Blue color.	0	0-5	N	Y	Y	Y	N	Y	Y	8.2 - 8.7	2.4	0 - 35		G,M,T	G	G,M	G,M	M	G,M	M		G,M
Syntilo 9918	Medium to heavy duty synthetic for multi-metal materials.	0	0	N	N	Y	Y	N	Y	N	7.4 - 7.8	1.7	0 - 30	G,M,T,D ,R,B	G,M,T,D ,R,B	G,M,T,D ,B	G,M,T,B	G,M,T,B	M	G,M	M	C	C
Syntilo 9913	Boeing & Bombardier approved. Heavy duty, multi-metal, boron-free.	0	0	N	N	Y	N	N	Y	N	7.2 - 7.6	1.4	0 - 30	G,M,T,D ,R,B	G,M,T,D ,R,B,F,H	G,M,T,D ,B,F,H	G,M,T,B	G,M,T,F,B	M,F	G,M	M,H	C	C

Oil Accepting

Syntilo 1023	Oil-dispersing synthetic for cast iron transfer lines and heavy tramp oil.	0	0	N	N	Y	Y	Y	Y	Y	9.1 - 9.5	1.8	0 - 35	G,M,R,B ,T,D	G,M,T	G,M								
Syntilo 2109	Oil-absorbing. Accepts ~2% tramp oil to improve RP and lubricity.	0	0-5	N	N	N	Y	N	Y	N	9.0 - 9.5	1.8	0 - 35	G,M,T,D	G,M,T,D	G,M			M					

Carbide Grinding

Syntilo CR 68	Carbide grinding fluid. Protects from cobalt leaching of the carbide.	0	0	N	N	Y	Y	N	N	N	8.9 - 9.5	2.5	0 - 35	G,M	G,M	G					G			
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CUTTING & GRINDING - NEAT OILS																					
Product	Description	Color	CHEMISTRY										METALS / PERFORMANCE								
			Viscosity cSt @ 40°C	Viscosity SUS @ 100°F	Lubricity Additive %	Active Sulfur %	Total Sulfur %	Calcium Additive %	Zinc	Phosphorous	Flash Point °F (COC)	Copper Corrosion	Cast Iron (grey iron, ductile iron)	Low carbon steels, CGI, Nodular iron	Alloy steels, Stainless	Aluminum alloys	Titanium alloys	Nickel (Inconel, Rene, Hastalloy, Waspalloy)	Copper alloys	Carbide Grinding	Magnesium alloys
General Machining																					
CareCut ES 1 (fka CareCut ES 1 NA)	Ester-based oil for cutting of multi-metals. Bielomatik approved for 1 & 2-channel systems.	Yellow	28	132	n/a	N	Y	N	N	Y	>482	1b	▲▲▲▲	▲▲▲▲▲	▲▲▲▲	▲▲▲▲▲	▲▲	▲▲▲	▲▲▲▲	NR	▲▲
Ilocut 154	Economical, med to high viscosity oil for medium alloyed steel & non-ferrous.	Brown	35	184	10-15	N	Y	N	N	N	356	1b	▲▲▲	▲▲▲	NR	▲▲	NR	NR	▲▲	NR	NR
Ilocut 5713	Low vis, CP replacement oil for all metals. Suited for screw machines and Swiss autos.	Yellow / Amber	16	80	5-10	N	N	Y	N	N	383	1b	▲▲▲	▲▲▲	▲▲▲	▲▲▲	▲▲	▲▲	▲▲▲	NR	NR
Ilocut 5720	Med vis, CP replacement oil for ferrous. Suited for screw machines & Swiss autos.	Blue	28	140	5-10	Y	Y	Y	N	Y	385	4c	▲▲▲	▲▲▲	▲▲▲▲	NR	▲▲	▲▲	NR	NR	NR
Ilocut 5721	Med vis, CP replacement oil for all metals. Dual-purpose for screw machines & Swiss autos.	Amber	28	140	5-10	N	N	Y	N	N	320	1b	▲▲▲	▲▲▲	▲▲▲	▲▲▲	▲▲	▲▲	▲▲▲	NR	NR
Ilocut 5770	High vis, CP replacement oil for all metals and difficult ops like broaching and gear making.	Red	52	262	10-20	Y	Y	Y	N	N	395	1b	NR	▲▲▲▲	▲▲▲▲	▲▲	▲▲▲	▲▲▲	▲▲▲	NR	NR
Variocut C 838	High vis, CP replacment, low mist oil for all metals. Screw machines & Swiss autos.	Yellow / Amber	39	205	20-30	Y	Y	Y	N	N	>360	1b	NR	▲▲▲	▲▲▲▲	▲▲	▲▲▲	▲▲	▲▲	NR	NR
Environmentally Responsible																					
Performance Bio NC Plus (fka NuCut Plus)	Plant-based neat cutting oil. Dual-purpose cutting & lubrication. GM LS2 approved.	Light Yellow	40	190	n/a	N	Y	N	Y	N	540	1b	NR	▲▲▲	▲▲▲	▲▲▲▲	▲▲	▲▲	▲▲▲	NR	NR
Performance Bio NC Lite (fka NuCut Lite)	Plant-based neat cutting oil for general machining and high pressure applications.	Light Yellow	25	137	n/a	N	Y	N	Y	N	419	1b	▲▲▲	▲▲▲	▲▲▲	▲▲▲▲	▲▲	▲▲	▲▲▲	NR	NR
Performance Bio NC Ultra Lite EP (fka CD 0001 PBL1)	Plant-based neat cutting oil with EP for general machining, high pressure, & grinding apps.	Yellow	16	88	n/a	N	Y	N	N	Y	343	1b	▲▲▲	▲▲▲▲	▲▲▲▲	▲▲▲▲	▲▲▲	▲▲▲	▲▲▲	NR	NR
Performance Bio NC Super Lite (fka NuCut Super Lite)	Plant-based neat oil, for high pressures, small parts, and honing / grinding. Transor approved.	Light Yellow	8	49	n/a	N	Y	N	Y	N	329	1b	▲▲▲	▲▲▲	▲▲▲	▲▲▲▲	▲▲	▲▲	▲▲▲	▲▲▲	▲▲▲
Performance Bio CFX 85	Plant-based, designed for severe operations like broaching and drawing. GM LS2 approved.	Amber	85	395	n/a	Y	Y	N	Y	Y	338	4c	NR	▲▲▲▲	▲▲▲▲	NR	▲▲▲	▲▲▲	NR	NR	NR
Gundrilling																					
Variocut C 334	Low viscosity oil for machining ferrous metals including high alloy steels. GM LS2 approved	Yellow / Amber	10	60	5-10	Y	Y	N	N	N	>300	4c	▲▲▲	▲▲▲	▲▲	NR	NR	▲▲	NR	NR	NR
Variocut D 249	High performance, EP, chlorine-free gundrilling and machining oil for ferrous metals.	Amber	17	86	5-10	Y	Y	N	N	Y	340	4c	▲▲▲	▲▲▲▲	▲▲▲▲	NR	▲▲▲	▲▲▲	NR	NR	NR
Gear Making and Broaching																					
Variocut B 9	High perf broaching & gear cutting of ferrous metals in aerospace. Rolls-Royce approved.	Yellow	11	-	>50	Y	Y	N	N	Y	320	4c	▲▲▲▲	▲▲▲▲	▲▲▲▲	NR	▲▲▲▲	▲▲▲▲	NR	NR	NR
Variocut B 27	Gear hobbing, gear shaping, and grinding of ferrous metals. Long tube honing.	Yellow	23	110	10-20	Y	Y	N	N	Y	374	4c	▲▲▲	▲▲▲	▲▲▲	NR	NR	▲▲▲	NR	NR	NR
Variocut B 46 TC	High perf for gear making, broaching, grinding & other ops on ferrous metals. GM LS2 approved	Amber	15	77	5-10	Y	Y	Y	N	Y	320	2b	▲▲▲▲	▲▲▲▲	▲▲▲▲	NR	▲▲▲	▲▲▲▲	NR	NR	NR

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Product	Description	Color	CHEMISTRY										METALS / PERFORMANCE									
			Viscosity cSt @ 40°C	Viscosity SUS @ 100°F	Lubricity Additive %	Active Sulfur %	Total Sulfur %	Calcium Additive %	Zinc	Phosphorous	Flash Point °F (COC)	Copper Corrosion	Cast Iron (grey iron, ductile iron)	Low carbon steels, CGI, Nodular Iron	Alloy steels, Stainless	Aluminum alloys	Titanium alloys	Nickel (Inconel, Rene, Hastalloy, Waspalloy)	Copper alloys	Carbide Grinding	Magnesium alloys	
Grinding																						
CareCut ES 2	Premium ester-based, high performance cutting & grinding oil for all metals.	Pale Yellow	9	60	n/a	N	Y	N	N	Y	392	1b	▲▲▲▲	▲▲▲▲▲	▲▲▲▲	▲▲▲▲▲	▲▲	▲▲	▲▲▲▲	NR	▲▲	
Product ML 0001	High perf, low vis synthetic grinding fluid for carbide and other materials. Transor approved.	Clear Yellow	6	-	Proprietary			0	N	Y	338	1b	NR	▲▲▲▲	▲▲▲	▲▲▲	▲▲	▲▲	▲▲▲▲	▲▲▲▲▲	NR	
Variocut G 408 HC	Mineral oil designed for carbide grinding to prevent cobalt leaching. Transor approved.	Clear Colorless	7.7	51	0-5	N	N	N	N	N	>320	1b	▲▲▲	▲▲	▲▲	▲▲	NR	NR	▲▲▲	▲▲▲	NR	
Variocut G 500 (fka Ilogrind FGO 100)	Designed primarily for flute and thread grinding of tool steels for making drills and taps.	Pale Yellow	20	106	0-5	N	N	N	N	Y	424	1b	▲▲	▲▲	▲▲▲	▲▲	NR	NR	▲▲	NR	NR	
Variocut G 572 (fka Grinding Oil 1572)	Heavy duty machining & grinding titanium, stainless, nickel alloys, & other ferrous metals.	Black, opaque	50	243	20-30	Y	Y	N	N	N	356	4c	▲▲▲▲	▲▲▲▲▲	▲▲▲▲	NR	▲▲▲	▲▲▲	NR	NR	NR	
Variocut G 600 (fka Ilogrind 600)	CBN, high speed, and creep feed grinding of most metals. Low mist.	Yellow	12	66	5-10	Y	Y	N	Y	Y	338	4c	▲▲▲	▲▲▲	▲▲▲	NR	▲▲	▲▲	NR	NR	NR	
Variocut G 600 HC (fka Variocut G 600 HC NA)	High perf CBN grinding. Hydrocracked base oil for low odor and long life. Good for honing too.	Pale Yellow	11	64	5-10	Y	Y	N	N	Y	>320	1b	▲▲▲▲	▲▲▲▲	▲▲▲	NR	NR	▲▲▲	NR	▲▲	NR	
Variocut G 650 HC	CBN, high speed, creep feed grinding, general machining of ferrous metals. GM LS2 approved	Yellow	9.2	58	5-10	Y	Y	N	N	Y	320	1b	▲▲▲▲	▲▲▲▲▲	▲▲▲▲	NR	NR	▲▲▲	▲▲	NR	NR	
Variocut G 950 (fka Ilogrind 950)	CBN, high speed & creep feed grinding plus general mach. of multi-metals, HSS, & tool steel	Yellow	8	52	5-10	N	Y	Y	N	Y	>311	1b	▲▲▲	▲▲▲	▲▲▲	▲▲	NR	NR	▲▲▲	▲	NR	
Honing																						
CareCut ES 3	Premium ester-based oil for severe honing and superfinishing of all metals. GM LS2 approved	Pale Yellow	5.5	46	n/a	N	N	N	N	N	>320	1a	▲▲▲▲▲	▲▲▲▲	▲▲▲	▲▲▲▲▲	▲▲	▲▲	▲▲▲	NR	▲▲	
Honilo 710	Low odor, high perf honing oil with low VOCs. Good for carbide grinding. GM LS2 approved.	Pale Yellow	5.2	44	10-20	N	N	N	N	Y	284	1b	▲▲▲▲▲	▲▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	
Honilo 980	Honing and superfinishing of ferrous and non-ferrous metals; EP additives. GM LS2 approved.	Pale Yellow	4.3	41	5-10	N	N	N	N	Y	>257	1b	▲▲▲▲	▲▲▲	▲▲	▲▲	NR	▲▲	▲▲	NR	▲▲	
Honilo 981	Honing and superfinishing of ferrous and non-ferrous metals using non-EP additives.	Pale Yellow	5	47	10-20	N	N	N	N	N	257	1b	▲▲▲▲	▲▲▲	▲▲	▲▲▲	NR	▲▲	▲▲▲	NR	▲▲	
Heavy Duty Tapping & Threading																						
Variocut C Moly Dee (fka Moly Dee CF)	Heavy duty oil for tough ops like threading and tapping or as an additive to improve neat oils.	Gray, opaque	165	850	>50	Y	Y	N	N	Y	392	4c	▲▲▲▲▲	▲▲▲▲▲	▲▲▲▲▲	NR	▲▲▲▲▲	▲▲▲▲▲	NR	NR	NR	
41-810A	Chlorine-free, hot thread rolling oil for difficult metals or as an additive to improve neat oils.	Light Yellow	84	430	20-30	N	N	N	N	N	299	1b	▲▲▲▲	▲▲▲▲	▲▲▲▲	▲▲▲▲	▲▲▲▲	▲▲▲▲	▲▲▲▲	NR	NR	
MQL (Minimum Quantity Lubrication)																						
Hyspray A 1536	Fatty alcohol MQL / mist fluid. Bielomatik approved for 2-channel systems.	Clear, Colorless	28	148	n/a	N	N	N	N	N	356	1a	▲▲▲	▲▲▲▲	▲▲▲	▲▲▲▲	NR	NR	▲▲▲	NR	NR	
(See also: CareCut ES 1)																						
EDM Fluids																						
Ilocut EDM 200	EDM fluid with low odor and long life.	Clear, Colorless	3	33	0	N	N	N	N	N	250 (PMCC)	1b	▲▲▲	▲▲▲	▲▲▲	▲▲▲	▲▲▲	▲▲▲	▲▲▲	NR	NR	

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CLEANERS																											
Product	Description	CHEMISTRY										SOILS REMOVED					METALS			METHOD							
		pH of Solution	Temp Range	CIC Break point (DI water)	Refractometer Factor* (conc= brix x factor)*	Silicated	Boron	Phosphates	Chlorides	Secondary Amines	MEA	TEA	Emulsions	Medium Duty MW Oils	Heavy Duty MW Oils	Paste / Wax / Grease	Particulate	Steel	Aluminum	Yellow Metals	Dip	Spray	Flood	Vibratory (w/o media)	Vibratory (w/ media)	Ultrasonic	High Pressure
Alkaline - Oil Rejecting																											
Techniclean XHP (fka CareClean XHP)	High P cleaner up to 10,000 psi with excellent rust protection.	7.5 - 8.5	amb - 150°F	1%	1.7	N	Y	N	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	N	Y	Y	N	N	N	Y
Techniclean 3602	Neutral pH, high pressure process cleaner.	7.7 - 8.1	amb - 150°F	2%	-	N	N	Y	Y	N	N	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
Techniclean 3660	Alkaline spray cleaner with good surfactancy & rust protection.	8.6 - 9.2	amb - 150°F	3%	3.1	N	Y	N	Y	N	Y	Y	Y	Y	Y	N	Y	Y	N	C	Y	Y	Y	N	Y	N	Y
Techniclean S 5001	Multi-purpose, multi-metal, medium to heavy duty alkaline cleaner.	10.0- 11.0	amb - 160°F	2%	4.1	N	N	N	Y	N	Y	Y	Y	Y	Y	N	Y	Y	C	Y	Y	Y	Y	Y	C	Y	Y
Techniclean 45 XBC	High RP, chloride-free for ferrous. Compatible w/ XBB coolants.	9.3 - 9.8	amb - 160°F	2%	-	N	N	N	N	N	Y	Y	Y	Y	Y	N	Y	Y	N	N	Y	Y	Y	C	C	C	C
Techniclean 80 XBC	High P cleaner for multi-metal. Compatible w/ XBB coolants.	9.4 - 10.0	amb - 160°F	-	3.0	N	N	N	Y	N	Y	Y	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y	C	C	C	Y
Techniclean 90 XBC	High P, multi-metal, no MEA or TEA. Compatible w/ XBB coolants	9.5 - 10.1	amb - 160°F	-	1.9	N	N	N	Y	N	N	N	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y	C	C	C	Y
Alkaline - Oil Absorbing																											
Techniclean MP 2 (fka CareClean MP 2)	Mild alkaline, multi-purpose, oil-absorbing process cleaner.	8.5 - 8.9	122 - 176°F	4%	2.0	N	N	N	N	N	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N
Maintenance Cleaners																											
Techniclean 2000	Floor cleaner and degreaser, mild pH, lime scent	8.0 - 9.5	ambient	> 10%	-	N	N	Y	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y	N	N	N	N
Techniclean MP Flex (fka Flexiclean)	Heavy duty alkaline cleaner for parts and sump cleaning.	12.0- 12.6	amb - 180°F	3%	2.9	Y	N	N	N	N	Y	N	Y	Y	Y	Y	Y	Y	C	Y	Y	Y	N	N	Y	Y	
Emulsion Cleaner (Oil-Containing)																											
Techniclean CPL (fka Flexiclean CPL)	Medium duty, semi-synthetic emulsion cleaner with long life.	9.0 - 9.4	amb- 150°F	3%	1.3	N	Y	Y	N	N	N	N	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y	C	C	N	Y
Solvent Cleaner																											
Techniclean AS 105	Low odor, high flash point, hydrocarbon solvent cleaner.	n/a	Flash pt 214°F	n/a	n/a	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	Y

*Note: Cleaners are best measured for concentration by Alkalinity. Refractometer should be used for fresh charges only.

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Performance Key: ▲min to ▲▲▲▲▲max

CORROSION INHIBITORS																		
Product	Description	Film Type	Odor	PROPERTIES										APPLICATION				
				Viscosity cSt @ 40°C	Flash Point °F (open cup)	Indoor Protection (months)	Outdoor Protection (months*)	Film Forming Content (%)	Film Thickness	Drying Time @20C (min)	Demulsifying Performance	Dewatering	Barium	Water Displacing	Fingerprint Suppression	Paintable	Protects in Acid Atmosphere	Weldable
Solvent Based																		
Rustilo 4135 HF	Medium-term, high flash, solvent-based RP with low VOC.	Greasy	Solvent, mild	3.3	235	12	3	10%	2-2.5 micron	120	▲▲▲▲	▲▲▲▲	N	Y	Y	N	Y	N
Rustilo DW 300 X	Medium-term, dewatering corrosion inhibitor	Greasy	Solvent, mild	1.6	>144 (PMCC)	8-12	3-6	8%	0.7 micron	60-90	▲▲▲▲	▲▲▲▲	N	Y	Y	N	Y	N
Rustilo DW 330 (fka Safecoat DW 33)	Very long-term, solvent-based with heavy film protection.	Firm, Greasy	Solvent, mild	4.4	>144 (PMCC)	24	12	39%	7 micron	120	▲▲▲▲	▲▲▲	N	Y	Y	N	Y	N
Rustilo DW 4130	Long-term, dewatering corrosion inhibitor	Oily / Greasy	Solvent, mild	2.4	180	18	3-6	23%	1.3 micron	75	▲▲▲▲	▲▲▲	Y	Y	Y	N	Y	N
Rustilo DWX 30	Medium-term, ultra-thin, fast dewatering & demulsifying RP	Greasy	Solvent, mild	2	109	8-12	3-6	8%	0.8 micron	30	▲▲▲▲▲	▲▲▲▲▲	Y	Y	Y	N	N	N
Oil Based																		
Rustilo 630	Short-term, oil based corrosion inhibitor	Oily	Oil, mild	22	320	3	Not Recom.	100%	4 micron	n/a	▲▲	▲▲	N	N	N	N	N	N
Rustilo 4163	Long-term, oil based corrosion inhibitor	Oily	Oil, strong	6	250	12-24	Not Recom.	100%	2 micron	n/a	▲▲	▲▲▲	N	Y	Y	N	Y	N
Rustilo 66 VCI	Long-term RP with vapor-phase corrosion inhibitor (VCI)	Oily	Mild, Oil	12	327 (PMCC)	Sealed: 60 Unsealed: 12	Not Recom.	100%	2 micron	n/a	▲▲	▲▲	N	N	N	N	N	N
Rustilo DW 90 HF (fka Safecoat DW 90)	Long-term, high flash with low odor and low VOCs.	Oily	Low to None	14	335	12-18	Not Recom.	100%	2.5 micron	n/a	▲▲	▲▲▲▲	N	Y	Y	N	N	N
Rustilo HL 01	Oil-based with VCI. Schaeffler INA approved universal test oil	Oily	Oil, mild	29	392	n/a	Not Recom.	100%	n/a	n/a	n/a	n/a	N	N	N	N	N	N
Aqueous																		
Rustilo Aqua 614 (fka Aquasafe 614)	Wax emulsion for dry-film lubrication & corrosion inhibition	Dry-Film	Mild, amine	n/a	n/a	Up to 3 years	Up to 3 months	20%	< 13 micron	20	n/a	n/a	N	N	Y	N	Y	N
Rustilo Aqua 616 (fka Aquasafe 616)	Wax emulsion for dry-film lubrication & corrosion inhibition	Dry-Film	Mild, amine	n/a	n/a	Up to 2 years	Up to 2 months	12%	< 8 micron	20	n/a	n/a	N	N	Y	N	Y	N
Rustilo Aqua 639 (fka Aquasafe 639)	Wax emulsion for dry-film lubrication & corrosion inhibition	Dry-Film	Mild, amine	n/a	n/a	Up to 5 years	Up to 6 months	24%	5 micron	15	n/a	n/a	N	N	Y	N	Y	N
Rustilo 4175	Synthetic, aqueous corrosion inhibitor. Refract factor 2.5.	Dry	Low to None	n/a	n/a	Up to 9 months	Not Recom.	3% @10% conc	0.4 micron	15	n/a	n/a	N	N	Y	Y <4%	N	Y

*Assumes primary protection from the elements via a tarp or some other type of cover

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DEFORMATION FLUIDS																																								
Product	Description	PROPERTIES											METHOD			METALS				APPLICATION																				
		pH of Solution	Refractometer Factor (conc= brlx x factor)	Viscosity cSt @ 40°C	Viscosity SUS @ 100°F	Sulfur %	Zinc	Phos	Chlorides	Sulfonate%	Ester/Fatty Oil %	Boron	Flash Point °F (open cup)	Brush/Roller	Dip	Spray	Flood	Electrostatic	Steel	Stainless Steel	Aluminum	Yellow Metal	Galvanized	Auto Panel Pressing	Cold Heading	Deep Drawing	Drawing	Electrical Steel Stamping	Fine Blanking	Fin stamping	Stamping	Tube Bending	Tube Drawing	Tube Expansion	Tube Pilgering	Mechanical Tube	Structural Tube	Wire Drawing		
Synthetics (water-miscible)																																								
Iloform PS 326	Medium duty synthetic metal forming fluid	9.0 - 9.4	1.5	~465 cSt	-	N	N	Y	N	N	Y	N	n/a	✓	✓	✓	✓	✓	✓				✓	✓			✓						✓	✓						
Tube Mill Coolants (water-miscible)																																								
Iloform TRS 107 (fka Fluidform 107)	Economical tube mill coolant for mechanical tubing.	8.8 - 9.3	2.4	n/a	n/a	N	N	N	Y	N	N	Y	n/a			✓	✓	✓	✓																			✓		
Iloform TRS 185	Synthetic tube mill coolant for structural tubing with minimum (<5%) oiled metal feedstock.	8.8 - 9.5	2.4	n/a	n/a	N	N	N	Y	N	N	Y	n/a			✓	✓	✓	✓																			✓		
Iloform TRS 186	Synthetic tube mill coolant for mechanical tubing with oiled metal feedstock.	8.7 - 9.3	2.3	n/a	n/a	N	N	N	Y	N	N	Y	n/a			✓	✓	✓	✓																		✓			
Hysol MB 10	Semi-syn coolant suitable for galvanized tubes. Good RP.	9.2 - 9.8	2.1	29	n/a	N	N	N	N	N	Y	Y	n/a			✓	✓	✓	✓			✓														✓	✓			
Syntilo 9902	Synthetic coolant for hydro-testers. Requires RP after.	8.5 - 9.0	2.3	n/a	n/a	N	N	N	Y	N	N	Y	n/a			✓	✓	✓	✓																		✓			
Syntilo 9918	Synthetic suitable for galvanized tubes. Requires RP after.	7.4 - 7.8	1.7	n/a	n/a	N	N	N	Y	N	N	Y	n/a			✓	✓		✓			✓														✓	✓			
Neat Oils																																								
Iloform CFX 25	Low viscosity, high perf EP drawing and forming oil.	n/a	n/a	28	132	Y	N	Y	N	N	Y	N	329	✓	✓	✓	✓	✓	✓					✓	✓								✓					✓		
Iloform CFX 185	Medium viscosity high perf EP stamping and blanking oil.	n/a	n/a	185	-	Y	N	Y	N	N	Y	N	396			✓		✓	✓						✓	✓									✓					
Iloform CFX 6000	High visc, heavy duty, deep drawing and steel cold pilgering.	n/a	n/a	6000	-	Y	Y	Y	N	Y	Y	N	320	✓				✓	✓																✓					
Iloform FST 8	High viscosity, heavy duty forming oil with high EP.	n/a	n/a	170	788	Y	Y	Y	N	Y	Y	N	360	✓	✓	✓	✓	✓	✓							✓			✓				✓							
Iloform FST 14	High performance fine blanking, stamping, and drawing oil.	n/a	n/a	86	390	Y	N	N	N	Y	Y	N	435	✓	✓	✓	✓	✓	✓					✓	✓			✓				✓		✓				✓		
Iloform FST 16	High performance fine blanking, stamping, and drawing oil.	n/a	n/a	95	426	Y	N	Y	N	N	Y	N	360	✓	✓	✓	✓	✓	✓						✓	✓			✓				✓							
Pastes, Gels, and Waxes																																								
Iloform PS 700	Synthetic wax emulsion paste, dilutable with water.	7.5 - 8.3	n/a	n/a	n/a	N	N	N	N	N	Y	Y	n/a	✓	✓			✓		✓		✓		✓	✓	✓					✓	✓	✓							
Iloform Stick Wax	Solid lubricating waxes for cutting & drawing in multi-metal.	n/a	n/a	n/a	n/a	N	N	N	N	N	N	N	470	Hand applied				✓		✓	✓																			
Solvent-Based Vanishing Oil																																								
Iloform 7425	Light duty stamping oil that vanishes with evaporation.	n/a	n/a	7	-	N	N	N	N	N	N	N	127 (PMCC)	✓		✓	✓		✓		✓	✓	✓				✓	✓					✓							

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GEAR OILS		Performance Ratings: ✓ Good ✓✓ Better ✓✓✓ Best C = Consult Engineering														
Product	Description	PROPERTIES								APPLICATIONS						
		Base oil	Additives*	ISO VG (Viscosity @ 40°C)	VI	Zinc	Temp Range* (varies by viscosity)	Flash Point (COC - varies by vis)	Pour Point (varies by viscosity)	Spur	Bevel	Spiral Bevel	Helical	Double Helical	Worm	Application Notes
Mineral																
Alpha CLP	Conventional EP gear oil	Mineral	EP	68,150-460	> 95	N	+10°F to +160°F	420°F - 445°F	-6°F to 16°F	✓	✓	✓	✓	✓	C	Conventional gear oil with traditional sulfur/phosphorous EP additive package.
Alpha SP	Premium conventional EP gear oil	Mineral	EP	68 - 680	> 95	N	+10°F to +160°F	>356°F - 445°F	-6°F to 21°F	✓	✓	✓	✓	✓	C	Premium gear oil with traditional sulfur/phosphorous EP additive package.
Molub-Alloy GM 170W (fka Molub-Alloy 170W)	Compounded mineral oil for worm gears	Mineral	Moly / Fatty Compound	680	97	Y	+35°F to +200°F	471°F	16°F	C	C	C	C	C	✓✓	Mineral oil compounded with 5% fatty material as required by many worm gear OEMs.
Molub-Alloy GM 969 (fka Molub-Alloy 969)	Leak-resistant, high performance gear oil	Mineral	EP / Moly / thickener	320	100	N	+20°F to +160°F	445°F	5°F	✓✓	✓✓	✓✓	✓✓	✓✓	C	DO NOT USE IN GBs WITH CIRCULATING OIL SYSTEMS, FILTRATION, OR SMALL ORIFICES.
Optigear 1100 (fka Tribol 1100)	High performance gear oil with TGOA**	Mineral	EP / TGOA	68 - 1500	83-100	Y	+0°F to +160°F	433°F - 525°F	-27°F to 5°F	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	C	Extremely long equipment and oil life over conventional gear oils. Excellent demulsibility.
Optigear BM	High performance gear oil with Microflux Trans (MFT)**	Mineral	EP / MFT	68 - 1000, 3000	90-110	Y	+10°F to +160°F	>392°F - 500°F	-11°F to 32°F	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	C	Extremely long equipment and oil life over conventional gear oils. Low demulsibility w/ water.
Synthetic																
Alphasyn EP	Synthetic PAO EP gear oil	PAO	EP	150 - 680	140	N	-30°F to +230°F	>392°F	-54°F to -33°F	✓✓	✓✓	✓✓	✓✓	✓✓	C	High temp synthetic EP gear oil for heavily loaded gears.
Alphasyn T	Synthetic PAO gear oil with mild AW/EP	PAO	AW	150 - 460	131-141	N	-20°F to +275°F	520°F - 545°F	-40°F to -22°F	✓✓	✓✓	✓✓	✓✓	✓✓	✓	High temps, moderate loads or non-EP apps (such as GBs with backstops and overrunning clutches).
Optigear Synthetic PD ... ES	High perf gear oil with MFT and Flender approval.	PAO	MFT	220	172	N	-40°F to +250°F	>482°F	-54F	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	C	High temp synthetic EP gear oil for heavily loaded gears.
Optigear Synthetic 800 (fka Tribol 800)	Synthetic polyglycol (PAG) wide temperature gear oil	Polyglyco I (PAG)	EP	150-1000, 2200	210-320	N	-20°F to +250°F	540°F	-49°F to 7°F	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	Excellent thermal stability and micropitting resistance. <u>Not compatible with other oils. Miscible with water.</u>
Wind Turbine Gear Oils																
Optigear Synthetic A	High perf, syn gear oil w/ high micropitting protection	PAO	EP / MFT	320	140	Y	-10°F to +230°F	401°F	-33°F	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	C	Wind turbine approvals: GE, Suzlon, Clipper, Servion (RePower), MADE (Gamesa), SE Wind.
Optigear Synthetic CT	High performance, ashless synthetic gear oil	PAO	EP	320	174	N	-25°F to +230°F	>392°F	-49°F	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	C	Wind turbine approvals: Vestas, Siemens Gamesa, GE, Servion (RePower), Nordex.
Optigear Synthetic X	High perf, syn gear oil w/ excellent micropitting protection	PAO	EP / MFT	320, 460	179	N	-20°F to +230°F	>482°F	-49°F, -43°F	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	C	Approvals: GE, Siemens, MADE (Gamesa), Nordex, Clipper, Servion (RePower), Eno, Suzlon, Sinovel, Dongfang, Mingyang, Envision, SE Wind, Kenersys/ Nupower/W2E.
Robot Gear Oils																
Optigear Synthetic RO 150	Synthetic gear oil with MFT for robots & rail-borne apps	PAO	EP / MFT	150	130	Y	-20°F to +230°F	446°F	-33°F	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	C	High performance robot gear oil with OEM approvals (Kuka and ABB). High EP protection.
Optigear ALR X1	Synthetic gear oil for robots. Yellow.	PAO	AW	150	>145	N	-20°F to +230°F	446°F	-49°F	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	C	Aftermarket alternative for Optigear Synthetic ALR 150. ALR = Advanced Lubricant Robotics
(See also: Optigear Synthetic 800, Optigear BM, Alpha SP)																
Food Grade																
Optileb GT	H1 food grade, full synthetic gear oil	PAO	EP	220	157	N	-5°F to +230°F	410°F	-53°F	✓✓	✓✓	✓✓	✓✓	✓✓	✓	May be used for applications other than gears requiring H1 food grade.

*Note: Temp range here is for reference only. Actual range varies greatly by application conditions, relubrication frequencies, lubrication volumes, etc.

**TGOA = Tribol Gear Oil Additive; MFT = MicroFlux Trans - these are proprietary blends of EP additives capable of improving gear condition, lowering temperature, reducing vibration, and providing energy savings

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HYDRAULIC AND CIRCULATING OILS											
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Product name	Description	PROPERTIES						APPLICATION			
		Base oil	Additives	ISO VG (Viscosity @ 40°C)	VI	Zinc	Flash Point (COC - varies by viscosity)	Temp Range* (varies by vis)	Pour Point (varies by vis)	Pressure Range	Application Notes
Mineral											
Hyspin HLP-Z	Antiwear hydraulic & circulating oils	Mineral	AW	32,46,68	>93	Y	428°F - 473°F	+10°F to +160°F	-27°F to 17°F	7500+ psi	Anti-wear oils for use in all types of hydraulic and circulating systems.
Hyspin AWS	Preimum antiwear hydraulic & circulating oils	Mineral	AW	15 - 150	> 95	Y	401°F - 450°F	+10°F to +160°F	-17°F to 10°F	7500+ psi	Anti-wear oils for use in all types of hydraulic and circulating systems.
Hyspin AWH-M	High VI antiwear hydraulic oils	Mineral	AW	15, 32, 46, 100	130 - 150	Y	401°F - 450°F	-40°F to +160°F	-60°F to -22°F	7500+ psi	Systems requiring high VI. Cold and/or wide temp systems. Superclean version (15/13/10) in ISO 32.
Hyspin HVI	High VI antiwear hydraulic oil, zinc-free	Mineral	AW	15, 32, 46	> 150	N	334°F - 428°F	-30°F to +160°F	-49°F to 22°F	7500+ psi	Systems requiring high viscosity index, non-zinc fluids. Cold and/or wide temperature systems.
Hyspin Spindle Oils	Rust and Oxidation inhibited spindle oils	Mineral	R&O	2,10, 22	105	N	176°F (2), 294°F (10), 413°F (22)	0°F to +160°F	-	-	Spindle oils for systems that do not require AW additives, which is most.
Hyspin VG	Rust and Oxidation inhibited hydraulic & circulating oils	Mineral	R&O	32 - 220	> 95	N	410°F - 469°F	0°F to +160°F	-22°F to 16°F	-	Used in turbines, centrifugal compressors, spindles and other apps not requiring antiwear additives.
Hyspin ZZ	Zinc-free antiwear hydraulic oils	Mineral	AW	32 - 68	> 95	N	410°F - 439°F	0°F to +160°F	-17°F to -6°F	7500+ psi	Oils for use in all types of hydraulic and circulating systems where non-zinc is preferred.
Tribol HM 943 (fka Tribol 943 AW)	Zinc-free, high perf hydraulic, compressor, circulating oil	Mineral	AW	22 - 100	>100	N	>356°F - 485°F	-10°F to +190°F	-34°F to -15°F	7500+ psi	Extremely long life, non-zinc oil for all systems especially with servo and proportional valves.
Magna CTX 100	Circulating oil for high speed rolling mills in Steel segment	Mineral	AW	100	99	N	>435°F	+15°F to +190°F	10°F	-	Meets requirements for Primetals/Morgoil no-twist mills and Danieli wire-rod mills.
Magna CTX...WT (fka Magna XX)	Circulating oil for backup roll bearings in Steel segment	Mineral	AW	460, 680	92 - 97	N	469°F - 475°F	+30°F to +160°F	16°F to 21°F	-	Excellent demulsibility. Meets Primetals/Morgoil, SMS and Danieli requirements for mill backup bearings.
Magna 68 N, 100, 320	High quality oils with minimal additives for general purpose use	Mineral	None	68, 100, 320	> 95	N	349°F - 572°F	+10°F to +150°F	0°F to 16°F	-	Suitable for vacuum pumps, flushing out systems, or as a basic circulating oil.
Fire-Resistant											
Anvol SWX	FM approved polyol ester fire-resistant hydraulic oil	Polyol Ester	AW	46,68	180 - 185	N	>572°F	-10°F to +180°F	-40°F to -31°F	7500+ psi	Excellent oxidation stability & filterability. Longer oil & equipment life and lower maintenance over competition.
Anvol WG 46	FM approved, water glycol fire-resistant hydraulic fluid	Water Glycol	AW	46	> 200	N	None	-20°F to +150°F	-43°F	<3000 psi	For use in hydraulic systems up to 3000psi. See full PDS for seal and metal compatibility.
Environmentally Responsible											
Performance Bio HE... PBL (fka BioHydraulic)	Plant-based hydraulic oil	Plant Based	AW	32, 46	190	Y	568°F - 590°F	+20°F to +140°F	-36°F to -42°F	7500+ psi	Excellent compatibility with Performance Bio cutting oils.
Performance Bio HE 32 TG (fka Carelube HTG)	Plant-based hydraulic oil, zinc-free	Plant Based	AW	32	>200	N	>518°F	+0°F to +140°F	-27°F	7500+ psi	Biodegradable, long life, excellent anti-wear.
Turbine Oils											
BP Turbinol Select	R&O turbine oil with industry approvals	Mineral	R&O	32,68	>100	N	375°F - 421°F	-	-27°F	-	Meets GE, Cincinnati Milacron, Solar, Siemens, ABB, JIS K2213 type 2, MIL-L-H17276D, BS 489, Westinghouse.
Perfecto HPT 32	Long life R&O turbine oil with industry approvals	Mineral	R&O	32	>100	N	401°F (PMCC)	-	0°F	-	Meets requirements of Alstom, GE, Siemens, Westinghouse, BS 489, DIN 51515
Perfecto SN 46	Synthetic anti-wear turbine oil with industry approvals	PAO	AW	46		N	455°F	-	-65°F	-	Meets requirements of GE, Siemens, Solar, Alstom, MAN Turbo, BS 489, DIN 51515
Perfecto XEP 46	Long life anti-wear turbine oil with industry approvals	Mineral	AW	46	108	N	>428°F	-	5°F	-	Meets requirements of GE, Siemens, Solar, Alstom, MAN Turbo, BS 489, DIN 51515
(See also: Hyspin VG - for use in cases where turbine OEM approvals are not required)											

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HYDRAULIC AND CIRCULATING OILS											
fka = formerly known as											
Product name	Description	PROPERTIES						APPLICATION			
		Base oil	Additives	ISO VG (Viscosity @ 40°C)	VI	Zinc	Flash Point (COC - varies by viscosity)	Temp Range* (varies by vis)	Pour Point (varies by vis)	Pressure Range	Application Notes
Heat Transfer Oils											
Perfecto HT 4	Heat transfer oil for closed systems up to 550F	Mineral	R&O	22	97	N	>356°F	Up to 550F	-16°F	-	Excellent long-term performance and oxidation resistance in high temp, closed systems
Perfecto HT 5 Plus	Heat transfer oil for closed systems up to 600F	Mineral	R&O	46	100	N	>392°F	Up to 600F	-11°F	-	Excellent long-term performance and oxidation resistance in high temp, closed systems
Air Line Lubricant											
Tribol CM ATO 100 (fka Tribol ATO 100 LS ZF)	Air tool oil that emulsifies water to prevent rust/sticking	Mineral	AW, Moly	22	n/a	N	340°F	-	-40°F	-	Prevents pneumatic equipment from sticking and downtime, especially in humid summer months.
Paper Machine Oil											
Magna PM 220 ZZ (coming soon)	Paper machine circulating oil, zinc-free	Mineral	AW	220	97	N	446°F (PMCC)	-	10°F	-	Designed for circulating systems of paper machines. Detergent to prevent carbon build-up.

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Performance Ratings: ✓ Good ✓✓ Better ✓✓✓ Best * Not Recommended

SLIDEWAY OILS

Product name	Description	PROPERTIES					APPLICATION / PERFORMANCE				
		Base oil	Additives	ISO VG (Viscosity @ 40°C)	Zinc	Flash Point (COC - varies by viscosity)	Demulsibility	Resistance to Coolant Wash	Coolant Compatibility	EP / AW Level	Application Notes
Mineral											
Magna SW (fka Magna BD 68 / CF 220)	Conventional slideway oil	Mineral Oil	Stick-slip, AW	68 220	No	390°F - 413°F	✓	✓✓✓	✓	✓✓	Very good resistance to coolant wash.
Magna SW D (fka Magnaglide D)	High performance, good demulsibility w/ coolants	Mineral Oil	Stick-slip, AW	32,68, 220	No	>392°F - 480°F	✓✓✓	✓✓	✓✓✓	✓✓	Good demulsibility, wash resistance & wear protection. D 32 used as dual-purpose hydraulic-way oil.
Tribol SW MWO 20 (fka Tribol MWO 20 LS)	Heavy duty slideway oil with liquid moly	Mineral Oil	Stick-slip, Liquid Moly	68	No	374°F	✓✓	✓✓✓	✓✓	✓✓✓	Excellent resistance to coolant wash and wear.
Tribol SW MWO 40 (fka Tribol MWO 40 LS)	Heavy duty slideway oil with liquid moly	Mineral Oil	Stick-slip, Liquid Moly	220	No	428°F	✓✓	✓✓✓	✓✓	✓✓✓	Excellent resistance to coolant wash and wear.
Molub-Alloy MWO 50 A LP	Extremely heavy duty slideway oil with solid moly	Mineral Oil	Stick-slip, Solid Moly	~400 cSt	No	440°F	✓✓	✓✓✓	✓	✓✓✓	Very heavy way oil providing maximum protection from coolant wash off and wear.
Environmentally Responsible											
Performance Bio SW...PBL (fka BioWay)	Plant-based slideway oil	Plant Based	AW	68	Yes	579°F	n/a	✓✓	✓✓✓	✓	Excellent compatibility with other Performance Bio fluids.

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Performance Ratings: ✓ Good ✓✓ Better ✓✓✓ Best ✗ Not Recommended

COMPRESSOR OILS

Product name	Description	Base Oil	CHEMISTRY						APPLICATION							
			Additives	ISO VG (Viscosity @ 40°C)	VI	Zinc	Flash Point (COC - varies by viscosity)	Pour Point (varies by viscosity)	Temperature Range*	Rotary Screw	Rotary Vane	Centrifugal	Recip - Sump	Recip - Cylinders	Vacuum Pumps	Application Notes
Synthetic																
Tribol CS 890 (fka Tribol 890)	Synthetic ester, extremely long life and low carbon	Synthetic Ester	AW	32	152	N	464°F	-57°F	-40°F to 375°F	✓✓ ✓	✓✓ ✓	✓✓ ✓	✓✓ ✓	✓✓ ✓	✓✓ ✓	Outstanding sump life and residue control, even at high temps. <u>Not compatible with neoprene or EPDM elastomers. Caution when converting from mineral oils as synthetic ester will break loose carbon deposits.</u>
Aircol SN	Synthetic ester, extremely long life and low carbon	Synthetic Ester	AW	68, 100	67 - 89	N	450°F - 469°F (PMCC)	-40°F	-20°F to 428°F	✓✓ ✓	✓✓ ✓	✓✓ ✓	✓✓ ✓	✓✓ ✓	✓✓ ✓	
Aircol SR	Synthetic PAO compressor oil, long life	PAO	AW	32, 46, 68	137 - 142	N	507°F	-66°F to -54°F	-30°F to 275°F	✓✓	✓✓	✓✓ ✓	✓✓	✓	✓✓ ✓	Outstanding oxidation resistance and separation from water. Excellent long life AW synthetic oil for all applications. Not compatible with SBR and EPDM seals.
Mineral																
Tribol HM 943 (fka Tribol 943 AW)	Mineral hydraulic and compressor oil	Mineral Oil	AW	22 - 100	>100	N	>356°F - 485°F	-16°F to -11°F	+10°F to 190°F	✓	✓	✓✓ ✓	✓✓	✗	✓✓ ✓	Excellent for centrifugals & vac pumps. Suitable for lower temp rotary and recips.
Hyspin VG	R&O turbine / circulating oil	Mineral Oil	R&O	32 - 220	>95	N	410°F - 469°F	-22°F to 16°F	+10°F to 160°F	✗	✗	✓✓	✓	✗	✓✓	Economical choice for centrifugals & vac pumps. Not suitable for rotary screw compressors.

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GREASES		fka = formerly known as								Application Ratings: ✓= Recommended C = Consult Engineering						
Product Name	Description	PROPERTIES								APPLICATION / PERFORMANCE						
		Color	Thickener	Additives	NLGI grade(s)	Base oil	Base oil viscosity @ 40°C	Dropping Point (NLGI 1 & above)	Zinc	Temperature Range*	Low Speed	Medium Speed	High Speed	Application Notes		
Multi-Purpose High Performance																
Molub-Alloy 777 ES	High performance grease with lubricating solids	Dark Gray	Lithium	EP / Solids	1,2	Mineral	1000	>356°F	N	+30° F to +250° F	✓	✓	C	Designed for very heavy-duty applications. Capable of withstanding shock and heavy loading.		
Molub-Alloy 860 ES	High performance grease with lubricating solids	Dark Gray	Lithium complex	EP / Solids	0,1,2	Mineral	220,460	>500°F	N	+10°F to +400°F	ISO 460	ISO 220	ISO 220	Useful for plant-wide applications. Performs well in harsh environments (heat, water, high loads).		
Molub-Alloy 4086/320-1	High performance grease with 3%molys	Dark Gray	Lithium complex	3% moly	1	Mineral	320	>500°F	Y	+10°F to +350°F	✓	✓	C	Performs well in harsh environments (heavy loads, heat, water). 3% moly to meet heavy equipment specs.		
Molub-Alloy 6040/460-1.5	High perf grease for wet environments & couplings	Amber	Calcium Sulfonate	EP	1.5	Mineral	460	>500°F	N	+20°F to +400°F	✓	✓	C	Apps with heavy water contamination, high loads, & high temps. Best coupling grease.		
Tribol GR 100 PD (fka Longtime PD)	High perf grease w/ MFT.	Amber	Lithium	EP / MFT	00,0,1,2	Mineral	100	>374°F	Y	-30°F to +284°F	C	✓	✓	Highly loaded as well as high-speed bearings, motor bearings, long-term and lifetime lubrication.		
Tribol GR ALR 100-00 PD	High perf grease w/ MFT designed for robots.	Brown	Lithium complex	EP / MFT	00	PAO	100	n/a	Y	-40°F to +284°F	n/a	n/a	n/a	Developed for robot gear systems where grease is preferred over oil. Excellent seal compatibility.		
Tribol GR 1350-2.5 PD (fka Optipit)	Highly loaded, wet bearings	Brown	Lithium	EP / MFT	2.5	Mineral	1350	482°F	Y	-15°F to +280°F	✓	✓	C	For low speed bearings, mining, walking legs of cable dredges, under water, vibration, & shock loads.		
Tribol GR 4020 PD (fka Tribol 4020)	High performance grease with TGOA	Beige	Lithium complex	EP / TGOA	2	Mineral	220, 460	464°F	N	-20°F to +350°F	ISO 460	ISO 220	ISO 220	Medium & high loads, excellent water resistance. Tan color for customers wanting a non-black grease.		
Multi-Purpose																
Spheerol EPL	Multipurpose lithium EP grease	Light Amber	Lithium	EP	2	Mineral	150 - 200	374°F	Y	-10°F to +250°F	C	✓	✓	Multipurpose greases commonly used for general-purpose, plant-wide applications.		
Spheerol EPLX 460 (fka GXL 729)	Multipurpose grease for heavy loads	Dark Brown	Lithium complex	EP	2	Mineral	460	>500°F	Y	+10°F to +300°F	✓	✓	C	Heavy-duty, economical grease for steel mills and other slow moving, highly loaded applications.		
Spheerol SHL 00 (fka SHL 00)	Low leak grease	Blue	Lithium complex	EP	00	PAO	520 cSt (2400 SUS)	404°F	Y	-40°F to +300°F	n/a	n/a	n/a	Long-life, semi-fluid for use in truck wheel hubs or anywhere minimal leakage is desired.		
Low Temp																
Molub-Alloy 6780	Low temp bushing & bearing grease, 5% moly	Dark Gray	Lithium	5% Moly	1	PAO/Mineral	130	394°F	N	-40°F to +150°F	✓	✓	✓	Low temp bushings and bearings on draglines, shovels, drills, mobile equipment, and mills.		
(See also: Tribol GR 4541 HT, Tribol GR SW 460-1, Tribol GR SW 680-1, Braycote 2115-2)																
Paste																
Molub-Alloy Paste White T (fka Optimol Paste White T)	Assembly paste with high level of lubricating solids	White	Lithium	White Solids	1	Mineral	n/a	-	Y	-22°F to +482°F	n/a	n/a	n/a	Prevents fretting corrosion of tightly fitting metal parts. Allows for easy assy and disassy of these parts.		

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Product Name	Description	PROPERTIES							APPLICATION / PERFORMANCE						
		Color	Thickener	Additives	NLGI grade(s)	Base oil	Base oil viscosity @ 40°C	Dropping Point (NLGI 1 & above)	Zinc	Temperature Range*	Low Speed	Medium Speed	High Speed	Application Notes	
High Temp / Wide Temp															
Molub-Alloy 1000 HT (fka Molub-Alloy 1000)	Extreme temp rolling and sliding bearing grease	Dark Gray	Organic Sodium	EP / Solids	1	PAO/ Ester	540	>500°F	N	+30°F to +550°F	✓	✓	C	Specifically designed for high temp, heavy & shock loads. Withstands intermittent exposure to 650°F.	
Tribol GR 4541 HT (fka Tribol 4541)	Full synthetic, wide temperature grease	Red	Lithium Complex	EP	1	PAO	150	>500°F	N	-40°F to 450°F	✓	✓	✓	Synthetic base oil provides great low & high temp performance. Intermittent exposure up to 500°F.	
Tribol GR SW 460-1	High performance grease for Wind turbines and other applications	Yellow	Lithium Complex	EP / MFT	1	PAO	460	>482°F	N	-40°F to +400°F	✓	✓	C	For wide temps, heavy loads & slow speeds. All Wind turbine brgs (except generator brg). Approvals: Gamesa (yaw brg), Clipper, Nordex/Acciona.	
Tribol GR SW 680-1	High performance grease for Wind turbines and other applications	Yellow	Lithium complex	EP / MFT	1	PAO	680	>482°F	N	-40°F to +400°F	✓	✓	C	For wide temps, heavy loads & slow speeds. All Wind turbine brgs (except generator brg). GE approval pending.	
Braycote 2115-2 (fka Molub-Alloy 2115)	High temp rolling and sliding bearing grease	White	PTFE	PTFE	2	PFPE	500	None	N	-40°F to +480°F	✓	✓	C	Extremely long service life at high temps. Intermittent exposure up to 575°F. Ventilation needed at >500°F.	
Braycote Inertox 2 (fka Inertox Heavy)	High temp rolling and sliding bearing grease	White	PTFE	PTFE	2	PFPE	150 (500 in-use)	None	N	-13°F to +500°F	✓	✓	C	Extremely long service life at high temps. Intermittent exposure up to 575°F. Ventilation needed at >500°F.	
Miscellaneous															
Molub-Alloy BRB 572	Multi-service bearing grease	Dark Gray	Lithium	EP	2	Mineral	150	>356°F	Y	-15°F to +250°F	C	✓	✓	Can be used for "full-pack" applications, where brg housing is packed 60-100% full. See PDS for details.	
Optitemp LG 2	Grease for low temps and very high speeds.	Very light	Lithium	AW	2	PAO	46	>356°F	Y	-58°F to +248°F	C	C	✓	Approved for Kuka robot cables. Low temp, robot cables, plastic compatible, door locks.	
Optitemp PG 1.5	Full synthetic, polyglycol grease; silicone free	Beige	Lithium complex	R&O	1.5	PAG	220	>428°F	N	-40°F to +284°F	C	✓	✓	Lifetime lubrication of elastomers & plastics (EPDM compatible). Paint compatible & noise dampening.	
Performance Bio GR 8899 (fka Molub-Alloy 8899 LV)	Biodegradable mill grease with plant-based oil	Yellow Amber	Silica Gel	EP	00	Vegetable Oil	1670	-	N	+20°F to +250°F	✓	C	C	Heavily loaded, slow bearings in rolling & grinding mills. Also for rolling mill slides and chock liners.	
Tribol GR 400-3 PD (fka Olista Longtime 3 EP)	Heavy duty, adherent grease	Brown	Lithium	EP / MFT	3	Mineral	400	>365°F	Y	-13°F to +284°F	✓	✓	C	NLGI 3 grease for extreme conditions on bearings, as well as some gears. Prevents fretting corrosion.	
Tribol GR 3020/1000-0 PD (fka Tribol 3020/1000-0)	Grease with high viscosity base oil and TGOA	Yellow Amber	Lithium	EP / TGOA	0	Mineral	1000	>320°F	N	-40°F to +248°F	✓	C	C	Very high viscosity base oil for heavy loads and slow speeds. TGOA additive.	
Tribol GR CLS 000 (fka Olit CLS 000)	Water resistant semi-fluid grease	Beige	Lithium / Calcium	EP	000	Mineral	100	300°F	Y	-40°F to +212°F	C	✓	✓	Works well for leaky gearboxes. Excellent flow & pumpability at low temps.	
Food Grade															
Optileb GR 823 (fka Foodproof 823 FM)	H1 food grade grease	White	Aluminum Complex	White Solids	0,1,2	White Oil	192	>446°F	Y	-22°F to +266°F	✓	✓	✓	H1 food grade grease providing excellent performance in all grease applications.	
Optileb GR UF (fka Optimol Obeen UF)	H1 food grade grease. Full synthetic base oil.	White, Clear	Aluminum Complex	EP	00,1	PAO	400	>446°F	Y	-40°F to +284°F	✓	✓	C	H1 food grade grease designed for all applications, including high temperatures. Very light color.	

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OPEN GEARS and WIRE ROPES

Product Name	Description	Type	CHEMISTRY						APPLICATION	
			Thickener	Additives	NLGI grade	Base oil	Base oil viscosity (cSt @ 40°C)	Solvent Containing	Temperature Range*	Application Notes
Open Gears										
Molub-Alloy OG 936 SF Heavy A (fka Molub-Alloy 936 SF Heavy A)	Open gear lubricant for heavily loaded gears; very adherent to gears	Open Gear	Lithium	EP / Solids	0.5	Mineral oil	1890	No	30°F to 300°F	Open gears and wire ropes at high loads & low speeds. Water-resistant, sprayable, solvent-free. Excellent for heavy duty, mining, & sugar mill applications. CAT / Bucyrus approved. 4-ball weld of 800 kg.
Molub-Alloy OG 8031 (fka Molub-Alloy 8031)	Open gear grease for heavily loaded gears; drains well from gear pits	Open Gear	Microgel	EP / Solids	00	Mineral oil	2200, 3000, 6000	No	10°F to 300°F (varies by grade)	Designed to lubricate heavily loaded open gears, screw type actuators, & plain journal bearings. 4-ball weld load 800 kg for 8031/6000 (400 kg for other grades).
Wire Ropes										
Molub-Alloy 902 SF Light	Lubricant for wire ropes	Wire Rope	n/a	EP	n/a	Mineral oil	869	No	0°F to 250°F	Best applied automatically with at least 2 nozzles on opposing sides of wire rope. May also be applied manually.

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CHAIN LUBRICANTS									
Product name	Description	Base fluid	PROPERTIES					APPLICATION	
			ISO VG (Viscosity @ 40°C)	Additives	VI	Flash Point (COC - varies by viscosity)	Fire Point	Maximum Temperature*	Application Notes
Oil Based (non dry-film)									
Molub-Alloy CH 22 (fka Molub-Alloy Chain Oil 22)	Light viscosity, mineral based chain oil with moly	Mineral	22	AW / Solids	-	359°F	365°F	300°F	May also be used for wire ropes due to excellent corrosion protection. Nearly dry-film, great for dusty areas.
Tribol CH 290 (fka Tribol 290)	High viscosity chain oil, compatible with water-based paint	PAG	150, 220	AW	210, 225	565°F	-	430°F	E-coat, painting, drying & curing ops. Prevents cratering & fish-eye. NOT COMPATIBLE WITH OTHER OIL TYPES.
Tribol CH 1421 (fka Tribol 1421)	High temp chain oil designed for the highest operating temperatures	Ester	150, 276(SG), 680	AW	115, 129, 232	500°F	570°F - 580°F	575°F	Designed to provide the highest protection, lowest usage, and lowest residue at the highest application temperatures. H2 rated lubricant.
Viscogen KL 23, 300	High temp synthetic chain oils	Ester	250, 3500	AW	115, 159	428°F - 482°F	-	464°F	High temp chain oils for use up to 464F. KL 23 and 300 available in spray cans only.
Viscogen KLK 25, KLK 28	Chain oils designed for engineered wood presses (MDF, OSB)	Ester	255, 280	AW	160	500°F	540°F, 550°F	482°F	Extremely low surface tension penetrates tight chain pins. For Metso (Küsters), Siempelkamp, & Dieffenbacher presses
Food Grade									
Optileb CH (fka Viscoleb)	Synthetic food grade chain oil. H1 rated for incidental contact.	PAO	32, 150	AW	128, 145	428°F, 457°F	-	302°F, 392°F	Approved for use on chain pins by AB Inbev. Meets the H1 food grade designation.

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PERMA LUBERS			
SINGLE-POINT / MULTI-POINT LUBRICATORS			
Product name	Description	Available with:	Comments
Perma STAR VARIO General Info: Motor-driven, mechanical pump that can generate up to 85 psi, allowing for remote mounting up to 15 feet away. Temperature DOES NOT affect the dispense rate of these units. DO NOT use above 140F. May be used on multiple lubes points but ONLY WITH DISTRIBUTION BLOCK. The electro-mechanical drive unit is reusable (replace battery pack and lube cartridge).			
STAR VARIO L250 (250 cc / 8.5 oz)	Electro-mechanical (EM) driven, lubricant cartridge with variable dispense time up to 12 months	Molub-Alloy 860/220-2 ES	5X.25L pack in SAP = 5-pack starter kits which will include the EM motor, battery pack, and filled luber 10X.25L pack in SAP = 10-pack of replacements which will contain battery pack and filled luber (no EM motor)
Perma FLEX General Info: FLEX units should be installed as close to the bearing as possible, preferably screwed directly into the grease fitting port, but max of 3 feet away. Temperature SIGNIFICANTLY AFFECTS the dispense time (colder temps produce slower dispense rate). DO NOT use above 140F. DO NOT use on distribution lines smaller than 1/4". DO NOT use on more than 1 lube point. These units are completely disposed of when empty.			
FLEX 125 (125 cc / 4.2 oz)	Gas driven, lubricant cartridge with variable dispense time up to 12 months	Molub-Alloy 860/220-2 ES	10X.125L pack in SAP = 10-pack of lubers (dispose of entire luber when empty and replace with new one)