



CHAMPION BRANDS  
1001 GOLDEN DRIVE  
CLINTON, MO 64735  
1-800-821-5693

[www.championbrands.com](http://www.championbrands.com)  
[www.championsusechampion.com](http://www.championsusechampion.com)

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AUTHOR: JAKE NEUBAUER

## IMPORTANT INFORMATION ON GREASES

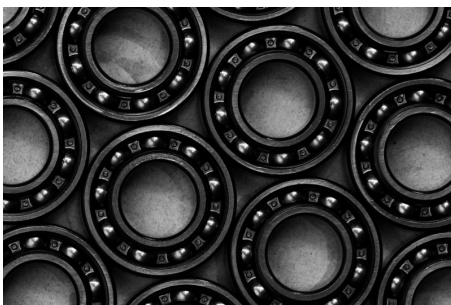
Greases are available in a dizzying array of colors, textures, and chemistries and are primarily used to lubricate rolling element bearings and journals. Despite this apparent diversity, they are all made up of base oil, performance additives, and special thickeners which hold the base oil in a semi-solid form, which shears to release the lubricating oil.

The consistency of the grease is described by its NLGI grade, where a higher number signifies thicker or more solid grease – this is affected by the type and amount of thickener, and to some extent the additives and base oil viscosity.

### THICKENERS

By far the most common type of thickener is the lithium soap 12-hydroxystearate. Other soaps, such as aluminum and calcium soaps can also be used, as well as finely dispersed clays or synthetic particles. Soap-thickened greases can also be made with additional “complexing” agents, which affect the way the thickener molecules interact and alter the consistency of the grease and its ability to withstand heat. Some of these thickeners are also incompatible with one another or with certain base oils.

Mixing of incompatible greases can cause serious lubrication problems such as thinning of grease from a semi-solid state to a liquid which can run out of equipment.



### BASE OILS

The lubricating oil which is held in greases by thickening agents can be a simple mineral oil, highly refined mineral oil, poly-alpha-olefin, polyol ester, or other type of base fluid. Properly formulated grease will have an oil viscosity that is appropriate for the contact pressure and speed of the equipment to be lubricated. It is also important that the oil be slowly released under shear pressures, and is not allowed to easily run out of bearings or journals. Other properties, such as oxidative and thermal stability are just as important for high-performance greases as for high-performance and specialty oil applications.

### ADDITIVES

Additives found in grease can be oil-based additive systems or may be suspensions of proven solid lubricants such as graphite or molybdenum disulfide. Extreme pressure additives systems are common in greases and usually correspond to improved performance in scuffing, weld loads, and wear scars – some other additives found in greases are anti-oxidants and corrosion inhibitors.

