FOOD GRADE LUBRICANTS
Matrix Specialty Lubricants is a company based in The Netherlands, producing and marketing specialty lubricants and greases. Matrix Specialty Lubricants was created by a nucleus of industry specialists with a collective experience of many years working for major oil companies. Our vision is to harness new technology and with the expertise of our chemists provide the correct lubricant for each application. It is just a matter of knowledge.

Specific product information is available in our brochures and most of the technical data sheets can be found on our website; www.lubes-portal.com. Our main products are divided into groups with the most common being presented in our brochures. The most up to date information can always be found on our website.

Bio lubricants
This group of products includes biodegradable hydraulic, gear, and other lubricants as well as a range of greases and concrete mould release agents. High performance, long life, low toxicity and biodegradability are key factors within this product group.

Compressor, vacuum and refrigeration fluids
A comprehensive range of gas and refrigeration compressor fluids providing long life and low maintenance costs in combination with high efficiency. The range consists of mineral, and synthetic (hydro treated, PAC, POE, Alkyl Benzenes, DiEster, Esters, PAG, PTFE) based lubricants with operating points at 12.000 hour drain intervals.

Food grade lubricants
A complete range of fluids, lubricants and greases for applications whenever a food grade lubricant is required. The high performance Foodmax® line is NSF and InS approved and includes a range of expiry dates.

Industrial specialty products
This product group includes a range of specialty chain lubricants, gear oils, transformer oils and many more products. All the products exceed performance expectations contributing to lower maintenance costs.

Grease and paste
An extensive range of specialty greases and pastes, including polyurea, calcium sulphonate, aluminium, barium, silicon, organic and PTFE. By using the latest technology and materials we are able to provide high performance and problem solving products.

Metal Working Fluids & Rust Preventatives
This line of products include the latest technology soluble metal working fluids, neat cutting oils, and cold and hot forging, quenching, drawing and stamping products.

Specialty base oils and dispersions
These base oils are used in the formulation of metalworking fluids, biodegradable hydraulic fluids, top 2 and 3 engine oils, mould release agents and many more. They include DTO, TOFA and various types of esters. Another range include both technical and pharmaceutical grade specialty base oil and 0.01% of nano-dispersed cerium oxynitride based on graphite, Moly, PTFE and Boron Nitride (hBN). These can be used as additives, lubricants and processing additives.

Food grade lubricants
The food processing industry presents unique challenges to lubricant formulation engineers, lubricant marketers, plant lubrication engineers and equipment designers. It is never desirable to lubricate in food contact raw materials, work-in-progress or finished product. The consequences of a lubricant contaminated product are rarely more acute than in the food processing industry. As such lubricants used in this industry have detailed requirements and performance expectations that exceed typical industrial lubricants.

Matrix Specialty Lubricants has developed an extensive range of food grade lubricants which frequently outperform high tech industrial lubricants and greases. Matrix continues to develop and add new products to the existing extensive portfolio. For any special product request do not hesitate to seek the assistance of your local Matrix representative.

NSF and InS are certification bodies who approve lubricants and greases according to various categories. The most common lubricant approvals are listed and explained in the overview below.

H-1 Lubricants
Used on operating equipment that is vital to the manufacturing plant, but will not come in contact with food products. Will not contain: Perfume, Pb, Sb, Cd or Ni additives.

H-2 Heat Transfer Fluids
Universally approved in applications where incidental contact with food products is likely.

H-3 Soluble Oils
These products are chemically acceptable for applications to hooks, trolleys and similar equipment to clean and prevent rust. Those portions of the equipment that contact edible products must be made free of the mixture before re-use.

3-H Release Agents
Lubricants and release agents that will often come in contact with food. Unlike H-1, 3-H lubricants can be used as food additives (the 10 PPM rule does not apply) (i.e. divider oil).
General lubricants
The lubrication of numerous lubrication points found in the food industry.

Hydraulic lubricants
A large proportion of equipment in the food processing industry is operated by hydraulic systems. Although hydraulic systems are used relatively far from the process, the risk of contamination is large because the high operating pressures can cause leakages to travel a long distance. Matrix has developed three types of food grade hydraulic fluids to suit specific performance requirements.

Foodmax® Basic
Paraffin food grade oil for general lubrication purposes. Can be used in authorized industrial operations where there is the possibility of food contact (for both humans or animals). Foodmax® Basic can be used as a general lubricant in various applications in the food processing industry. Additionally it gives excellent results as general lubricant in the textile, knitwear, food and tin container industry, whenever very high cleanliness level is required.

Foodmax® AW
Foodmax® AW is non toxic and formulated using specially selected highly refined base stocks in combination with the latest additive technology. Foodmax® AW is suitable for applications where incidental contact with food or raw materials is possible during the production process. Thanks to the very low pour point Foodmax® AW PAO is better suited to low temperature applications in comparison to Foodmax® Aw. Foodmax® AW 22 is a higher performance alternative to soap/water mixtures for the lubrication of conveyor belts in the beverage industry.

Foodmax® AW PAO
Foodmax® AW PAO is non toxic and formulated using specially selected synthetic base stocks in combination with the latest additive technology. Foodmax® AW PAO is suitable for applications where incidental contact with food or raw materials is possible during production. Because of its great performance characteristics and carefully chosen additives, Foodmax® AW PAO oils can be used in most applications in the food manufacturing and processing industry.

Foodmax® FRF
Foodmax® FRF is a synthetic food grade fire resistant hydraulic fluid formulated to provide both fire resistance and excellent lubrication. Unlike most water-glycol based formulations, Foodmax® FRF is easy to maintain, has an exceptionally long fluid life and offers superior pump protection. No special change out procedures are necessary to switch from a standard mineral oil hydraulic fluid to Foodmax® FRF and, unlike water glycol formulations, pump deaeration is not required. Its’ exceptional oxidative stability, corrosion resistance, and anti-wear properties make Foodmax® FRF particularly well suited for applications where other fire resistant fluid technologies are restricted. Check out the demonstration video on YouTube or our website searching for Foodmax® FRF.

Foodmax® Selection Table

<table>
<thead>
<tr>
<th>Kinematic Viscosity</th>
<th>NSF/InS</th>
<th>Foodmax® ISO VG</th>
<th>Viscosity</th>
<th>VI</th>
<th>Pour Point °C</th>
<th>Flash Point °C</th>
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Foodmax® FRP Selection Table

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Gear lubricants

Gearboxes are seen everywhere in food processing plants. Most of the time they are relatively small and will operate at both low and high temperatures. Depending on the circumstances and type of gearbox the right choice can be made from Foodmax® Gear, Gear PAO or Gear PAG.

Foodmax® Gear

Food grade range of lubricants for gears, bearings and transmissions. Foodmax® Gear is a range of lubricants in which a combination of the latest base stock technology together with special additives delivers a very high performance. All base components used for the formulation are non-toxic and food grade. Also suitable as chain oil when a non sticky lubricant is required.

Foodmax® Gear PAO

Range of fully synthetic food grade gear oils, particularly suited for the lubrication of drive chains, conveyor chains, gearboxes and reduction units. Foodmax® Gear PAO 680 and 1000 contain special additives that extend relubrication intervals. These lubricants can also be used as chain oils. Foodmax® Gear PAO is specially designed for low temperature applications.

Foodmax® Gear PAG

Foodmax® Gear PAG is a synthetic oil with excellent anti wear properties, high stability to oxidation and a low pour point. It is resistant to metals including aluminium alloys and copper. It resists mechanical shearing, is very stable to ageing and has very good viscosity temperature characteristics. Foodmax® Gear PAG is suitable for the most severely loaded gearboxes. Foodmax® Gear PAG is not miscible with other synthetic and mineral fluids.

Foodmax® Air

The superior performance characteristics of Foodmax® Air mean it can be used safely in all types of compressors and vacuum pumps. The product is based on a fully synthetic base oil and specially selected additives. Foodmax® Air has an excellent oxidation stability and long life at very high temperatures. Foodmax® Air 32 can be used as an airline lubricant.

Foodmax® Air PAO

Foodmax® Air PAO oils are food grade, non-toxic synthetic oils developed for all types of compressors used in the food, beverage and pharmaceutical industries.

Airline Lub

High Temp. Load

Chain Medium

Basic Lub Medium

Compressor Low

Hydraulic Medium

Vacuumpump Gear High

Kinematic

NSF/InS

ISO VG

Kinematic

Viscosity

40 °C

VI

Pour Point

°C

Flash Point

°C

Foodmax® ISO VG Viscosity 40 °C VI Pour Point °C Flash Point °C approvals

Foodmax® Gear 68 68 69 130 -12 206 H1

Foodmax® Gear 100 100 90-110 116 -12 220 H1

Foodmax® Gear 150 150 135-165 113 -12 253 H1

Foodmax® Gear 220 220 198-242 116 -12 254 H1

Foodmax® Gear 320 320 288-352 116 -12 265 H1

Foodmax® Gear 460 460 414-506 121 -18 230 H1

Foodmax® Gear PAO 150 150 149 136 -35 275 H1

Foodmax® Gear PAO 220 220 218 135 -35 280 H1

Foodmax® Gear PAO 320 320 322 134 -30 280 H1

Foodmax® Gear PAO 460 460 485 133 -30 280 H1

Foodmax® Gear PAO 680 680 682 136 -30 282 H1

Foodmax® Gear PAO 1000 1000 998 138 -28 284 H1

Foodmax® Gear PAG 220 220 198-242 > 210 < -35 > 240 H1

Foodmax® Gear PAG 320 320 288-352 > 220 < -35 > 240 H1

Foodmax® Gear PAG 460 460 414-506 > 230 < -30 > 245 H1

Foodmax® Air ISO VG Viscosity 40 °C VI Pour Point °C Flash Point °C approvals

Foodmax® Air 32 32 312 111 < -19 222 H1

Foodmax® Air 46 46 45,8 106 -35 229 H1

Foodmax® Air 68 68 67,5 107 -30 240 H1

Foodmax® Air 100 100 101 107 -25 255 H1

Foodmax® Air 150 150 149,1 123 -15 269 H1

Foodmax® Air PAO 46 46 + 130 > -35 150 H1

Foodmax® Air PAO 68 68 + 130 > -30 150 H1

Foodmax® Air PAO 100 100 + 130 > -30 150 H1

Compressors & Vacuum pumps

Compressors are vital components in any food production or processing plant. Cleanness of the equipment, temperature resistance and lifetime of the lubricant can influence the reliability of compressors and vacuum pumps to a great extent.

Foodmax® Selection Table

Airline Lub

High Temp. Load

Chain Medium

Basic Lub Medium

Compressor Low

Hydraulic Medium

Vacuumpump Gear High

Kinematic

NSF/InS

ISO VG

Kinematic

Velocity 40 °C

VI

Pour Point °C

Flash Point °C

Approvals
Foodmax® Chain

Fully synthetic food grade oil with characteristics that make it particularly suited for the lubrication of drive chains and conveyor chains, gearboxes and reduction units. Contains special additives that extend relubrication intervals significantly; does not contain any mineral components. Foodmax® Chain can be used in incidental contact with food and raw materials.

Foodmax® Chain LT

Foodmax® Chain LT is based on a blend of synthetic hydrocarbons and is inhibited against oxidation to give a long wet film life over a wide temperature range. Foodmax® Chain LT is designed for the lubrication of conveyor chains and bearings running continuously at low temperatures, down to minimum of -40 °C. Foodmax® Chain LT is also suitable for spiral freezers.

Foodmax® Chain HT

Foodmax® Chain HT is based on highly polar biodegradable base oil and is inhibited against oxidation to give a long wet film life at high temperatures. The highly polar molecules strongly adhere to the surface and withstand high temperatures, at the same time separating the moving parts thanks to its highly viscous lubricating film which is maintained at these high temperatures. Foodmax® Chain HT can go up to 250°C, and is therefore suitable for bread ovens in bakeries. Foodmax® Chain HT-X is will reduce wear on chains even further by using the latest available technology. It possesses outstanding anti wear capacity and resistance against high temperatures and shows outstanding evaporation properties.

Foodmax® Mammut Oil 25

Foodmax® Mammut Oil 25 is a food grade product formulated to dissolve sugar from chains, slides and moulds. It has been developed specially for the confectionary market and any application involving sugar. Foodmax® Mammut oil 25 first washes sugar from the chain before it starts to lubricate and protect the chain.

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**Foodmax® Chain Selection Table**

<table>
<thead>
<tr>
<th>Chain Type</th>
<th>Temp. range °C</th>
<th>ISO VG</th>
<th>Viscosity 40 °C</th>
<th>Viscosity 100 °C</th>
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<th>Pour Point °C</th>
<th>Flash Point °C</th>
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**Foodmax® Mammut Oil 25 Selection Table**

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**4-ball wear test**

- Welding load, kg: 40 kg, 1 hr, mm
- Wear scar load, kg: 40 kg, 1 hr, mm

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**Matrix**

Chain & Conveyors lubricants
Food is very often transported in a food production plant by means of chains and conveyors. As the equipment is often exposed to water, cleaning agents and extreme temperature variations it is extremely important to select the right product.
Greases

The use of grease in the food production process is almost endless. Many applications require specific, chemically inert greases to ensure the cleanliness of the food production environment. Foodmax® Grease is a range of high-performance greases specifically designed for food applications. Foodmax® Grease is food grade, non-toxic and meets all relevant FDA (Food and Drugs Administration) and other national and international food grade standards.

Foodmax® Grease ALU-M
Foodmax® Grease ALU-M is a range of aluminum complex greases designed for the lubrication of almost any application requiring a food grade lubricant. Foodmax® Grease ALU-M is formulated with complex soap, additive base oil and solid lubricants. It possesses excellent lubricating properties and a high water resistance, as well as a wide range of application temperatures. It is suitable for a combination of water environments. Foodmax® Grease ALU-M series can be used in a large variety of applications including bearings operating within a temperature range of -35 to 150 ºC.

Foodmax® Grease ASP
Foodmax® Grease ASP is an aluminum complex grease designed for the lubrication of almost any application requiring a food grade lubricant. Foodmax® Grease ASP is formulated with complex soap, base oil additive and solid lubricants. Due to its exceptionally high water resistance, Foodmax® Grease ASP is suitable for all conditions such as food conveyor chains. Foodmax® Grease ASP 2 is very suitable for the lubrication of plain and anti-friction bearings as well as sliding surfaces.

Foodmax® Grease CAS M2
Foodmax® Grease CAS M2 is a member of a family of technologically advanced greases which have been developed by complexing modified overbased calcium sulfonates. This technology is characterized by exceptional mechanical stability, high dropping point, high load carrying performance, reduced wear and excellent resistance to water and corrosion. This technology equals and, in many ways, outperforms other premium, high temperature greases such as lithium complex and aluminum complex.

Foodmax® Grease CAS S L S
Foodmax® Grease CAS S L S is a member of a family of technologically advanced greases which have been developed by complexing modified overbased calcium sulfonates. This technology is characterized by exceptional mechanical stability, high dropping point, high load carrying performance, reduced wear and excellent resistance to water and corrosion. This technology equals and, in many ways, outperforms other premium, high temperature greases such as lithium complex, aluminum complex and polynaphthenate. NLGI 1 is available for better pumpability requirements.

Foodmax® Grease CAS S 2 HS
Foodmax® Grease CAS S 2 HS is a member of a family of technologically advanced greases which have been developed by complexing modified overbased calcium sulfonates. This technology is characterized by exceptional mechanical stability, high dropping point, high load carrying performance, reduced wear and excellent resistance to water and corrosion. This technology equals and, in many ways, outperforms other premium, high temperature greases such as lithium complex and aluminum complex.

Foodmax® Grease Clear
Foodmax® Grease Clear is a food grade grease which is suitable for the lubrication of a wide range of applications including plain and rolling bearings in sluice gates, rolling element bearings or any other food processing plants. Foodmax® Grease Clear is very suitable for the lubrication of plain and anti-friction bearings as well as sliding surfaces.

Foodmax® Grease Fluor HT
Foodmax® Grease Fluor HT is a non-flammable white grease developed from a perfluoropolyether oil, with micronized PTFE as thickener. It is physically and chemically totally inert except for fluorinated solvents and thermal and ionising radiation. The new materials used in the manufacturing process appear in the positive list of the FDA (Food and Drugs Administration).

Foodmax® Grease Inor 3-H
Foodmax® Grease Inor 3-H is a non-toxic grease designed for direct contact with food. It has a wide temperature range containing anti-wear and other additives. Foodmax® Grease Inor 3-H is suitable for all plain and anti-friction bearings as well as sliding surfaces.

Foodmax® Grease TF-S
Foodmax® Grease TF-S is a synthetic food grade grease containing PTFE. The combination of the synthetic base fluid and solid load reduces friction to a great extent and will provide lubrication under all circumstances including boundary lubrication. Shows excellent compatibility with elastomers and plastics.

Foodmax® Grease Fluor HT
Foodmax® Grease Fluor HT is a non-flammable white grease developed from a perfluoropolyether oil, with micronized PTFE as thickener. It is physically and chemically totally inert except for fluorinated solvents and thermal and ionising radiation. The new materials used in the manufacturing process appear in the positive list of the FDA (Food and Drugs Administration).

Foodmax® Assembly Paste
White, non-toxic, grease-like compound with a high solid lubricant content designed for use as an assembly lubricant for bushing bushings, sliding surfaces, small open plastic or metal gears and anti- fric tion compound for threaded fasteners. The compound is designed to prevent damage during start-up and protect against premature wear during the running-in period.

NLGI: class Worked penetration, penetration number General consistency
00 445-475 Liquid
000 445-475 Melt
0 355-385 Semi liquid
1 310-340 Very weak
2 255-295 Weak
3 220-250 Semi solid
4 195-220 Medium
5 160-190 Very solid
6 085-110 Firm
### Foodmax® Grease Selection table: behaviour & applications

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<th>Behavior to Chemical agents</th>
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</tr>
<tr>
<td>Suitable with brake</td>
<td></td>
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</tr>
</tbody>
</table>

**Product**
- Foodmax® Grease ALU M H1
- Foodmax® Grease ASP H1
- Foodmax® Grease CAS M 2 H1
- Foodmax® Grease CAS S LS H1
- Foodmax® Grease CAS S 2 HS H1
- Foodmax® Grease Clear H1
- Foodmax® Grease Inor 3H H1
- Foodmax® Grease Fluor HT 2 H1

AC = Aluminium Complex, Ca = Calcium, Cas = Calcium Sulphonate, SS = Semi Synthetic, S = Synthetic, Si = Silicon, Pe = Perfluorinated, P = PTFE, I = Inorganic

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**Foodmax Grease Selection table: temperature range & NLGI classifications**

<table>
<thead>
<tr>
<th>Product</th>
<th>NLGI</th>
<th>°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foodmax® Grease ALU M</td>
<td>W1</td>
<td>120 160 220 280 300</td>
</tr>
<tr>
<td>Foodmax® Grease ASP</td>
<td>W1</td>
<td>120 160 220 280 300</td>
</tr>
<tr>
<td>Foodmax® Grease CAS M 2</td>
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<td>Foodmax® Grease CAS S LS</td>
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<td>W1</td>
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<td>W1</td>
<td>120 160 220 280 300</td>
</tr>
<tr>
<td>Foodmax® Grease Inor 3H</td>
<td>W1</td>
<td>120 160 220 280 300</td>
</tr>
<tr>
<td>Foodmax® Grease Fluor HT 2</td>
<td>W1</td>
<td>120 160 220 280 300</td>
</tr>
</tbody>
</table>

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Price dependent on volume of purchase and geographical location.

**Available on the Matrix Specialty Lubricants Grease Choice selection App**

Use our grease choice app as an easy way to find out the correct grease for each application. It also gives you the option to download and to share our Matrix Technical Data Sheets. Free for download. This app is available for iPhone and Android.
Foodmax® DDO/DDO-V
Foodmax® DDO is produced from highly refined vegetable based oil and special additives to warrant a trouble-free operation when used as a dough divider oil.

Foodmax® HTF 32
Foodmax® HTF (Heat Transfer Fluid) fluids are made with food grade synthetic base fluids. They are formulated to be very thermally and oxidative stable and are further enhanced with proprietary additives that greatly extend their life over normal and other synthetic food grade heat transfer fluids. They provide exceptional performance in a number of food related heat transfer applications.

Foodmax® Silicon
Foodmax® Silicon are special fluids developed to lubricate applications which suffer from high temperatures and where water and other contaminants are found. Foodmax® Silicon can also be used as heat transfer fluids in circulating systems and hot bath applications.

Characteristics
Foodmax® Clean
Foodmax® Clean is a very effective general purpose cleaner and degreaser formulated from a citrus derivative which is non-toxic, biodegradable and InS C1 approved.

Foodmax® Freeze
Foodmax® Freeze is an inhibited polyol glycol specialty fluid for use in HVAC (Heating, Ventilation, Air Conditioning) systems, industrial heat transfer systems, food industry chilling and freezing systems. Foodmax® Freeze are typically used in secondary cooling systems found in slaughterhouses and breweries.

Foodmax® Spray
Aerosols are easy to use and allow mechanics to apply lubricants and greases at the right concentration in the correct location.

Foodmax® Multi Spray
Foodmax® Multi Spray is a very adhesive white food grade lubricant in a spray package. The spray contains a food grade synthetic fluid which is food grade liquid. Lubrication of chains, conveyors, slides, joints, mould slides, small bearings in any other application which requires a food grade high performance lubricant. Also suitable for textile, paper and graphic arts, plastic and elevator industry. Also provides excellent performance in motorcycle chain lubrication and in high speed gear transmission chains.

Foodmax® Easy Spray
Foodmax® Easy Spray is a universal lubricant for use in food processing equipment where incidental contact with food may occur. Suitable for most applications where medium load resistance is required. Foodmax® Easy Spray can be used as non sticky general lubricant for chains, bearings and slides with low load, hinges and as a cleaning and conserving agent for stainless steel. Additionally Foodmax® Easy Spray can be used as a food grade mould release oil.

Foodmax® Grease Spray
Foodmax® Grease Spray is a high performance food grade white grease, sticky and water resistant. Suitable for open gears, idlers, conveyors and bearings. Also suitable to use as an assembly paste. Temperature range -40 to 180 °C and up to 1200 °C as assembly grease (dry). H1 for the use in food processing equipment where incidental contact with food may occur.

Miscellaneous food grade
In this section a number of various lubricants and fluids which are key for a proper operation of food processing equipment. Heat transfer fluids is one of them and they very often represent a high risk of causing contamination since a leakage may not be discovered for a long time. Other general purpose products are Foodmax® Silicon oils, Foodmax® DDO dough divider oils and food grade cleaners.
Refrigeration
The production of food goes hand in hand with the cooling and freezing of the final product and raw materials. Most food production plants are therefore having all types of refrigeration equipment in place. Matrix Specialty Lubricants offers a large selection of high quality refrigeration lubricants including POE and PAG and special lubricants for ammonia refrigeration. Please check our Coolmax products in the refrigeration fluids brochure or check the website for more details.

Disclaimer
Information presented in this brochure is considered reliable, but conditions and methods of use, which are beyond our control, may modify results. Before adopting our products for commercial use, the user should confirm their suitability. In no case should recommendations or suggestions for the use of our products be understood to represent rejection of any patent.
Additives
An additive is a chemical substance added to a fluid to modify its properties or to change its behavior. Additives are added to base oils or crude petroleum to improve the performance of the lubricant. Additives can improve the oxidation stability of the lubricant. Oxidation is a chemical reaction that causes the decomposition of a fluid, which results in the formation of carbon or other deposits. Oxidation can be prevented by the addition of antioxidants. Oxidation is a chemical reaction that causes the decomposition of a fluid, which results in the formation of carbon or other deposits. Oxidation can be prevented by the addition of antioxidants. The antioxidants can be added as single additives or as a combination of two or more additives. The antioxidants are usually added in small quantities, typically less than 0.5% of the total volume of the fluid.