

HS 609 - LUBRICANTS AND COOLANTS

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REVISION LOG

Rev	Remarks
28	Tunap Tungrease CS-2 renamed CP-2
27	Moved Thread Lockers to Adhesives Standard HS 897
26	Added NexPET to the list of TUNAP - Tungrease CS-2 applications
25	Added Tunap Tungrease CS-2 aerosol
24	Added Lubriplate Synxtreme FG-1
23	Added CMD Extreme Pressure Lube No. 3 for O-ring applications (fitting ends and non-captive grooves)
22	Added new (Non-Food Grade) oils for “Gear box (gear oil)” under “Lubricants for General Applications” and removed Lubriplate SFGO Ultra 220 (Food Grade) as it was not recommended by the supplier. [See SIF# MCL004556]
21	Loctite 771 is a high temperature lubricant. Removed from table 3 (list of thread lockers) and added to table 1 (lubricants) where it belongs.

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	Revision Level - 28 - PUBLISHED	Security Level - PUBLIC	Standard No.	HS 609

20	Updated LPS 2 picture in table 4; replaced 'Lubriplate FMO-350-AW' with 'Lubriplate FMO-85-AW' in table 1 and table 4; updated Lubriplate FMO-85-AW picture in table 4
19	Added Grease for Closure-Molds [SIR 105982; SR 49526]
18	Added Stack Mold Carrier Bushing application to list. See SR 42775 for details
17	Added Kem-A-Trix Fahrenheit 800 to list; clarified HR components
16	Lubricants used for HPP5.1 added to tables 1, 3 and 4
15	Lubriplate SynXtreme FG-1 food-grade lubricant added to list
14	Table 3 application description updated
13	P80 Emulsion and Loctite 771 added to list
12	Lubriplate Pure Tac lubricant added to list. Mold bushing applications reviewed and updated (table 1). Lubricant list reformatted (table 3).
11	New food grade oil added for assembly and break-in purposes of new greaseless leader pin bushings
10	Updated grease application and Error Fixed (KLUBERSYNTH is Food Grade grease)
9	New lubricant added for Perma Nova Automatic Lubricator Rod Ends
8	Plastar H1-2, Plastar B3 No. 2 and Amblygon TA 15/2 greases added for use on AE products
7	AFB-LF grease added for the linear bearings and AFJ grease added for ceramic linear bearings.
6	Added lubricant for bare steel surfaces after removing the rust inhibitor
5	Added gearbox oil Shell Omala 220
4	Typo fixed (Aral Degol GS200 replaced by GS220)
3	Update Castrol Alpha SP to include the Viscosity 220
2	Add Mobilgear 600 XP 220 for Electric Clamp Lock
1	Reference to Shell Tellus 46 replaced by list specified in HS 207
0	Original Issue

1 PURPOSE

This standard contains a list of approved lubricants and heat transfer fluids for use in Husky systems. Specific product selection is the responsibility of the equipment operator/owner and may depend on climate, application, performance and regional/regulatory requirements.

2 DOCUMENT CONTROL

Revisions to this document shall be authorized by Corporate Operations.

3 REFERENCES

HS 207 – Hydraulic Oil Quality Component Specification

HS 252 – Standard Assembly Torques

HS 897 – Adhesive Standard

4 LUBRICANTS

Apply proper lubricant to all threads and contacting surfaces before installation.

Table 1 – Lubricants for General Applications

Application	Lubricant	
	Food Grade	Non-Food Grade
Mechanical (fastener threads) - Low temperature (<150°C)	Lubriplate FGL-1 Lubriplate Synxtreme FG-1	Recommended Hydraulic Fluid *, LUB 3000, Molykote G-N Metal Assembly Paste (MoS2) or equivalent
Mechanical (fastener threads) - High temperature (>150°C)	Not Available	Optimoly Paste TA or equivalent
Electrical (fastener threads) – High temperature e.g. heater bands	Not Available	Optimoly Paste TA or equivalent
Generic hydraulic oil	Refer to HS 207 – Hydraulic Oil Quality Manual Requirements	
Roller and ball bearing (open cage)	Lubriplate FGL-1, FGL-2 or Plastar grease H1-2 Lubriplate Synxtreme FG-1	Lubriplate No. 3000 or Plastar grease B3 No. 2
Linear bearing	Lubriplate FGL-1	Lubriplate 730-1, THK AFB-LF grease
Robot linear bearing	Lubriplate Synxtreme FG-1	THK AFJ
Vacuum pump bearing	Not Available	Kluber Amblygon TA 15/2
Electric mold stroke ball screws, Angular contact bearings and bushings. Moving platen linear bearings	Lubriplate SynXtreme FG-1 (the only food grade grease approved for use on electric mold stroke)	Not Available

* See HS 207, section 8.1, chart 1.

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... Table 1

Application	Lubricant	
	Food Grade	Non-Food Grade
Electric clamp lock piston assembly	Not Available	Mobilgear 600 XP 220
Greaseless bushings (HPP5 leader pin bushing, booster pad assembly – all molds, etc)	Lubriplate FMO-85-AW	Not Available
Standard bushings used with leader pin (all non-HPP 5 molds)	Lubriplate FGL-2 Lubriplate Synxtreme FG-1,2	Not Available
Wear plates and gibs (all molds)	Lubriplate FGL-2 or Lubriplate Pure Tac	Not Available
Cavity plate to manifold plate guide pins, alignment dowels, screw heads, screw threads, grease fittings	Lubriplate FGL-2 or Lubriplate Pure Tac	Not Available
Dynamic joints (linkages, tie bar shoe, etc.)	Lubriplate FGL-1 (Automatic Greasing) or FGL-2 Lubriplate Synxtreme FG-1,2	Lubriplate No. 3000
Clamp shutter cylinder rod ends & plain bearings perma nova automatic lubricator for rod ends	Klubersynth UH1 14 151 Lubriplate Synxtreme FG-1,2	
Seals (before and after installation)	Lubriplate SFG0 Ultra 46	Recommended Hydraulic Fluid *, Fiske AW-46, etc.
Bare steel surfaces (after removing the rust inhibitor)	<u>Not available.</u> LPS 1 Premium Lubricant is acceptable for use in Canadian food processing establishment	LPS1 Premium Lubricant or equivalent
Cavity flange, neck ring and lock ring tapers, CAM follower track	Lubriplate Pure Tac	Not Available
Mold and hot runner plates (all molds)	LPS 2 protective spray	Not Available
EOAT tube O-rings (all molds)	Not Available	Novagard G661
Hot Runner Components (Guide Pins, plate-alignment dowels, drop bolt heads & threads, shoulder bolt heads & threads, Locating Ring screws, Center Locating Insulator screw)	Kem-A-Trix Fahrenheit 800 Bearing Gel	Not Available
Stack Mold Carrier Bushings	Lubriplate FGL-2 Lubriplate Pure Tac Lubriplate Synxtreme FG-1, 2	THK AFB-LF grease or Lithium based NLGI 2 grease
	DO NOT USE: Lead Based Greases, Dry Film Lubricants, Molybdenum Disulfide Lubricants	

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... Table 1

Application	Lubricant	
	Food Grade	Non-Food Grade
Closure-Mold Stack-Components (Inner- and Outer-Cores, Stripper-Sleeves, Slides and Seal-Rings).	TUNAP - Tungrease CP-2 HPN 7538794 (400g) HPN 7538795 (1000g) HPN 8619521 (400 ml)	Not Available
Closure-Mold Alignment Features: (Leader-Pins, Leader-Pin-Bushings, Linear-Ball-Bearings, Straight-Locks, Cams, Wedges).		
Closure-Mold Ambient-Temperature Installations and Fasteners (Screw-Heads, Screw-Threads, Alignment-Dowels, O-Rings)		
NexPET molds components: cavity taper, neck ring external taper (cavity side), leader pin, leader pin bushing, wear plates		
Screws installed into the hot runner manifold (heads & threads for: Sprue Bushing screws, Sprue Bar screws, Transfer Bushing screws, Backup Insulator screws, T/C mounting screws)	Not Available	Loctite 771
Gear box (gear oil)	Not Available	Aral Degol GS220, Castrol Alpha SP 220 Shell Omala 220 Castrol Optigear BM 220 Fuchs Renolin CLP 220 Klüber Klüberoil GEM1-220N Mobil Mobilgear 600 XP 220 Fuchs Renolin Unisyn CLP 220 Klüber Klübersynth GEM4 - 220N Mobil SHC Gear 220 Shell Omala S4 GX 220

* See HS 207, section 8.1, chart 1.

Table 2 – Lubricants for Fittings











Application	Connection		Food Grade	Non-Food Grade
HYDRAULIC	STEEL	SAE, ORFS, BSPP	FGL-2 (O-ring contact area)	Recommended Hydraulic Fluid * (threads) CMD Extreme Pressure Lube #3 (on O-rings to be retained on fitting ends or non-captive grooves)
		Barb	P80 Rubber Lubricant (hose end contact area)	Not recommended
LUBRICATION	STEEL	SAE, ORFS, BSPP	FGL-2 (surface of contact of o-ring)	Recommended Hydraulic Fluid * (threads) CMD Extreme Pressure Lube #3 (on O-rings to be retained on fitting ends or non-captive grooves)
		NPT	Loctite 567	Loctite 577
AIR	STEEL, ALU and BRASS	NPT	Loctite 567	Loctite 577
		JIC	Not Available	Recommended Hydraulic Fluid *
	STEEL	SAE, BSPP	Not Available	Recommended Hydraulic Fluid *
	BRASS	SAE, BSPP	Not Available	No Lubrication
	Any material	Barb	P80 Rubber Lubricant (hose end contact area)	Not recommended
WATER	STEEL and BRASS	NPT	Loctite 567	Loctite 577
		SAE, BSPP, JIC	Not Available	Recommended Hydraulic Fluid *
	ALUMINUM	NPT	Loctite 567	Loctite 577
	STAINLESS STEEL	NPT	Loctite 567	Loctite 577
		JIC, SAE (SAE plugs)	Not Available	Recommended Hydraulic Fluid *
	Any material	Barb	P80 Rubber Lubricant (hose end contact area)	Not recommended





* See HS 207, section 8.1, chart 1.



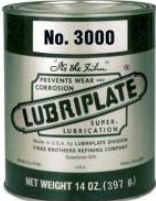



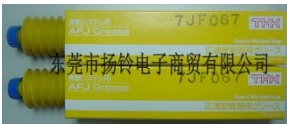





Table 3 – Thread Lockers











See HS 897 - Adhesive Standard







Table 4 – Lubricants List

Product	Manufacturer	Name	Product Use
		Lubriplate FGL-1	High performance, aluminum complex, food grade grease
		Lubriplate FGL-2	High performance, multi-purpose, aluminum complex, food grade grease
		Lubriplate SFG0 Ultra 220	100% Synthetic, Polyalphaolefin (PAO)-based, high-performance, super multi-purpose, food grade fluid lubricant
		Lubriplate FMO-85-AW	Food grade USP white mineral oil
		Lubriplate SFG0 Ultra 46	Synthetic lubricating oil Food grade
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Product	Manufacturer	Name	Product Use
		LPS1 Premium Lubricant	Greaseless lubricant Non-food grade
		Lubriplate Pure Tac	Petroleum lubricating grease Food grade
		Klubersynth UH1 14-151	Synthetic lubricating grease Food grade
		Molykote G-N Metal Assembly Paste (MoS2)	Heavy duty lubricating paste Non-food grade
		Castrol Optimol Paste TA for screw connections	High temperature lubricating paste Non-food grade
		Plastar Grease B3 No. 2	Synthetic grease lubricant Non-food grade
Not found		Plastar Grease H1-2	Synthetic grease Lubricant for indirectly fortuitous contact with foodstuff (Partially) Food grade
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Product	Manufacturer	Name	Product Use
		Lubriplate 730-1	Petroleum lubricating grease Non-food grade
		Lubriplate No. 3000	Petroleum lubricating grease Non-food grade
		THK AFB-LF	General-purpose grease developed with a lithium-based consistency enhancer using refined mineral oil as the base oil for bearing applications Non-food grade
		THK AFJ	Grease containing urea-based consistency enhancer and other special additives that give excellent lubrication properties for bearing applications Non-food grade
		Amblygon TA 15/2	Special grease for long-term lubrication and high temperature bearing applications Non-food grade
		Aral Degol GS220,	Fully synthetic zinc-free EP gear oils with poly-glycol base with very high VI >200, for high thermal and mechanical stress and danger of micro pitting Non-food grade
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Product	Manufacturer	Name	Product Use
		Shell Omala 220	Extreme pressure heavy duty gear lubricant for highly loaded enclosed gears and bearings Non-food grade
		Castrol Alpha SP 220	Oil intended for use in all types of enclosed gears with circulation or splash lubrication systems Non-food grade
		Mobilgear 600 XP 220	Extra high performance gear oil having outstanding extreme pressure characteristics and load-carrying properties, intended for use in all types of enclosed gear drives with circulation or splash lubrication systems
		Fiske AW-46	Petroleum lubricating oil High performance, antiwear, fortified hydraulic oils developed to meet the requirements of most types of hydraulic and recirculating systems Non-food grade
		P-80 Rubber Lubricant Emulsion	A temporary rubber lubricant for hydraulic, air and water fittings that reduces friction during installation (applied on hose end of fittings) Food grade
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Product	Manufacturer	Name	Product Use
		Loctite 771	<p>High temperature anti-seize lubricant</p> <p>Heavy duty, high temperature lubricant that resists galling and corrosion and reduces wear in heavy pressure applications. It contains tenacious metals, oils and graphite materials that cannot be burned away or removed from slow moving parts. This product withstands temperatures ranging from -65 Deg. F to 1400 Deg. F.</p> <p>Viscosity: flow similar to mustard</p> <p>Appearance: Thick metallic, sliver paste, without separation</p> <p>Benefits: provides long life for slow speed parts, nickel content stays intact up to 1315 Deg. C, prevents galling of parts, especially stainless steel</p>
		Lubriplate Synxtreme FG-1	<p>NSF H1 registered, high performance, multi-purpose, synthetic, food machinery grade grease. Provides long lasting, anti-wear and extreme pressure protection. Highly resistant to water and caustic solution wash downs. Provides excellent high and low temperature performance. SynXtreme FG-1/220 is formulated with a heavier (ISO 220 Grade) base fluid and is recommended for slow to medium speed bearings and other equipment operating under high temperatures</p>
		LPS2 Protective Spray	<p>Fast acting deep penetrating lubricant and protectant. Sprayed as a coating for interior storage. Protects against corrosion for a year or more.</p> <p>Food grade</p>
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Product	Manufacturer	Name	Product Use
		Novagard G661	Silicone O-ring lubricant Non-food grade (complies with FDA regulation 21 CFR section 178.3570 Lubricants with incidental food contact)
	 Kem-A-Trix™ (Lubricants) Inc. Specialty Lubricants and Shaft Seal Systems	Kem-A-Trix Fahrenheit 800	High-performance bearing lubricant (-37°C to 399°C) Food grade (USDA H-1 and Kosher/Halal approved in food applications. Complies with FDA #21 CFR #178.3570 and #172.878. Will not support bacterial growth.)
	 TUNAP Industrie Chemie GmbH & Co Bürgermeister-Seidl- Str. 2 D-82515 Wolfratshausen Phone: +49 (0) 8171 / 16000 sdb@tunap.com	TUNAP Tungrease CP-2	Physiological harmless high-performance grease based on a special complex soap with a compound of synthetic base oils and additives. NSF H1 registered (Reg. No.: 137582) Temperature-Range -50°C up to +220°C
	 CMD Lube and Oil Chicago Manufacturing and Distribution Co., Inc.	Anti-scoring, Extreme Pressure Lube No. 3	For use in applications that require O-rings to be retained on fitting ends or manifold interfaces to aid assembly. The lubricant is significantly more “sticky” than the FGL-2 and allows for O-rings to be retained in non-captive face seal grooves for inverted assembly.

5 COOLANTS

Table 5 – Heat Transfer Fluids

Application	Heat Transfer Fluid	
	Food Grade	Non-Food Grade
F2P Barrel Cooling System	Not Available	BP Transcal N

6 LINKS

<https://www.lubriplate.com/Resources/Safety-Data-Sheets/>

(GHS Compliant SDS)

<https://catalog.applied.com/Applied-Product-Catalog-20212022/Catalog/106/#>

(AW Series Hydraulic Oil)

<https://www.ipcol.com/assembly-lubricants/industries/pump-hvac>

(P-80 Lubricants)