

OILS AND GREASES

Oils are based on petroleum or related hydrocarbons, they have certain inherent characteristics of which the user should be aware. There are, of course, no unusual hazards associated with most lubricating oils and greases, provided reasonable care is taken with their storage, handling and usage.

The Oil and Grease Control Ordinance is the result of a mandate from the NC Department of Environment and Natural Resources that each municipality install a program of oil and grease control to aid in the prevention of sanitary sewer blockages and overflows that adversely impact the environment. Previous surveys and inspections of food service facilities suggest that the majority are already compliant with the main focal points of this ordinance. Inspections of facilities for compliance with the ordinance will be an on-going process.

<http://www.apexnc.org/services/public-works/sanitary-sewer/oil-and-grease-information>

TYPES OF OIL

- Monounsaturated fat - olive or canola oil
- Polyunsaturated fat - sunflower or soybean oil
- Saturated fat - butter, coconut, or palm oil
- Trans-fat - hydrogenated fat used in cookies and commercial French fries.

http://www.drlam.com/opinion/oils-differnt_types_for_different_uses.asp

TYPES OF GREASES

MINERAL OILS MIXED WITH SOLIDS

These types of greases are very heavy lubricants for specialized applications. Such greases lubricate rough-fitting machine parts operating under heavy pressures or loads at relatively slow speeds. Examples of equipment that will typically use this type of grease include concrete mixers, bearings and rollers on conveyors and heavy construction equipment.

HEAVY ASPHALTIC-TYPE OILS BLENDED WITH LIGHTER OILS

These types of lubricants are classified as greases but are actually thick, heavy oils used to lubricate open-type gearing and wire rope. A primary advantage of these oils is that they form a

heavy protective film when heated or painted on surfaces and then allowed to cool. Lighter oil is typically blended with the heavy oils in order to improve the pour point of the oil.

EXTREME-PRESSURE GREASES

The unique characteristic of this type of grease is that it contains additives to improve firm strength under various applications. In essence, film strength provides the resistance of the lubricant to being torn apart, thus preventing metal-to-metal contact of the equipment being lubricated. A film is formed by a chemical reaction of the metal to the additives in the grease. The chemical reaction is usually brought about (or accelerated) by pressure exerted on the grease, creating heat.

ROLL NECK GREASES

Roll neck greases are specialized lubricants used almost exclusively for lubricating plain bearings in rolling equipment. For example, it's fairly common to use a block of NLGI No. 6 grease, which has the consistency of a bar of soap, carved to mate with the shape needed to accommodate the bearing of heavily loaded equipment.

SOAP THICKED MINERAL OILS

This is by far the most widely used category of grease in industry today. This type of grease varies by the additive that forms the soap in the lubricants chemical makeup

http://www.reliabilityweb.com/art04/understanding_the_basics_of_grease.pdf

Calcium	Soap	Greases
These do not dissolve in water. They are recommended for installations exposed to water at temperatures below 60 degree C. They offer good protection against salt water in marine environments.		

Sodium	Soap	Greases
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Also called soda greases, they may be utilized over a wide range of temperatures up to 120 degree C. However, if too much water penetrates into the bearings, there is a risk that the grease will be washed out and the lubricating properties become deteriorated.

Lithium

Soap

Greases

These have excellent resistance to high temperatures. They can also be used over a wider range of temperatures from -50 to 150 degree C. They are not water soluble.

<http://thomas-yoon.wrytestuff.com/swa3953.htm>

USES OF OILS AND GREASES

Gun oil has many important uses. It protects the gun's metal finish from water and rust

http://www.carduccitactical.com/Oil_or_Grease_.html

Products	Commercial Uses	% of Total US Oil Consumption
1. Gasoline Fuel	For use in automobiles and piston engine aircraft.	43.4%
2. Distillate Fuel Oil	Includes both home heating oil and diesel fuel. Primarily used for space heating, diesel engine fuel railroad engine fuel, agricultural machinery and electric power generation.	23.5%
3. Kerosene-Type Jet Fuel	Used for turbine powered aircraft engines.	9.2%
4. Petroleum Coke	A solid black residue created during the distillation process. Used in electrode manufacturing, the production of chemicals, and to heat steel industry ovens.	4.9%
5. Residual Fuel Oil	Heavy fuels used in factories, shipping, and for electric power generation.	3.8%
6. Liquefied Petroleum Gases (LPG)	Contains hydrogen, methane, ethane, and olefins used in the production of petrochemicals.	3.4%
7. Still Gas	Contains methane, ethane, normal butane, ethylene, butylene, propane, and propylene	4%

	used in the production of petrochemicals.	
8. Asphalt & Road Oil	Used to build roads, highways, playgrounds, and sidewalks.	3.1%
9. Raw Material for Petrochemicals	Also referred to as petrochemical feedstock. These materials are used by the petrochemical industry to create synthetic goods for use by industries, agriculture and consumers.	2.5%
10. Lubricants	Used in engines, factories and machinery to reduce friction between moving parts.	0.9%
11. Kerosene	Used for lighting and heating.	0.4%
12. Other	This includes all other petroleum based products.	0.9%
Total		100%

<http://alternativeenergy.procon.org/view.resource.php?resourceID=001797>

Grease is sometimes used to describe lubricating materials that are simply soft solids or high viscosity liquids, but these materials do not exhibit the shear-thinning (thixotropic) properties characteristic of the classical grease.

Greases are applied to mechanisms that can only be lubricated infrequently and where a lubricating oil would not stay in position. They also act as sealants to prevent ingress of water and incompressible materials. Grease-lubricated bearings have greater frictional characteristics due to their high viscosity.

1) Machinery that runs intermittently or is in storage for an extended period of time. Because grease remains in place, a lubricating film can instantly form.

(2) Machinery that is not easily accessible for frequent lubrication. High-quality greases can lubricate isolated or relatively inaccessible components for extended periods of time without frequent replenishing. These greases are also used in sealed-for-life applications such as some electrical motors and gearboxes.

(3) Machinery operating under extreme conditions such as high temperatures and pressures, shock loads, or slow speed under heavy load. Under these circumstances, grease provides thicker film cushions that are required to protect and adequately lubricate, whereas oil films can be too thin and can rupture.

(4) Worn components. Grease maintains thicker films in clearances enlarged by wear and can extend the life of worn parts that were previously oil lubricated. Thicker grease films also provide noise insulation.

http://www.engineersedge.com/lubrication/application_grease.htm

HOW ARE OIL AND GREASES STORED AND TRANSPORTED

They are required to be lifted, carried or moved shall be lifted, carried or moved in such a way and with such precautions and safeguards, including protective clothing, guards or other precautions as will ensure that the lifting, carrying or moving of material, articles or things does not endanger the safety of the worker;

(b) Shall be transported, placed or stores so that the
Material, articles or things, will not tip, collapse or fall, and can be removed or withdrawn without endangering the safety of any worker."

- 1) Manufacturer's instructions regarding procedures and equipment should be followed.
- 2) Hot oil/grease should be allowed to cool prior to handling.
- 3) Use only containers capable of withstanding high temperatures i.e. steel pails and utensils. DO NOT USE PLASTIC pails or containers.
- 4) Ensure containers have adequate capacity.
- 5) Cover the hot oil/grease container when transporting.
- 6) Wear protective equipment appropriate to the circumstance.

<http://www.ccohs.ca/otherhsinfo/alerts/alert8.txt>

- Appropriate environment for storing lubricants
- Estimating quarterly, semiannual or annual usage requirements
- Usage and storage methods (FIFO inventory system)
- Storage life limits for various lubricants in various storage environments
- Labeling requirements, including blending date, packaging date, delivery date and the date the lubricant was put into service by opening the container Testing the condition of expired lubricants or those that have been compromised in storage

<http://www.machinerylubrication.com/Read/172/lubricant-storage-life>

HOW TO HANDLE AND STORE WASTE FAT, OIL AND GREASE

- Use a cover to transport grease container contents to the rendering barrel.
- Provide employees with the proper tools (ladles, ample Containers, etc.) to transport materials without spilling.

<http://www.calfog.org/docs/lacsdbmp.pdf>

Lubricants are marketed and distributed in a range of bulk and packaged forms. These include road tankers, bulk Iso-tainers, mini-tainers, maxipacs, 200 litre drums and various small pack sizes. Distribution is done either direct to the end user or through company depot and distribution networks. Major oil companies and national road haulage companies such as Tanker Services, Unitrans, and others play a role in the bulk transport of lubricants and in the distribution of packed products. Drum and smallpack suppliers include Rheem, Van Leer, and others.

<http://www.mbendi.com/indy/oilg/lubs/af/sa/p0005.htm>

DISPOSAL METHODS

1. Allow the oil to cool completely before disposing of it.
2. Decide whether the oil needs to be discarded. Oil used for deep-frying can usually be reused several times. Strain it into a clean sealable container.
3. To throw it away, carefully pour it into a strong sealable container, such as an old plastic jar with a lid. Many households save jars for this purpose. Plastic jars are better than breakable glass ones.
4. If the amount of oil is small, place the filled, sealed jar in the trash.
5. Take large amounts of cooking oil to the local landfill.
6. Alternatively, recycle large amounts of used cooking oil with the help of a cooperative local restaurant. Most restaurants have used grease bins, whose contents are recycled into consumer products. Ask if you can add your used oil to their grease bin.
7. Used cooking oil can also be composted with other organic matter. If you have a compost heap or a healthy backyard earthworm population, feed them kitchen scraps.

http://www.ehow.com/how_15918_dispose-used-cooking.html

PROPER DISPOSAL OF GREASE AND OIL

1. **Solidify thin, liquidy fats with absorbent material.** It is most tempting to just pour light oils down the drain; after all, you can't just pour them in the garbage! However, you can use coffee grounds or kitty litter (or even some leftover powder laundry detergent) to

absorb the liquid and then dispose of the solid waste. If you want to go super green, you can even [make your own kitty litter from recycled paper!](#)

2. **Filter out heavy grease and fatty solids.** When boiling meat or any time fats and water mix, it's easy to just pour it all down the drain. However, you can simply cover the drain with one or two layers of paper towel (or a large coffee filter) and use them as a filter to catch softer, more solid fats and grime when they are already heavily mixed with water. Then discard the "filter paper" in the trash.
3. **Wipe out greasy pots and pans.** It's messy, and it can be annoying, but it's safer and healthier than rinsing the grease and grime down the drain. If you do it soon enough after cooking, it also cuts down on the elbow grease needed to get pots and pans clean. THAT'S worth the effort!
4. **Fill a safe container and discard the container.** An empty coffee can, or better, an empty plastic food container (they are usually not recyclable) with a tight fitting lid can be used to hold the grease or oil, and you can simply throw that out with the trash. Easy peasy. Just make sure that the grease or oil has cooled first - you don't want to dispose of hot grease for a number of safety reasons.

To prevent sewage backups and overflows, you need to keep fats, oils, and grease out of the sewer system. The most effective solution is to control fats, oils, and grease at the sources. Here's how:

1. Install a grease trap that's sized and manufactured to handle the amount of grease by-product anticipated to be discharged.
2. Maintain your grease trap in proper operating condition by having it cleaned and serviced frequently.

<http://www.cityofsalem.net/Departments/PublicWorks/Operations/EnvironmentalServices/Information%20Brochures/Oil%20Grease%20Information.pdf>

ENVIRONMENTAL RISKS

Clogged sewer can lead to overflows. As sewage overflows onto streets, it enters the storm sewer system where the sewage is then carried to our local waterways, creating a health risk for swimmers and marine life

<http://www.cityofsalem.net/Departments/PublicWorks/Operations/EnvironmentalServices/Information%20Brochures/Oil%20Grease%20Information.pdf>

