



FOOD GRADE LUBRICANTS



**FOOD GRADE LUBRICANTS**  
– WE ARE AWARE OF OUR RESPONSIBILITY!



# FOOD GRADE LUBRICANTS BY FINKE

## – WE ARE AWARE OF OUR RESPONSIBILITY!

Almost every day we are faced with crisis situations related to food. This is demonstrated, for example, by recalls of products that are contaminated with glass or metal particles or toxic substances, and burden on human health, thereby harming in turn the producer's image and brand name. This need not be the case!

Take advantage of the complete service system from Finke Mineralölwerk! With our food grade Lubriplate lubricants we offer a unique service, from consulting, through to delivery and technical support!

### OUR PERFORMANCE PROFILE

- Technical consulting
- HACCP analysis
- In-house engineering services
- Complete commissioning of new systems
- Customised product development
- Turnkey complete systems service
- Laboratory tests
- Maintenance checks
- Total fluid management
- Lubricant training seminars
- Approvals in accordance with USDA/FSIS, CFIA, NSF, Kosher, Halal, F.D.A., A.Q.I.S and ISO-21469
- Worldwide sales network
- Nearly 200 registered NSF products

The team from Finke Mineralölwerk operates as Master Distributor for the sale of Lubriplate food grade lubricants in Germany and Europe. 30 years ago, a trained and experienced team devoted to

Food Grade Lubricants as the food industry and the suppliers of raw materials from the pharmaceutical and chemical industries exerted a growing pressure on lubricant producers to accelerate the development and recommendation of food grade lubricants for food processing.

The tasks of lubricants are clearly stated. Primarily, they ensure that machinery and equipment operate without problems. By choosing the right lubricants, the user reduces friction and wear. Thus, a trouble-free and safe production is made possible.

In addition to the basic requirements of a lubricant, a food grade lubricant has to fulfil additional criteria.

Only if a lubricant perfectly complies with food laws and regulations, is harmless to health, taste and odour neutral and approved at an international level, one can assume that in a technically unavoidable contact with food no health risks to consumers arise.

Under no circumstances may consumers' health be impaired. With respect to this, there are new and demanding legislations. Higher hygiene standards such as the HACCP concept (Hazard Analysis and Critical Control Points) make it possible to identify lubrication points, where a risk of contamination with food exists, more clearly.

These points should be lubricated exclusively with food grade lubricants in line with current legislation.







### **NO DANGER OF FOOD CONTAMINATION DUE TO LUBRICANTS – EMPLOY EXCLUSIVELY FOOD GRADE LUBRICANTS!**

On the other hand, of course, these lubricants must also fulfil their original mission:

- Machine and component lubrication
- Heat dissipation
- Wear protection
- Friction reduction
- Corrosion protection
- and much more

Machinery and equipment in the food industry do not differ in principle from those of other industries – but the environmental effects can be much more complex.

Components such as in-line oilers, plain and rolling bearings, chains, compressors, vacuum pumps, gears, heat transfer oils, hydraulic systems, pumps and slideways can also be found everywhere in the food industry.

For example, machinery daily washing with partly aggressive agents under high pressure, contamination with quite active substances (fruit juices) and the influence of extreme temperature fluctuations – from shock cooling systems to the wafer ovens – should be mentioned here.

Expertise and practical experience are very important to recommend the ideal lubricant and be able to

determine maintenance intervals for lubrication – the latter along with the respective application and ambient conditions.

Intervals for changing oil depend more on the contamination of the lubricant than on the reduction of its lubricating properties as a result of additive aging, or the lubricant oxidation.



# LUBRIPLATE LUBRICANTS – UNIQUE WORLDWIDE!

Since 1884, Finke Mineralölwerk has been producing and selling lubricants of the AVIATICON own brand throughout Europe and Asia. Through the co-operation with the American producer LUBRIPLATE Lubricants, the company product portfolio could be expanded to include food grade lubricants (NSF H1). So Finke is today the European Master Distributor for selling food grade lubricants to competent partners in Europe. For over 140 years, Lubriplate lubricants have been produced and distributed in the US. The company is based in Newark, New Jersey.

Finke decided to partner with LUBRIPLATE because it is a very well-established family company that has very high brand awareness in the food industry and a broad product portfolio which is used by the leading producers in the food and beverage industry.

The entire product line of NSF H1 registered Lubriplate high-performance lubricants in food machine quality has been designed so as to completely cover all lubrication needs in food processing and filling systems. These lubricants are produced under strict quality safety standards as per ISO 21469 and ISO 9001, and formulated by combining a base oil with modern anti-wear additives.

All Lubriplate H1 lubricants are made from materials complying with the FDA regulation 21 CFR 178-3570 for lubricants. They meet the USDA H1 safety standards and may be used in tested meat and poultry plants. As they are clean, safe and non-toxic, by using them lubrication can be eliminated as a critical control point in HACCP programs.

Also in the field of synthetic lubricants, we take advantage of LUBRIPLATE research and development lead. Especially in Europe, the market share of synthetic lubricants will grow to about 34 % in Western Europe and 11 % in Eastern Europe by the end of 2015.

Finke Mineralölwerk and LUBRIPLATE Lubricants have been certified by ISO 9001. In addition, LUBRIPLATE Lubricants products have been approved by ISO 21469.

For production, only the purest and highest quality base oils and most modern additives are used.

We appreciate the trust our customers have placed in us and we are very well aware that it must be always and constantly renewed through our daily work.

## OUR DISTRIBUTORS IN EUROPE

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Vlaamsekaai 2-5 · 2000 Antwerpen  
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Gerald Lutz  
Managing Director  
Finke Mineralölwerk GmbH

# AREAS OF APPLICATION FOR LUBRIPLATE FOOD GRADE LUBRICANTS

MEAT INDUSTRY

BEVERAGE INDUSTRY



CONFECTIONERY INDUSTRY

BAKING INDUSTRY

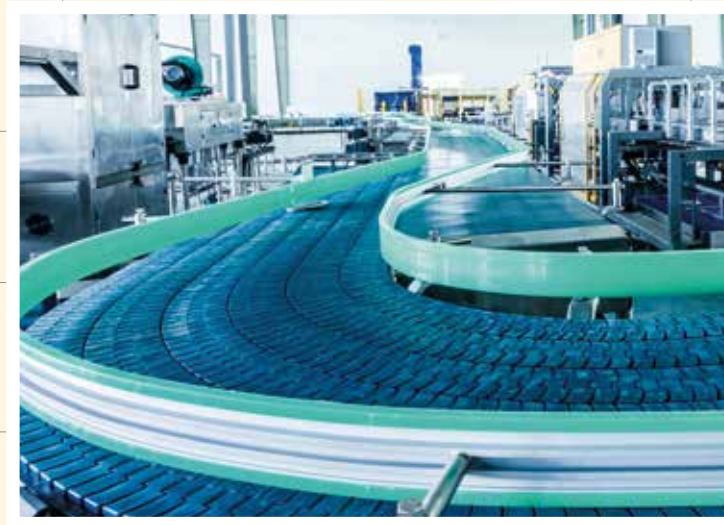
OIL MILLS

VEGETABLE INDUSTRY

AGRICULTURE

FISH INDUSTRY

FRUIT INDUSTRY



DAIRY INDUSTRY

ANIMAL FEED INDUSTRY

POULTRY INDUSTRY

CEREAL PROCESSING  
INDUSTRY





## WHAT ARE FOOD GRADE LUBRICANTS?

For food grade lubricants, there are no German or EU regulations. It is therefore customary to refer to the US standards. The US has long-term experience in specifications about raw materials to be used as food grade lubricants, and the American regulations governing the use of these substances are considered highly reliable. The food grade lubricants permitted under American regulations are considered as the standard for food grade lubricant quality in everyday practice.

Until September 30, 1998, the United States Department of Agriculture (USDA) authorized food grade lubricants according to the FDA list. This office was taken over by the private institution NSF International (formerly National Sanitation Foundation).

The H1 and H2 designations remain unchanged. Already certified lubricants retain their certificate. The basis for new certifications continues to be FDA positive list. Other NSF category codes are 3H (separating or cleaning agents with unavoidable direct contact with food) and HT1 (heat transfer oils with incidental contact).

In the US, the Food and Drug Administration (FDA) determines which ingredients may be used for food grade lubricants.

In list 21 CFR § 178.3570, those raw materials – identified by chemical name and quantity delivery) which may be used for food grade lubricants are listed.

Only those substances which can demonstrate their sanitary harmlessness through extensive toxicological tests are listed.

The USDA reviewed the products submitted for certification and divided them into different NSF classes.

Through enhanced HACCP controls, the USDA decided that in the future no more food grade lubricants will be approved.

The result of this is that although enough food grade lubricants with USDA approval are currently still present, such approval is no longer assigned for new developments.

A working group made up of EHEDG (European Hygienic and Design Group), ELGI (European Lubrication Grease Institute), NLGI (North American Lubrication Grease Institute) and DIN CERTCO (certification agency of the German Institute for Standardisation) has decided to establish an international system, based on USDA practice, to authorise food grade lubricants.

## FOOD MARKET AND FOOD GRADE LUBRICANT MARKET

### – Legal regulations

Quality, hygiene and product liability are extremely important issues in the food, beverage and pharmaceutical industries. Large sums are invested to provide brands in the commodities sector high level of awareness.

In the Foodstuffs and Commodities Law (LMBG) applicable in Germany, there is no specific regulation for lubricants.

Lubricants are used in food processing equipment, which by definition are included in commodities.

As an occasional contact between lubricant and food cannot be completely ruled out, lubricants must meet the requirement under § 31 LMBG, which prohibits to use commodities in such a way that substances are transferred to foodstuffs or their surfaces.

The regional legislation stipulates that a food producer is deemed liable until it can prove that all possible measures have been taken to prevent food contamination.

#### LMBG § 31 LEGAL TEXT:

##### § 31 Transfer of substances to food

- (1) It is forbidden to use materials or items within the meaning of § 2 para. sentence no. 1, which do not comply with the requirements on production stated in Article 3 para. 1 of Regulation (EC) 1935/2004, as commodities, or place them on the market.
- (2) The Federal Ministry is authorised, by ordinance approved by the Bundesrat, insofar as it is required to comply with the purposes mentioned in § 1 para. 1 no. 1 or 2, also in conjunction with § 1, paragraph 3, 1. to require that materials or items as commodities within the meaning of § 2 para. 6 sentence 1 no. 1 may only be produced in such a way as they, under normal or foreseeable conditions of use, do not transfer any substances to foodstuffs or their surfaces in quantities capable of
  - a) endangering human health,
  - b) affecting the composition, smell, taste or appearance of foodstuffs.2. to determine for certain substances present in commodities whether and in which proportion the substances may be transferred to foodstuffs. Materials or items that do not meet the requirements of sentence 1 no. 2 may not be used or distributed as commodities within the meaning of § 2 para. 6 sentence 1 no. 1 on the market.
- (3) It is forbidden to distribute foodstuffs, which have been produced or treated using a commodity referred to in paragraph 1, as food on the market.



# WHY IS THE USE OF FOOD GRADE LUBRICANTS NECESSARY?

## HACCP – HAZARD ANALYSIS AND CRITICAL CONTROL POINT (HACCP)

A system that serves to identify, evaluate and control significant health hazards posed by food

### WHAT IS HACCP?

In food production, handling, processing, transport, storage and sale, the factors contributing to generating causing human diseases after food consumption must be eliminated.

This is why food companies carry out their own checks. Within this self-control system, the HACCP concept is intended to avert those health risks which must be specifically addressed, i.e. identified, evaluated, continuously detected and controlled.

An internationally binding version of the HACCP concept can be found in the rules and regulations of FAO/WHO Codex Alimentarius and in the „General principles of foodstuff hygiene“ 1., it being an integral part thereof. The HACCP concept is „... a system that serves to identify, evaluate and control significant health risks posed by foodstuffs.“

Accordingly, specific health hazards for consumers – chemical, physical and microbiological ones – must be identified and the probability and significance of their occurrence assessed. Based on this analysis, the necessary preventive measures, with which the identified hazards can be avoided, eliminated or at least reduced to an acceptable extent, must be determined. Such a system is particularly applicable to operations with fixed, constantly repetitive workflows.

The HACCP concept can be integrated into a quality management system, in accordance with DIN EN ISO 9000 series. The concept definitions form the framework of the HACCP concept and are therefore extremely important.

Through them, correct application can be first guaranteed. Frequent misunderstandings of the HACCP concept arise from the wrong translation and interpretation of the terms „hazard“ as risk, „control“ as spot checks and „CCP“ as a point on a hygiene checklist.

The term CCP should not be translated as just an abbreviation of the „Critical Control Point“ English expression, because it is an internationally recognised term, precisely as the HACCP acronym.

### WHO IS RESPONSIBLE FOR IMPLEMENTING THE HACCP CONCEPT?

The HACCP concept is an integral part of the self-monitoring system in a company; its implementation is therefore the responsibility of the proprietor. The application of the HACCP concept may be required by law or be voluntary in other cases.

### WHAT ARE THE HACCP PRINCIPLES?

The HACCP principles are the basis for the creation of an HACCP plan. Altogether, there are seven principles:

- 1: Performing a hazard analysis.
- 2: Determining the „Critical Control Points (CCP)“.
- 3: Defining one or more critical limits.
- 4: Defining a system for monitoring CCPs.
- 5: Defining the corrective actions to be carried out when monitoring indicates that a particular CCP is no longer controlled.
- 6: Determining verification procedures to confirm that the HACCP system is working successfully.
- 7: Introducing a documentation package taking into account all processes and records in accordance with the principles and their application.



# OVERVIEW OF THE DIFFERENT REGULATORY AUTHORITIES AND THEIR CODES

## NEW CERTIFICATION AS PER DIN EN ISO 21469:2006

A certification according to the NSF ISO 21469 programme stands for the most sophisticated and comprehensive H1 lubricant certification.

The standard was drawn up upon request of the German lubricant industry on the basis of the DIN V 10517:2001-04 pre-standard, and includes the International Standard ISO 21469 unchanged, which was created by ISO/TC 199 „Safety of machinery“ (secretariat: DIN). The standard provides definitions and hygiene requirements for the composition, manufacture and use of special lubricants.

These lubricants are designed for use in machinery and equipment in the food, cosmetics, pharmaceutical, animal feed and tobacco industries. They are used when an incidental contact with the processed product (e.g. a foodstuff) cannot be certainly excluded.

The standard does not apply to lubricants which, within the meaning of legal regulations, are regarded as additives. It is also not applicable to substances which are transferred to the product during processing due to technological reasons.

With respect to DIN V 10517:2001-04, the following changes have been made:

a) The phrase „food grade lubricants“ is no longer used. Instead, the phrase „Lubricants with incidental product contact“ is used;

b) Conformity criteria have been included in the area of application which apply to the determination of compliance with this standard;

c) The hazard list has been acquired;

d) The elements of the risk analysis have been included in the hygiene requirements section;

e) The certification criteria previously indicated in the normative annex are now informative;

f) The document has been drawn up according to design criteria for International Standards.

## NSF CLASSES

NSF H1	Lubricants – General incidental contact
NSF HX-1	Ingredients for use in H1 lubricants (incidental contact)
NSF H2	Lubricants – General no contact
NSF HX-2	Ingredients for use in H2 lubricants (nonfood contact)
NSF H3	Soluble oils
NSF 3H	Release agents
NSF HX-3	Ingredients for use in H3 lubricants (soluble oils)
NSF HT-1	Heat transfer
NSF HTX-1	Ingredients for use in HT1 heat transfer fluids (incidental contact)
NSF HT-2	Heat transfer fluid – no contact with food
NSF HTX-2	Ingredients for use in HT2 heat transfer fluids (no food contact)



ISO 21469 Certified



Nonfood Compounds  
Program Listed: H1  
Registration:

Products that meet requirements are listed in the NSF White Book

[info.nsf.org/USDA/psnclistings.asp](http://info.nsf.org/USDA/psnclistings.asp)

## F.D.A.-CODES (CFR)

Explanation of different FDA codes that are applicable for lubricants.

21.CFR 178.3570      lubricants that come accidentally into contact with food products must meet this FDA Code.  
All Lubriplate H1 products are produced in accordance with this Code.

21.CFR 178.3620      Technical white oil as a component of NON\_FOOD, which may come into contact with food. / The FMO Series complies with the relevant requirements.

21.CFR 172.878      USP White mineral oil for direct contact with food./  
The Lubriplate FMO Series maintains this code.

All mineral products of the LUBRIPLATE H1 series are made of USP white mineral oil. USP White mineral oil is an extremely pure and high-quality base oil that can be used to produce NSF H1-products.

21.CFR 172.882      Synthetic isoparaffinic hydrocarbons, i.e. base oils based on PAO/Lubriplate SFGO Ultra Series, SFL Series and SYNXTREME-FG series.

21.CFR 182.9 subgroups      Substances that are generally recognised as safe; such as zinc oxide and tocopherols (vitamin E).

EU legislation on hygiene issues for food processing machines  
Regulation (EC) 1935/2004

EC 93/43  
Sets out requirements for food hygiene, including HACCP principles



## NSF REGISTRATION NUMBERS AND CATEGORY CODES FOR LUBRIPLATE FOOD GRADE LUBRICANTS

LUBRIPLATE PRODUCTS	NSF REGISTRATION NUMBER	CLASS
CLEARPLEX -1	140575	H1
CLEARPLEX -2	129940	H1
CS-FG EP-2	151136	H1
FG COOKER OIL	122669	H1
FGL-00	043532	H1
FGL-0	043531	H1
FGL-1	043534	H1
FGL-2	043536	H1
FGL-2 XTREMITY	148904	H1
FGL-CC	043530	H1
FMO-45	122688	3H, H1
FMO-85	122674	3H, H1
FMO-200	122689	3H, H1
FMO-300	122783	H1
FMO-350	122666	3H, H1
FMO-500	122672	3H, H1
FMO-85-AW	122670	H1
FMO-150-AW	132661	H1, HT1
FMO-200-AW	122668	H1
FMO-350-AW	122665	H1
FMO 350 AW SPRAY	126089	H1
FMO-500-AW	122664	H1
FMO-500-AW-OR	124778	H1
FMO-500-AW-OR (D)	135986	H1
FMO-900-AW	122675	H1
FMO-1100-AW	122687	H1
FMO-1700-AW	122667	H1
FMO-2400-AW	122671	H1
FMO-3800-AW	122673	H1
FP-150	126123	H1

LUBRIPLATE PRODUCTS	NSF REGISTRATION NUMBER	CLASS
FP-150-L	126124	H1
HTCL FG-68	143869	H1
HTCL FG-220	143870	H1
GEN. PUR. FG SILICONE (AEROSOL)	126086	H1
PAN DIVIDER OIL	139787	3H, H1
PDO LIGHT	142304	3H, H1
PGO-FGL 150	141192	H1
PGO-FGL 220	141193	H1
PGO-FGL 320	141194	H1
PGO-FGL 460	141195	H1
PGO-FGL 680	141196	H1
PM-500	126122	H1
PURE FLUSH	126121	H1
PURE TAC	043649	H1
PURE TAC LIGHT	141506	H1
RCO-68 FG	138533	H1
SEAMER OIL FG 100	143566	H1
SEAMER OIL FG 150	143600	H1
SFGO ULTRA-7 (AEROSOL)	136601	H1
SFGO ULTRA 7	125679	H1
SFGO ULTRA 15	138420	H1
SFGO ULTRA 22	138421	H1
SFGO ULTRA 32	125680	H1, HT1
SFGO ULTRA 46	125678	H1
SFGO ULTRA 68	125681	H1
SFGO ULTRA 100	125682	H1
SFGO ULTRA 150	125683	H1
SFGO ULTRA 220	125539	H1
SFGO ULTRA 320	125540	H1
SFGO ULTRA 460	125541	H1

LUBRIPLATE PRODUCTS	NSF REGISTRATION NUMBER	CLASS
SFGO ULTRA 680	125542	H1
SFGO ULTRA 1000	125543	H1
SFL-000	136256	H1
SFL-00	113092	H1
SFL-0	119618	H1
SFL-1	043677	H1
SFL-2	113093	H1
SFL SPECIAL	142303	H1
SILICONE FLUID FG-350	138305	H1
SPECIAL COOKER CHAIN GREASE	120918	H1
SSO-FG-100	138390	H1
SSO-FG-150	138391	H1
STO-FG	126120	H1
SUPER FGL-1 (AEROSOL)	126088	H1
SUPER FML-0	125742	H1
SUPER FML-1	125740	H1
SUPER FML-2	125741	H1
SUPER FML-2 (AEROSOL)	126087	H1
SYNCOOL-FG	149789	H1
SYN H1 220	138317	H1
SYN H1 WORM GEAR LUBRICANT	139198	H1
SYN HTF LIGHT	148083	HT1, H1
SYN ST HP H1 SPECIAL	142599	H1
SYNXTREME FG-0	137239	H1
SYNXTREME FG-1	137238	H1
SYNXTREME FG-2	136212	H1
SYNXTREME FG-1/220	142237	H1
SYNXTREME FG-2/220	142239	H1





## PRODUCTION AND PERFORMANCE OF FOOD GRADE LUBRICANTS

In principle, food grade lubricants do not differ substantially from standard products based on mineral oils. Theoretically, the same production facilities can be used.

In the production of food grade lubricants, however, clearly stricter rules apply, so that the highest possible degree of purity is achieved and cross-contamination avoided.

Food grade lubricants are only made in production facilities, which are ISO 9001/14001 certified.

In addition to guaranteeing health safety, food grade lubricants must also feature very good performance capability. Precisely in this connection, there have always been prejudices that food grade lubricants are not powerful enough and the operators often need to relubricate, thus entailing higher staffing and financial expenses.

A few years ago, when almost exclusively white oils were used as base fluids, this may have been the case.

Today, synthetic base oils are increasingly used, and progress has been made also in white oil production.

This and the fact that formulation chemists are now working with much better fundamentals, has meant that modern food grade lubricants in no way should be considered inferior; especially synthetic lubricants reach today at least the same, if not

higher performance profile as conventional synthetic lubricants.

### **BASICALLY, THE FOLLOWING PRINCIPLE APPLIES TO FOOD GRADE LUBRICANTS:**

Lubricants, such as lubricating oil or grease should exert no adverse effects on food!



#### PERFORMANCE FEATURES

Sophisticated, modern formulations

Products registered according to NSF H1

Multi-functional application

Free technical support

Free business studies

Free lubricant and lubricating grease analyses

#### ADVANTAGES

Higher service life of the machine; less wear and energy consumption; prolonged oil change intervals

Compliance with USDA/FDA guidelines and the HACCP programme

Reduction, consolidation and simplification of lubricant storage and thus less misuse

Fast reply to your questions on lubricant applications

Identification of opportunities for improvement and consolidation of lubricant inventories

Free lubricant and lubricating grease analyses



# LUBRIPLATE FOOD GRADE LUBRICANTS

Synthetic lubricants for  
food processing machines

Synthetic lubricants  
for high temperatures  
in chain baking ovens

USP lubricating  
greases in food processing  
machinery quality

USP mineral oil based  
food grade lubricants

Food grade  
spray lubricants

Food grade refrigeration  
compressor oils

Food grade lubricants  
for agriculture and  
food producers

Rinsing and  
cleaning liquids

Synthetic lubricating  
greases for food  
processing machines





## ■ SYNTHETIC LUBRICATING GREASES FOR FOOD PROCESSING MACHINES

### LUBRIPLATE FMO-85-AW TO FMO-500-AW (ISO VG 22 TO 100) NSF H1

HLP hydraulic oils according to DIN 51 524 Part 2 based on USP standard white oils with anti-wear additives and antimicrobial agents delaying the growth of bacteria and mould.

PRODUCT	AREA OF APPLICATION	ISO VG
FMO-85-AW	HLP hydraulic oil with excellent wear protection	22
FMO-150-AW	HLP hydraulic oil with excellent wear protection	32
FMO-200-AW*	HLP hydraulic oil with excellent wear protection	46
FMO-350-AW	HLP hydraulic oil with excellent wear protection	68
FMO-500-AW	HLP hydraulic oil with excellent wear protection	100

\* has passed the FZG test level 11



## ■ SYNTHETIC, HIGH-PERFORMANCE HYDRAULIC SYSTEMS AND MULTI-PURPOSE OILS

### LUBRIPLATE SFGO ULTRA 7 TO SFGO ULTRA 100 (ISO VG 7 TO 100) NSF H1

HVLP hydraulic oils according to DIN 51.524 Part 3 based on 100 % PAO having excellent oxidation resistance, thermal stability and anti-microbial agents delaying the growth of bacteria and mould. They provide excellent protection against rust and corrosion besides working reliably under extreme temperature conditions.

PRODUCT	AREA OF APPLICATION	ISO VG
SFGO Ultra 7	Recommended for hydraulic systems and compressors that operate under very demanding conditions	7
SFGO Ultra 15	Recommended for hydraulic systems and compressors that operate under very demanding conditions	15
SFGO Ultra 22	Recommended for hydraulic systems and compressors that operate under very demanding conditions	22
SFGO Ultra 32	Recommended for hydraulic systems and compressors that operate under very demanding conditions	32
SFGO Ultra 46*	Recommended for hydraulic systems and compressors that operate under very demanding conditions	46
SFGO Ultra 68	Recommended for hydraulic systems and compressors that operate under very demanding conditions	68
SFGO Ultra 100	Recommended for hydraulic systems and compressors that operate under very demanding conditions	100

\* has passed the FZG test level 11





## ■ INDUSTRIAL GEAR AND MULTI-PURPOSE OILS

### LUBRIPLATE FMO-500-AW TO FMO-3800-AW (ISO VG 100 TO 680) NSF H1

CLP industrial gear oils according to DIN 51.517 Part 3 based on 100 % PAO having excellent oxidation resistance and thermal stability, which provide excellent protection against rust and corrosion.

LUBRIPLATE SFGO Ultra 100 to 1500 have been provided with antimicrobial agents delaying the growth of bacteria and mould. They work reliably even under extreme temperature conditions.

PRODUCT	AREA OF APPLICATION	ISO VG
FMO-500-AW	Gears, bearings and pumps in which a CLP industrial gear oil is required, in accordance with DIN 51 517 Part 3	100
FMO-900-AW	Gears, bearings and pumps in which a CLP industrial gear oil is required, in accordance with DIN 51 517 Part 3	150
FMO-1100-AW*	Gears, bearings and pumps in which a CLP industrial gear oil is required, in accordance with DIN 51 517 Part 3	220
FMO-1700-AW	Gears, bearings and pumps in which a CLP industrial gear oil is required, in accordance with DIN 51 517 Part 3	320
FMO-2400-AW*	Gears, bearings and pumps in which a CLP industrial gear oil is required, in accordance with DIN 51 517 Part 3	460
FMO-3800-AW	Gears, bearings and pumps in which a CLP industrial gear oil is required, in accordance with DIN 51 517 Part 3	680

\* have passed the FZG test level 14



## ■ SYNTHETIC, HIGH-PERFORMANCE INDUSTRIAL GEAR AND MULTI-PURPOSE OILS

### LUBRIPLATE SFGO ULTRA 100 TO 1500 (ISO VG 100 TO 1500) NSF H1

CLP industrial gear oils according to DIN 51.517 Part 3 based on 100 % PAO having excellent oxidation resistance and thermal stability, which provide excellent protection against rust and corrosion.

LUBRIPLATE SFGO Ultra 100 to 1500 have been provided with antimicrobial agents delaying the growth of bacteria and mould. They work reliably even under extreme temperature conditions.

PRODUCT	AREA OF APPLICATION	ISO VG
SFGO Ultra 100	Gears, bearings and pumps in which a CLP industrial gear oil is required, in accordance with DIN 51 517 Part 3	100
SFGO Ultra 150	Gears, bearings and pumps in which a CLP industrial gear oil is required, in accordance with DIN 51 517 Part 3	150
SFGO Ultra 220*	Gears, bearings and pumps in which a CLP industrial gear oil is required, in accordance with DIN 51 517 Part 3	220
SFGO Ultra 320*	Gears, bearings and pumps in which a CLP industrial gear oil is required, in accordance with DIN 51 517 Part 3	320
SFGO Ultra 460*	Gears, bearings and pumps in which a CLP industrial gear oil is required, in accordance with DIN 51 517 Part 3	460
SFGO Ultra 680	Gears, bearings and pumps in which a CLP industrial gear oil is required, in accordance with DIN 51 517 Part 3	680
SFGO Ultra 1000	Gears, bearings and pumps in which a CLP industrial gear oil is required, in accordance with DIN 51 517 Part 3	1000

\* have passed the FZG test level 14



## ■ SYNTHETIC, HIGH-PERFORMANCE INDUSTRIAL GEAR AND MULTI-PURPOSE OILS

### LUBRIPLATE PGO-FGL-150 TO 680 (ISO VG 150 TO 680) NSF H1

CLP industrial gear oils according to DIN 51.517.3 based on 100 % PAG

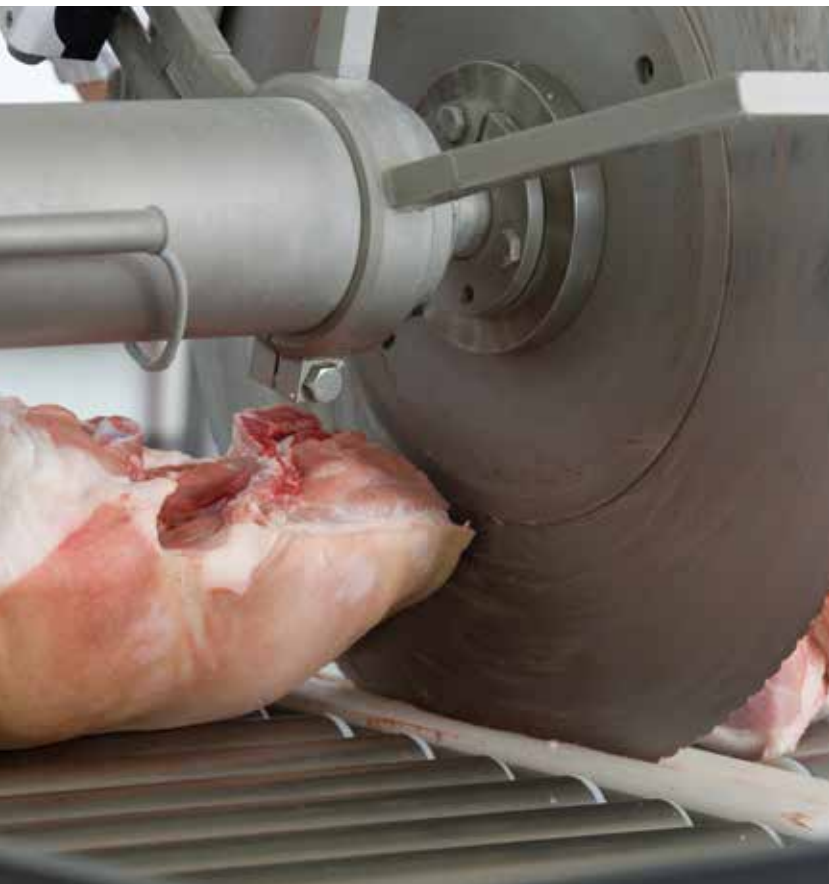
They feature a high-performance additive system and provide excellent protection against micropitting, wear and corrosion besides being highly thermal resistant.

PRODUCT	AREA OF APPLICATION	ISO VG
PGO-FGL-150	Spur, bevel and worm gears, as well as all types of plain and roller bearings	150
PGO-FGL-220	Gears, bearings and pumps in which a CLP industrial gear oil is required, in accordance with DIN 51 517 Part 3	220
PGO-FGL-320	Gears, bearings and pumps in which a CLP industrial gear oil is required, in accordance with DIN 51 517 Part 3	320
PGO-FGL-460	Gears, bearings and pumps in which a CLP industrial gear oil is required, in accordance with DIN 51 517 Part 3	460
PGO-FGL-680	Gears, bearings and pumps in which a CLP industrial gear oil is required, in accordance with DIN 51 517 Part 3	680

PGO-FGL-150, 220, 320, 460, and 680 are approved as physiologically safe lubricants for Flender bevel, bevel-helical and planetary gear units and gear motors.

Cone Drive has approved PGO-FGL-460.

Rexnord has also approved PGO-FGL-150, 220 and 320.



## ■ 3H AND H1 MULTI-PURPOSE OILS BASED ON USP STANDARD WHITE OILS

### LUBRIPLATE FMO-45 TO FMO-500 (ISO VG 5 TO 100) NSF 3H AND H1

Are particularly suitable for applications where food comes directly in contact with the lubricant.

PRODUCT	AREA OF APPLICATION	ISO VG
FMO-45	Thanks to its low viscosity, it can be used as a special agent in drip oilers, sprayers as well as spray nozzles.	5
FMO-85	Thanks to its low viscosity, it can be used as a special agent in drip oilers, sprayers as well as spray nozzles.	22
FMO-200	Compressed air lines	46
FMO-350	General lubrication applications	68
FMO-500	General lubrication applications	100

## ■ 3H AND H1 SEPARATING AGENTS BASED ON USP STANDARD WHITE OILS

### LUBRIPLATE PAN DIVIDER OIL AND PDO LIGHT NSF 3H AND H1

Primarily recommended for mould release oil applications

PRODUCT	AREA OF APPLICATION	ISO VG
Pan-Divider-Oil	Separating agent	15
PDO-Light	Separating agent	7



## ■ DRIP-FREE ADHESIVE OILS FOR CONVEYOR SYSTEMS AND CHAINS WITH NSF H1 APPROVAL

### LUBRIPLATE FP-150 AND FP-150-L NSF H1

This drip-free adhesive oils have excellent adhesion properties and provide outstanding resistance to water spray and steam applications. Through the use of very balanced additivition technology, an extremely high level of wear protection is guaranteed.

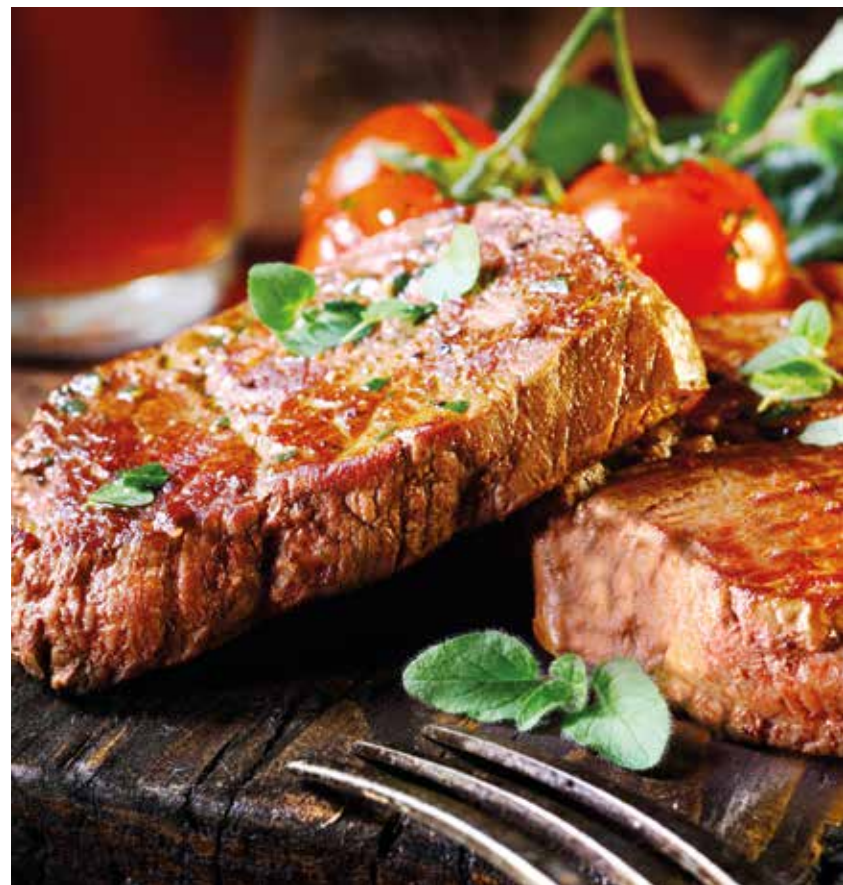
The products are used in hanging belt conveyors, hanging belt chains, drip systems and can lid cams. LUBRIPLATE FP-150 und FP-150-L contain antimicrobial agents delaying and preventing the growth of bacteria and mould as far as possible.

PRODUCT	AREA OF APPLICATION	ISO VG
FP-150	Helical gears, chains, cams and drip systems	320
FP-150-L	Helical gears, chains, cams and drip systems	100

## ■ SYNTHETIC, HIGH TEMPERATURE AND POE-BASED CHAIN OILS

### LUBRIPLATE HTCL-FG 68 AND HTCL-FG-220 NSF H1

PRODUCT	AREA OF APPLICATION	ISO VG
HTCL-FG-68	For the lubrication of chains in baking ovens	68
HTCL-FG-220	For the lubrication of chains in baking ovens	220



## ■ MINERAL AND SYNTHETIC HEAT TRANSFER OILS WITH NSF HT1- AND H1 APPROVAL

LUBRIPLATE FMO-150-AW AND SFGO ULTRA 32 NSF HT1

PRODUCT	AREA OF APPLICATION	ISO VG
FMO-150-AW	Mineral thermal oil for closed circuits e.g. in batch reactors, applications where extreme heat prevails, but also when using cooling elements in frozen and baking processes	32
SFGO Ultra 32	Synthetic thermal oil for closed circuits e.g. in batch reactors, applications where extreme heat prevails, but also when using cooling elements in frozen and baking processes	32
SFGO Ultra 100	Synthetic thermal oil for closed circuits e.g. in batch reactors, applications where extreme heat prevails, but also when using cooling elements in frozen and baking processes	100

## ■ SPECIAL LUBRICANTS

SPECIAL LUBRICANTS WITH NSF H1-APPROVAL

PRODUCT	AREA OF APPLICATION	ISO VG
FG Cooker Oil	Zinc-free cooker oil specifically for continuous cookers, sterilisers and steam peelers from FMC, with Manzel lubricators and micro-lubrication systems	150





## SPEZIAL-SCHMIERSTOFFE MIT NSF H1-ZULASSUNG – Fortsetzung

PRODUCT	AREA OF APPLICATION	ISO VG
Seamer Oil FG-100	USP White Mineral Oil basic Specifically designed for Angelus (61H and 120L) Can and seam closing machine with single-line operation	100
Seamer Oil FG-150	USP White Mineral Oil basic. Specifically designed for Angelus (61H and 120L) Can and seam closing machine with single-line operation	150
SSO-FG 100	100 % PAO synthetic lubricant Specifically designed for Angelus (61H, 120L, 121L, 140S and 180S) and Zacmi seam closing machines for beverage cans with an oil circulation system	100
SSO-FG 150	100 % PAO synthetic lubricant Specifically designed for Angelus (61H, 120L, 121L, 140S and 180S) and Zacmi seam closing machines for beverage cans with an oil circulation system	150
STO-FG	Non-corrosive lubricant for lubrication with bracket in bottle filling machines	68
PM-500 White Oil	Includes emulsifying agents and wets the parts to be lubricated with an oily film. Specifically designed for pear peelers	100
RCO-FG 68	100 % PAO-based synthetic low-temperature compressor oil	68
Syncool FG	Synthetic, biodegradable compressor oil based on polyglycol esters (PGE)	46



## ■ RINSING AND CLEANING LIQUIDS NSF H1 REGISTERED

LUBRIPLATE SYNFLUSH FG AND PURE FLUSH NSF H1

PRODUCT	PROPERTIES
SynFlush FG	This professional cleaning aid will help you when switching from „normal“ and H2 lubricants to NSF H1 lubricants. Can be mixed with PAO, POE, di-esters, PAGs and mineral products
Pure Flush	It is used along with the existing lubricant, thereby saving long downtimes. Cleans bearings, gears, hydraulic and central lubrication systems, compressed air lines, chains and compressed air tools. Can be completely mixed with mineral and most mineral oil compatible synthetic lubricants



# NSF H1 LUBRICATING GREASES

With our NSF H11 lubricating greases, maximum performance can be achieved in the food industry. LUBRI-ARMOUR® is a unique antimicrobial preservative agent for perfect long-term use in any operation.

LUBRI-ARMOUR® is an antimicrobial preservative agent, which is used in many of our NSF H1 registered lubricants and lubricating greases. It has been specifically designed to prevent lubricants

from being degraded by microorganisms such as bacteria, Listeria and moulds. Different antimicrobial additives recognized in the industry are contained in all our NSF H1 registered food grade lubricants (lubricants and lubricating greases) to prevent them from being decomposed by microorganisms.

LUBRI-ARMOUR® is the only additive to have been recently registered by EPA (reg. no. 86389-1).



## ■ ALUMINIUM COMPLEX SOAP GREASES WITH LUBRI-ARMOUR® BASED ON USP WHITE MINERAL OIL

LUBRIPLATE FGL SERIES, NLGI 00, 0/00, 0, 1, 2, NSF H1

Areas of application and advantages

High-performance greases for widespread use in all food and beverage industry areas. Enriched with anti-wear, anti-rust and anti-corrosion additives.

PRODUCT	THICKENER	NLGI CLASS	BASE OIL	BASE OIL VISCOSITY cST. AT 40 °C	OPERATING TEMPERATURE
FGL-00	Aluminium complex	00	USP-White Mineral Oil	120	-18 °C to +149 °C
FGL-CC**	Aluminium complex	0/00	USP-White Mineral Oil	120	-23 °C to +177 °C
FGL-0	Aluminium complex	0	USP-White Mineral Oil	120	-18 °C to +168 °C
FGL-1	Aluminium complex	1	USP-White Mineral Oil	120	-18 °C to +182 °C
FGL-2	Aluminium complex	2	USP-White Mineral Oil	160	-12 °C to +204 °C

\*\* has been specially developed for the central lubrication systems of high speed can seaming machines.

## ■ ANHYDROUS CALCIUM GREASES WITH LUBRI-ARMOUR® BASED ON USP WHITE MINERAL OIL

### LUBRIPLATE FML SERIES NLGI 0, 1, 2 NSF H1

Areas of application and advantages

White high-performance greases ensure top lubricating results due to their unmatched properties. They have exceptional anti-wear properties.

PRODUCT	THICKENER	NLGI CLASS	BASE OIL	BASE OIL VISCOSITY cST. AT 40 °C	OPERATING TEMPERATURE
FML-0	Anhydrous calcium	0	USP White Mineral Oil	144	-12 °C to +88 °C
FML-1	Anhydrous calcium	1	USP White Mineral Oil	144	-12 °C to +93 °C
FML-2	Anhydrous calcium	2	USP White Mineral Oil	144	-12 °C to +93 °C

## ■ ZINC-FREE ADHESIVE ALUMINIUM COMPLEX SOAP GREASES WITH LUBRI-ARMOUR® BASED ON USP WHITE MINERAL OIL

### LUBRIPLATE CLEARPLEX SERIES, NLGI 1, 2 NSF H1

Areas of application and advantages

They have been specially designed for use in plain and rolling bearings. Particularly suitable for seaming machines in the beverage processing industry.

No compromises have been made in terms of additive performance. Our Clearplex series features high wear and oxidation protection and a high water resistance.

PRODUCT	THICKENER	NLGI CLASS	BASE OIL	BASE OIL VISCOSITY cST. AT 40 °C	OPERATING TEMPERATURE
Clearplex-1	Aluminium complex	1	USP White Mineral Oil	100	-18 °C to +182 °C
Clearplex-2	Aluminium complex	2	USP White Mineral Oil	150	-12 °C to +204 °C



## ■ SYNTHETIC HIGH-PERFORMANCE ALUMINIUM COMPLEX SOAP GREASES WITH LUBRI-ARMOUR® BASED ON POLYALPHAOLEFINS

LUBRIPLATE SFL SERIES, NLGI 00, 0, 1, 2 NSF H1

Areas of application and advantages

The synthetic base oil and the aluminium complex thickener provide for a broad operating temperature range in all four NLGI consistency numbers. Due to its good conveyability, SFL-1 is particularly suitable for use in refrigerated warehouses.

PRODUCT	THICKENER	NLGI CLASS	BASE OIL	BASE OIL VISCOSITY cST. AT 40 °C	OPERATING TEMPERATURE
SFL-00	Aluminium complex	00	PAO	39	-51 °C to +149 °C
SFL-0	Aluminium complex	0	PAO	39	-51 °C to +163 °C
SFL-1	Aluminium complex	1	PAO	39	-51 °C to +177 °C
SFL-2	Aluminium complex	2	PAO	219	-40 °C to +204 °C



■ **100 % SYNTHETIC HIGH-PERFORMANCE CALCIUM SULPHONATE COMPLEX SOAP GREASES  
WITH LUBRI-ARMOUR® BASED ON POLYALPHAOLEFINS**

**LUBRIPLATE SYNXTREME FG SERIES NLGI 0, 1, 2, 1-220, 2-220 NSF H1**

Areas of application and advantages

They ensure outstanding shear stability, low wear and high resistance to water and spray applications with alkalis. They guarantee excellent performance at high and low temperatures.

Due to their higher base oil (ISO VG 220), SynXtreme FG-1/220 and FG-2/220 are especially suitable for slow and medium-rotating bearings running under high temperature conditions.

PRODUCT	THICKENER	NLGI CLASS	BASE OIL	BASE OIL VISCOSITY cST. AT 40 °C	OPERATING TEMPERATURE
SynXtreme FG-0	Calcium sulphonate complex	0	PAO	100	-43 °C to +199 °C
SynXtreme FG-1	Calcium sulphonate complex	1	PAO	100	-43 °C to +227 °C
SynXtreme FG-2	Calcium sulphonate complex	2	PAO	100	-43 °C to +232 °C
SynXtreme FG-1/220	Calcium sulphonate complex	1	PAO	220	-40 °C to +227 °C
SynXtreme FG-2/220	Calcium sulphonate complex	2	PAO	220	-40 °C to +232 °C

## ■ HIGH-PERFORMANCE SILICONE GREASE WITH PTFE

### LUBRIPLATE SYN ST HIGH PERFORMANCE H1 SPECIAL NLGI 3 NSF H1

Areas of application and advantages

Specifically designed for use with O-rings and seals in bottle filling systems as well as dairy and other dispensing equipment that are used in the food industry. It is compatible with EPDM seals and other non-silicone elastomers and resistant to hot water, steam and alkaline solutions. Silicone greases may not be used for applications that require using pure oxygen or other strong oxidising chemicals.

PRODUCT	THICKENER	NLGI CLASS	BASE OIL	BASE OIL VISCOSITY cST. AT 40 °C	OPERATING TEMPERATURE
SYN ST High Performance H1 Special	PTFE	3	Silicone	500	-50 °C to +149 °C

## ■ HIGH-PERFORMANCE MULTI-PURPOSE, CALCIUM SULFONATE, FOOD GRADE GREASE

### LUBRIPLATE CS-FG EP-2 NLGI 2 NSF H1

Areas of application and advantages

CS-FG EP-2 is calcium sulfonate thickened incidental food contact grease which offers premium performance properties. All ingredients used to manufacture this product comply with FDA 21 CFR 178.3570 and meets the requirement for NSF H1. The grease also has excellent corrosion protection and superior water washout properties. It is used by meat processing plants, canneries, dairies, breweries, carton & packaging equipment and many others where incidental food contact is a possibility.

PRODUCT	THICKENER	NLGI CLASS	BASE OIL	BASE OIL VISCOSITY cST. AT 40 °C	OPERATING TEMPERATURE
CS FG EP-2	Calcium sulphonate complex	2	USP White Oil	105	-18 °C to +200 °C



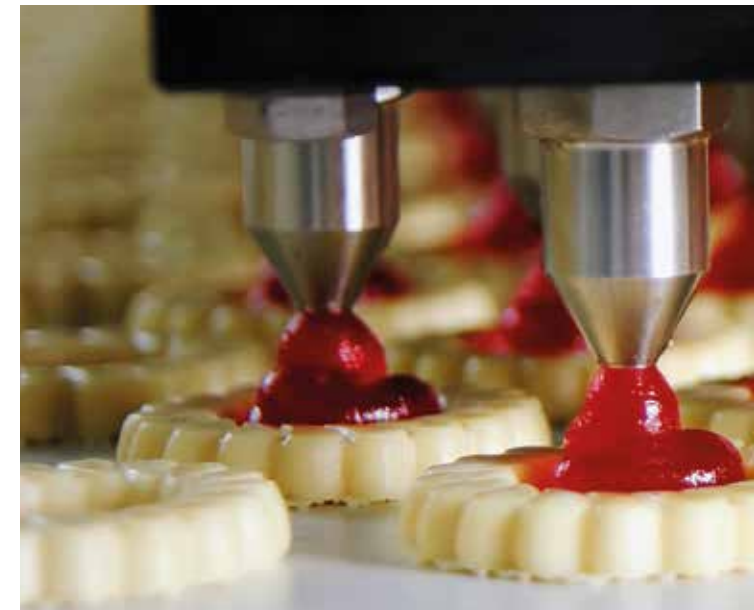
■ **HIGHLY ADHESIVE ALUMINIUM COMPLEX SOAP GREASES WITH LUBRI-ARMOUR®  
BASED ON USP WHITE MINERAL OIL**

**LUBRIPLATE PURE TAC AND LUBRIPLATE PURE TAC LIGHT NLGI 1.5 AND 2 NSF H1**

Areas of application and advantages

Lubricating greases for applications in food processing plants and canneries, where chemically treated water, heat and steam are used. Thanks to their extreme stickiness and adhesive force they are particularly suitable for open gears and are ideal lubricating greases for hydrostatic cooker chains.

PRODUCT	THICKENER	NLGI CLASS	BASE OIL	BASE OIL VISCOSITY cST. AT 40 °C	OPERATING TEMPERATURE
Pure Tac	Aluminium complex	2	USP-White Mineral Oil	1187	-7 °C to +204 °C
Pure Tac Light	Aluminium complex	1.5	USP-White Mineral Oil	600	-12 °C to +198 °C



## ■ SPECIAL LUBRICATING GREASES FOR HYDROSTATIC COOKER CHAINS

### LUBRIPLATE SPECIAL COOKER CHAIN GREASE, NLGI 2.5 NSF H1

#### Areas of application and advantages

Its outstanding resistance to chemically treated water, heat and steam makes it an ideal lubricating grease for all hydrostatic cooker chains. Due to its excellent resistance to water washout, this grease will stick for long, thus ensuring the proper lubrication of chain pins, bushings and rollers in hydrostatic cookers even under difficult ambient conditions. The LUBRIPLATE Special Cooker Chain Grease is also heavier than water. Therefore, excessive grease drops rather than float to the surface in cookers, so that cans leave the hydrostatic cooker without fat film.

PRODUCT	THICKENER	NLGI CLASS	BASE OIL VISCOSITY cST. AT 40 °C	OPERATING TEMPERATURE
Special Cooker Chain Grease	Non-Soap Thickener	2.5	500	-7 °C to +204 °C





## NSF H1 AEROSOL PROGRAMME

### **LUBRIPLATE FMO-350-AW SPRAY NSF H1**

is an excellent oil for use in bottling, dairy and food processing machinery, including armatures, O-rings, valves, pistons and seals, as well as for general lubrication purposes.

### **LUBRIPLATE FMO-85-AW SPRAY NSF H1**

For general machine lubrication in the food industry, recommended for mechanical systems, bearings, guides, chains and much more, in a practical pump spray bottle.

### **LUBRIPLATE GENERAL PURPOSE FOOD GRADE SILICONE SPRAY NSF H1**

Lubricant and separating agent for use in the food industry. It is particularly suitable for lubricating plastic pairings, guide rails, conveyor belts, O-rings and seals in processing, packaging and packing machines.

### **LUBRIPLATE SFGO ULTRA 7 SPRAY NSF H1**

Fully synthetic, high-performance assembly and corrosion protection oil for the food industry with outstanding creep and penetration capability. It quickly penetrates rusty and encrusted contact surfaces. There, it lubricates and protects against corrosion.

### **LUBRIPLATE FGL-1 SPRAY NSF H1**

is an excellent grease spray based on an aluminium complex soap and USP White Mineral Oil. It can be frequently found in the food industry for lubricating slideways, gears, cams on rotary filling machines, valves, O-rings, and pistons and for general

lubrication applications where high temperatures and humidity can be expected.

### **LUBRIPLATE SUPER FML-2 SPRAY NSF H1**

is an excellent white grease spray based on anhydrous calcium and USP White Mineral Oil. It can be frequently found in the food industry for lubricating slipways, gears, cams on rotary filling machines, valves, O-rings, and pistons and for general lubrication applications where high temperatures and humidity can be expected.





## RECOMMENDATIONS FOR GENERAL APPLICATIONS

APPLICATIONS	LUBRIPLATE PRODUCT
General lubricating greases – High temperatures Low temperatures	SYNXTREME FG-2 or FGL-2 SYNXTREME FG-2 or FGL-2 SYNXTREME FG-1 or SFL-1
General oils	SFGO ULTRA-68 or FMO-350AW
Centralised lubrication systems	FGL-0 or FGL-00
Armatures/Cams/Open gears	PURE TAC
Chains/Conveyor systems/Wire rope Normal temperatures High temperatures	SFGO ULTRA-7 or FP-150L PGO-FGL-220
Gears (helical gears, spur gears) Gears (worms)	SFGO ULTRA-220 or FMO-1100AW SFGO ULTRA-460 or FMO-2400AW
Hot brake bearings	SYNXTREME FG-2 or PURE TAC
Air compressors (pistons) (screws)	SFGO ULTRA-68 or SFGO ULTRA 100 SFGO ULTRA-32 or SFGO ULTRA 46 RCO-68
Compressed air lines	FMO-85AW or FMO-150AW
Hydraulic equipment Normal temperatures Low temperatures	SFGO ULTRA-68 or FMO-350AW SFGO ULTRA-7 or FMO-85AW
High speed bearings, lubricating grease, oil	SFL-1 or FGL-1 SFGO ULTRA-32 or FMO-150AW

■ Synthetic product
 ■ Mineral oil based product

## RECOMMENDATIONS FOR GENERAL APPLICATIONS - Continued

APPLICATIONS	LUBRIPLATE PRODUCT
Chemical & Condensate Pumps Lubricating grease Oil	<span>SYNXTREME FG-2</span> or <span>FGL-2</span> <span>SFGO ULTRA-68</span> or <span>FMO-350AW</span>
Vacuum pumps	<span>SFGO ULTRA-68</span> or <span>SFGO ULTRA 100</span>
Fans Lubricating grease Oil	<span>SYNXTREME FG-2</span> or <span>FGL-2</span> <span>SFGO ULTRA-68</span> or <span>FMO-350AW</span>
Bottle filling machines with bracket	<span>STO-FG</span>
Peach pitter chain drives	<span>FP-150L</span> or <span>FP-150</span>
Welding rollers, spindles, chucks	<span>SYNXTREME FG-1</span> or <span>FGL-1</span>
Cooker carrier bearings	<span>SYNXTREME FG-2</span> or <span>PURE TAC</span>
Cooker valve lubrication Can seaming machines	<span>FOOD GRADE COOKER OIL</span>
Angelus seamers machines (Manzel lubrication systems)	<span>SSO-FG-100</span> , <span>SSO-FG-150</span> or <span>SFGO ULTRA-100</span> <span>SEAMER OIL FG-100</span> or <span>SEAMER OIL FG-150</span>
Drip oilers	<span>PM-500</span> or <span>FP-150L</span>
Electric motor bearings	<span>SYNXTREME FG-1</span> or <span>FGL-1</span>
Steam valves and peelers	Consult LUBRIPLATE Tech Service 0 42 62 / 7 98





## RECOMMENDATIONS FOR GENERAL APPLICATIONS - Continued

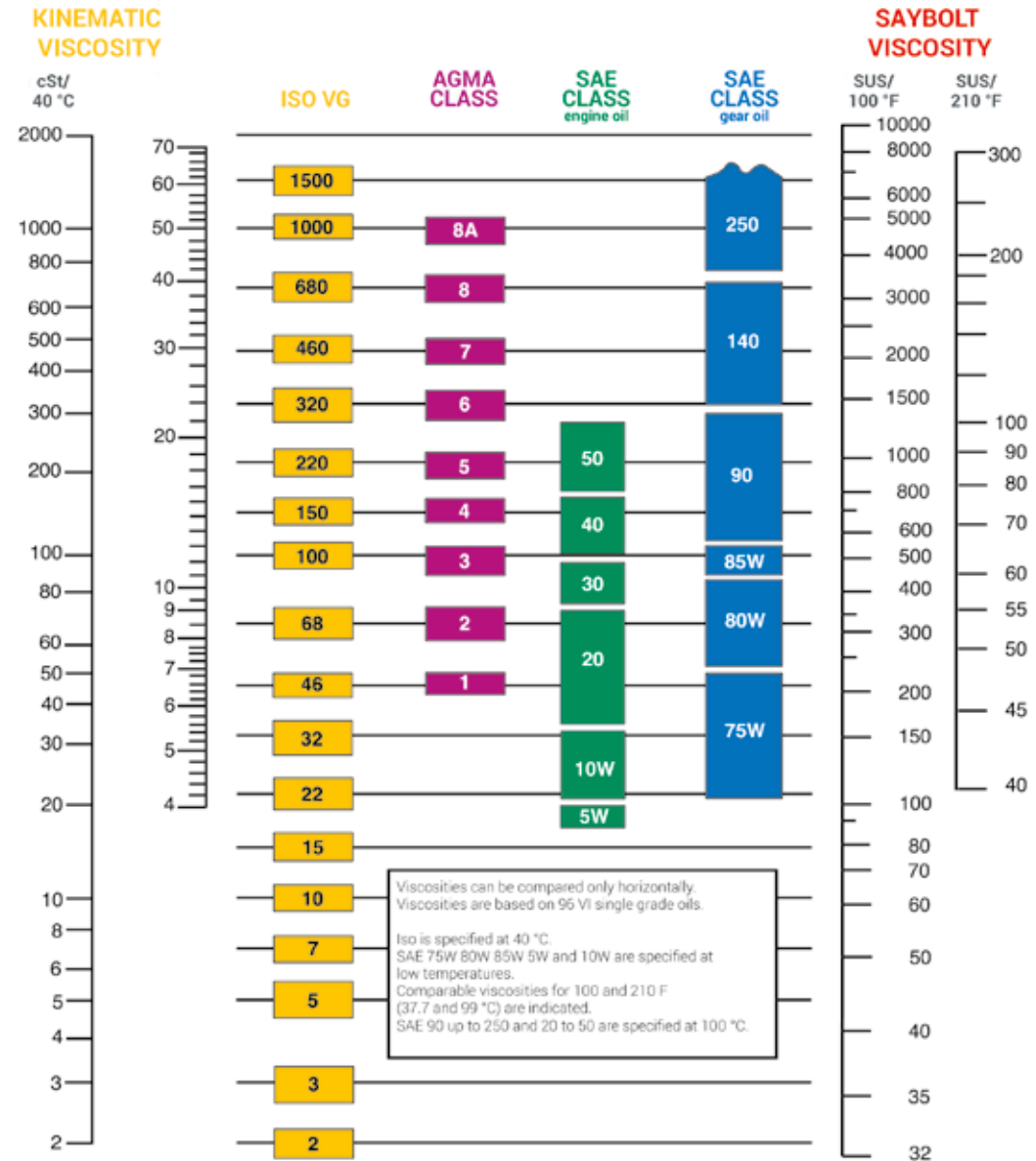
APPLICATIONS	LUBRIPLATE PRODUCT
Washers Grease nipples Chain drives	SYNXTREME FG-2 or FGL-2 FP-150L or FP-150
Forklift trucks Wheel bearings (lubricating grease) Hydraulic oils Chain lift	SYNXTREME FG-2 or PURE TAC SFGO ULTRA-68 or FMO-350AW FP-150L
Rust/corrosion protection	SFGO ULTRA-7 or FMO-350AW
Rinsing and cleaning liquids	SYNFLUSH FG or PURE FLUSH
Mould release oils	PAN DIVIDER OIL
Lubriplate White oils	FMO SERIES

■ Synthetic product ■ Mineral oil based product





## VISCOSITY TABLE



GREASE COMPATIBILITY AS PER NLGI

	Aluminium complex	Barium	Calcium	Calcium 12 hydroxy	Calcium complex	Alumina	Lithium	Lithium 12 hydroxy	Lithium complex	Polyurea	Calcium sulphonate
Aluminium complex		■	■	■	■	■	■	■	■	■	■
Barium	■		■	■	■	■	■	■	■	■	■
Calcium	■	■		■	■	■	■	■	■	■	
Calcium 12 hydroxy	■	■	■		■	■	■	■	■	■	
Calcium complex	■	■	■	■		■	■	■	■	■	■
Alumina	■	■	■	■	■		■	■	■	■	■
Lithium	■	■	■	■	■	■		■	■	■	■
Lithium 12 hydroxy	■	■	■	■	■	■	■		■	■	■
Lithium complex	■	■	■	■	■	■	■	■		■	■
Polyurea	■	■	■	■	■	■	■	■	■		■
Calcium sulphonate	■	■			■	■	■	■	■	■	

■ Compatible ■ Borderline Compatibility ■ Incompatible

NLGI GREASE CLASSIFICATIONS

NLGI NO.	DESCRIPTION	ASTM WORKED PENE- TRATION AT 77 °F/25 °C
000	semi-liquid	445 - 475
00	semi-liquid	400 - 430
0	very soft	355 - 385
1	soft	310 - 340
2	medium soft	265 - 295
3	medium	220 - 250
4	hard	175 - 205
5-6	very hard	85 - 160



# DEFINITIONS

## NSF (NATIONAL SANITARY FOUNDATION)

The approval as a special lubricant for the food industry is given by NSF. A special lubricant can only be approved if it meets FDA requirements.

## FDA (FOOD AND DRUG ADMINISTRATION)

The Food and Drug Administration has created a positive list of substances that may come into direct contact with food in small concentrations.

This positive list contains raw materials that may be used exclusively in the formulation of food grade lubricants. A special lubricant for the food industry is only approved if there is proof that the materials meet the high purity requirements of guidelines set out in the FDA Guidelines of Security 21 CFR 178.3570.

## USDA (UNITED STATES DEPARTMENT OF AGRICULTURE)

The USDA (US Department of Agriculture) verifies that lubricants are food grade.

Lubricants which may come into occasional contact with foodstuffs are NSF H1 registered, provided, however, that they only contain substances that meet the FDA rule 21 CFR 178.3570.

Other lubricants that may be used in the food industry receive H2 approval.

## NSF H1

H1 is available as a marking for lubricants which may be applied to all friction points of machines and systems in the food, pharmaceutical and animal feed industries, where an occasional, technically unavoidable contact between product and lubricant may occur.

## LMBG (GERMAN FOODSTUFFS AND COMMODITIES LAW)

The use of lubricants in the food industry is governed by the following laws, directives and regulations:

### LMBG § 5, § 31 of 15.08.1974

In this law, lubricants are defined as commodities. The law states that using lubricants in such a way that substances from them may pass over to foodstuffs or their surface is not allowed – a definition which is not very meaningful.

## DAB (GERMAN PHARMACOPOEIA)

Similarly to the FDA, the German Pharmacopoeia determines purity requirements for lubricants, but only for medicinal white oils and vaselines which are classified as harmless to health and odour and taste acceptable.

## LMHV (GERMAN FOOD HYGIENE REGULATIONS)

In this law, food producers are required to analyse individual production steps and to install a so-

called HACCP system (HACCP = Hazard Analysis and Critical Control Points). Lubricants are only indirectly addressed.

## EC (EUROPEAN COMMUNITY)

For Europe, an EU standard is expected, whereby it is very likely that the American requirements are adopted.

To date, there is only EC Directive 89/392, which requires the manufacturers of food processing machinery to design systems in such a way that lubricants do not come into contact with food.

## ABBREVIATIONS

CCP	Critical Control Point
DIN	German Institute for Standardisation
EHEDG	European Hygienic Equipment Design Group
ELGI	European Lubricating Grease Institute
FDA	Food and Drug Administration
HACCP	(Hazard Analysis and Critical Control Points)
ISO	International Standard Organisation
NLGI	National Lubricating Grease Institute
NSF	NSF International (formerly: National Sanitation Foundation)
OEM	Original Equipment Manufacturer
USDA	United States Department of Agriculture
VDI	Association of German Engineers



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tancy and Sales



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Lower Saxony



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Bremen



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[www.lubriplate.de](http://www.lubriplate.de)

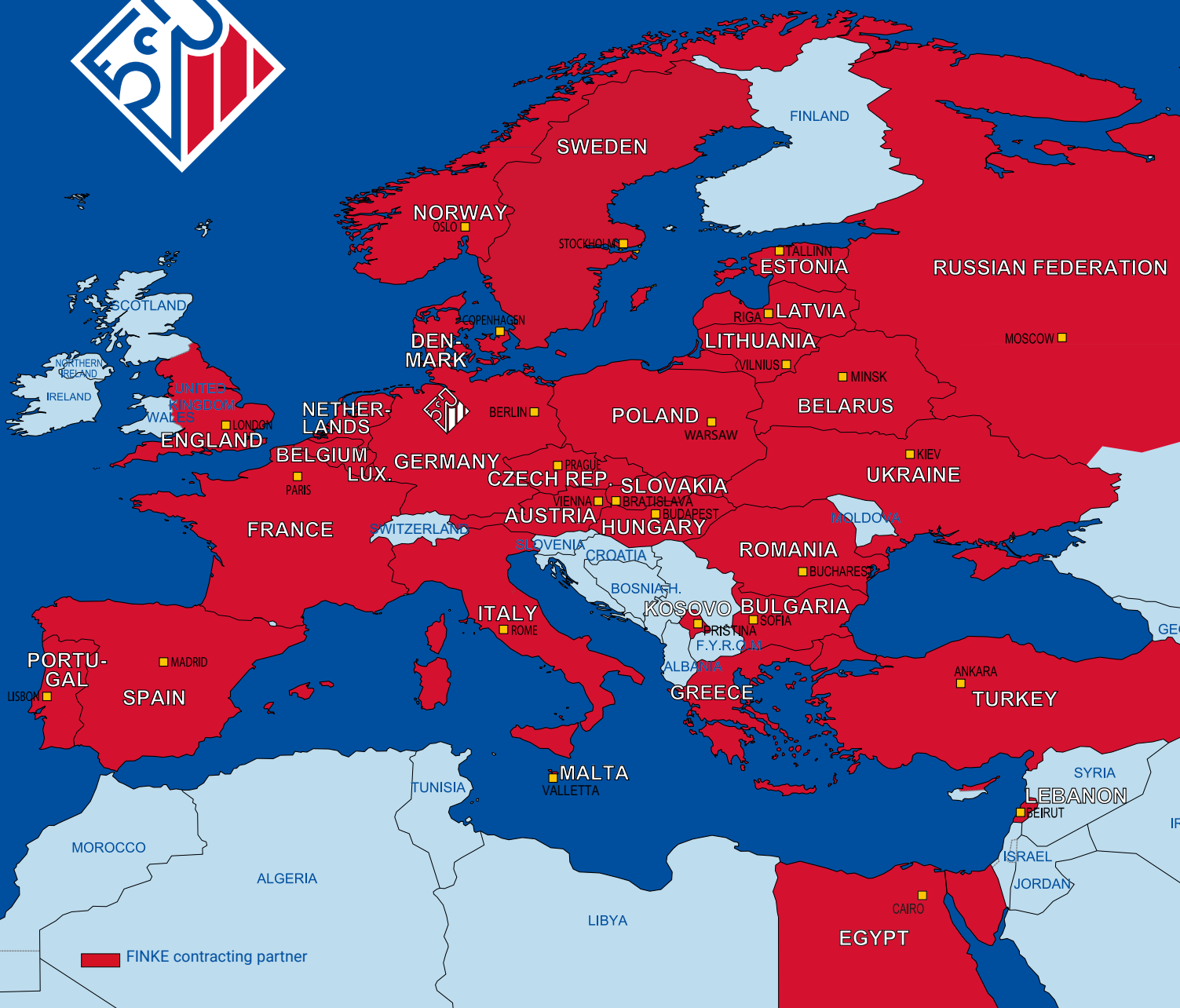




Engine Oils | Gear Oils | Tractor Oils | Hydraulic Oils | Slideway Lubricants | Chain Saw Oils | Air Compressor Fluids | Industrial Gear Oils | Metal Working Fluids and Service products | Greases | Release Agents | Spindle and machine Oils | Corrosion Inhibitor Oils | Cleaning Agents | Oil binder | Winter care program | Vaccumpump Oils | Aerosols | Biodegradable Products | AdBlue® | Food Grade Lubricants and many more...



# AVIATICON



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