NSF/H1 Registered
Food Machinery Lubricants: Understanding the Basics.

by
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& Government Agency Liaison

Lubriplate Lubricants Company
Newark, NJ - Toledo, OH
Presentation Overview

• What is the regulatory history of food machinery lubricants?

• What are the NSF Product Category Codes for lubricants and which one(s) should my facility be using?

• What is ISO 21469 certification?

• What are the features & benefits of NSF/H1 registered lubricants?

• What services should I expect from my lubricant supplier?
Regulation of Food Machinery Grade Lubricants

- Approved incidental food-contact lubricants used in meat and poultry facilities
- Relied on FDA – Title 21 Code of Federal Regulations
- USDA evaluated product formulations and reviewed labels, but seldom conducted testing
- USDA would issue a letter of authorization, which became industry-accepted

- 1998 - the USDA authorization program came to a halt due to a lack of resources and the development of Hazard Analysis Critical Control Point (HACCP) programs
- 1999 - NSF International took over the registration program

Source: http://www.machinerylubrication.com
What Is NSF International?

- An independent accredited organization
- Develops standards and certification programs that help protect the world’s food, water, consumer products and environment
- Provides auditing, education and risk management solutions for public health and the environment

Source: http://www.nsf.org
NSF Nonfood Compounds Program

- NSF offers product registration for nonfood compound products like lubricants.

- Products that bear the NSF mark have undergone a stringent review process and are compliant with food safety regulations.

- Registered products are included in the NSF White Book

Source: http://www.nsf.org
The NSF Nonfood Compounds registration program is based on the USDA standard and FDA - Title 21 Code of Federal Regulations which affect lubricants for machinery with incidental food contact.

<table>
<thead>
<tr>
<th>FDA 21 CFR Codes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.CFR 178-3570</td>
<td>Ingredients used to manufacture H1 lubricants must comply with this code</td>
</tr>
<tr>
<td>21.CFR 178-3620</td>
<td>Technical White Mineral Oil as a component of non-food articles intended for use in contact with food</td>
</tr>
<tr>
<td>21.CFR 172-878</td>
<td>USP White Mineral Oil for direct contact with food</td>
</tr>
<tr>
<td>21.CFR 172-882</td>
<td>Synthetic isoparaffinic hydrocarbons (i.e.: PAO base stocks)</td>
</tr>
<tr>
<td>21.CFR 182 with 9 subheadings</td>
<td>Substances generally recognized as safe (i.e.: zinc oxide and Vitamin E)</td>
</tr>
</tbody>
</table>
## NSF Nonfood Compounds Categories: Lubricant Specific

<table>
<thead>
<tr>
<th>NSF Category Code</th>
<th>Registration Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1*</td>
<td>General incidental contact</td>
</tr>
<tr>
<td>H2*</td>
<td>General no contact</td>
</tr>
<tr>
<td>H3*</td>
<td>Soluble Oils</td>
</tr>
<tr>
<td>3H*</td>
<td>Release Agents</td>
</tr>
<tr>
<td>HX-1</td>
<td>Ingredients for use in H1 lubricants</td>
</tr>
<tr>
<td>HX-2</td>
<td>Ingredients for use in H2 lubricants</td>
</tr>
<tr>
<td>HX-3</td>
<td>Ingredients for use in H3 lubricants</td>
</tr>
<tr>
<td>HT1</td>
<td>Heat transfer fluids - incidental food contact</td>
</tr>
<tr>
<td>HT2</td>
<td>Heat transfer fluids - no food contact</td>
</tr>
<tr>
<td>HTX-1</td>
<td>Ingredients for use in HT1 heat transfer fluids</td>
</tr>
<tr>
<td>HTX-2</td>
<td>Ingredients for use in HT2 heat transfer fluids</td>
</tr>
</tbody>
</table>

*Most commonly seen within the industry*
## Selecting The Correct Lubricant

<table>
<thead>
<tr>
<th>H1 LUBRICANTS</th>
<th>H2 LUBRICANTS</th>
<th>H3 LUBRICANTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Should be used in food processing environments where there is any possibility of incidental food contact</td>
<td>Should be used where there is absolutely NO POSSIBILITY that the lubricant or lubricated surface will contact food</td>
<td>Soluble or edible oils</td>
</tr>
<tr>
<td>May only be composed of one or more approved base stocks, additives and thickeners listed in 21 CFR 178.3570</td>
<td>H2 lubricants do not have a defined list of acceptable ingredients</td>
<td>Should be used to clean and prevent rust on hooks, trolleys and similar equipment</td>
</tr>
</tbody>
</table>

Source: http://www.machinerylubrication.com
ISO 21469 Product Certification

- The ISO 21469 standard is specifically for lubricants used in food, pharmaceutical, cosmetic and animal feed manufacturing.

- Standard specifies the hygiene requirements for the formulation, manufacture, use and handling of lubricants, which may come into contact with products during processing.

Source: http://www.nsf.org
H1/Food Grade Lubricants

Feature

100% use of H1/Food Grade Lubricants is possible and should be desirable.

Benefit

• Improves consumer safety
• Eliminates lubricants and lubrication as a potential chemical hazard in FDA and USDA mandated and monitored HACCP & HARPC programs.
• Produces lubricant inventory consolidation.
• Eliminates lubricant misapplication.

[Image: Lubriplate logo and certification marks]
H1/Food Grade Lubricants

Feature

Availability of 100% Synthetic H1 / Food Grade Lubricants.

Benefit

• >4 times the oxidation stability and cold temperature performance than the semi-synthetics which comprise most of the market.
• Prolongs lubricant life and reduces disposal issues.
• Excellent EP and AW characteristics. 14 Stage FZG Test pass.
100% Synthetic H1/Food Grade Lubricant Fluid Base Stocks & Grease Thickeners

**Fluid Base Stocks**
- Polyalphaolefin (PAO)
- Polyalkylene Glycol (PAG)
- Polyolester (POE)
- Polyglycolester (PGE)
- Perfluoropolyether (PFPE)

**Grease Thickeners**
- Calcium Sulfonate
- Aluminum Complex
- PTFE
H1/Food Grade Lubricants

Feature
PFPE-based grease provides high temperature capability

Benefit
• Up to 550°F / 288°C
• Chemically inert
• Anti-rust and anti-corrosion inhibitors
• Long service life
## H1/Food Grade Lubricants

<table>
<thead>
<tr>
<th>Feature</th>
<th>Benefit</th>
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</table>
| Factory Mutual Approved, POE-based hydraulic fluids are designed for demanding food processing applications | • Exceptionally High Flash Point for Superior Fire Protection  
• Outstanding Shear Stability  
• A High Viscosity Index which delivers high temperature application stability  
• Superior Anti-Wear Performance  
• Readily Biodegradable according to OECD 301F |

![Lubriplate Logo](image)
# H1/Food Grade Lubricants

<table>
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<th>Feature</th>
<th>Benefit</th>
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<tr>
<td>POE-Based fluids are designed for bakery oven chains.</td>
<td>• Protection against wear, rust, oxidation and corrosion.</td>
</tr>
<tr>
<td></td>
<td>• Superior film strength</td>
</tr>
<tr>
<td></td>
<td>• Reduced risk of oven fires</td>
</tr>
</tbody>
</table>

**Lubriplate®**

![ certification logos ]

**LUBRIPLATE® SUPER LUBRICATION**

**Prevents wear and corrosion**

**NSF**

**U**

**M**

**HALAL**

**ISO 21469 Certified**
H1/Food Grade Lubricants

Feature
The technology behind the advanced polyalkylene glycol (PAG) base stocks in some H1/Food Grade Lubricants contribute to a green workplace.

Benefit
- Lower energy requirements
- Superior thermal stability
- Extended lube intervals
- Less waste oil
- Biodegradability
- Gear Oils & Compressor Fluids
H1/Food Grade Lubricants

Feature

USP White Mineral Oil for Petroleum-based H1/Food Grade Oils and Greases.

Benefit

- Purest mineral oil available.
- Best at preventing metal-to-metal contact.
- Most oxidation stable.
- Contains Vitamin E which is a natural anti-oxidant and microbe fighter.
**H1/Food Grade Lubricants**

**Feature**

Use of H1/Food Grade Lubricants containing an anti-microbial additive can eliminate lubrication as a host for bacteria, listeria and mold in the food supply chain.

**Benefit**

- Improves consumer safety
- Safeguard the work environment
- Makes the lubricant last longer

**Lubriplate**

*Lubri-Armour* Anti-Microbial Additive

EPA Reg. No. 86389-1

NSF H1 Registered

Certified Kosher Pareve

HALAL

ISO 21469 Certified
Supplier Services

- Training - distributor and user.
- Interactive Plant Surveys.
- Follow-up Oil Analysis.
- Local Representation - regional distribution for on-time delivery and varied packaging.
- Operational Surveys.
- Color Coded Lube Charts, Machinery Tags and Storage Container Tags.
- Lubricant Inventory Consolidation.
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