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Happy Thanksgiving

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Spiritually speaking our world is pretty simplistic and predictable. God is in the Heavens and our choices have ramifications.

America's agricultural industry has always had to deal with unknown forces such as weather, disease, and market value fluctuations. Typically things like "tariffs" on far away countries products are hidden from sight but not this year. Some argue that tariffs are necessary to protect jobs. Others see tariffs as "simple taxes" that cause higher prices for some products and lower demand for others.

History predicts that our farming industry will continue to survive what it can't control. America's agriculture will remain the world's best and biggest because of the ingenuity and hard work of its farmers and their loyal support industries of which Cen-Pe-Co is a member.

As we prepare our tables for this upcoming Thanksgiving it's important to remember to never take "anything" for granted. Honesty and hard work still have value and love of God, Family, and Country, is still good for our world that we are lucky to live in.

Grease Compatibility

By: Blaine Ballentine

When two greases are "incompatible," it generally means that their mixture is thicker or thinner than either of the greases by themselves. For example, when you mix a #2 aluminum complex grease with a #2 polyurea grease, the resulting mixture may be an NLGI #1.

If the grease mixture is too thin, it can run out and leave the bearing unprotected. Too think, and it can "channel" or "tunnel," leaving almost no lubricant where it is needed.

Incompatible Grease Types

You have probably seen a grease compatibility chart, similar to the one below.

Legend: ● Compatible ▲ Borderline Compatible ■ Incompatible	Aluminum Complex	Barium	Calcium	Calcium 12-Hydroxy	Calcium Complex	Clay	Lithium	Lithium 12-Hydroxy	Lithium Complex	Polyurea
Aluminum Complex		■	■	●	■	■	■	■	●	■
Barium	■		■	●	■	■	■	■	■	■
Calcium	■	■		●	▲	●	●	▲	●	■
Calcium 12-Hydroxy	●	●	●		■	●	●	●	●	■
Calcium Complex	■	■	■	▲		■	■	■	●	●
Clay	■	■	●	●	■		■	■	■	■
Lithium	■	■	●	●	■	■		●	●	■
Lithium 12-Hydroxy	■	■	▲	●	■	■	●		●	■
Lithium Complex	●	■	●	●	●	■	●	●		■
Polyurea	■	■	■	■	●	■	■	■	■	

Typically, they do not indicate how the chart was created, or from where the chart was copied. This one is different.

NSK Corporation is a roller bearing manufacturer that created the chart displayed based on actual testing[1]. Ten types of grease were tested by mixing two together at a time at 25, 50, and 75% ratios. Worked penetration (as described in the last *Central News*) was used to measure thickness. Penetration was measured again after storage at 250°F.

Every grease was found to be incompatible with at least one other grease. Polyurea and barium are the least compatible grease thickeners. You can think of polyurea like plastic, which has multiple variations, and some polyurea greases are incompatible with other polyurea greases. Several polyurea greases claim to be compatible with lithium greases, but it never hurts to be cautious.

Some mixtures with barium based grease had a tendency to look like oil on the top and grease on the bottom. Clay (bentone) and calcium complex greases are also incompatible with most other grease types. The most compatible grease types are calcium 12 hydroxy and lithium complex.

Assuming the grease thickeners are compatible, there is still the possibility of incompatibility due to an additive conflict. An actual chemical reaction is unlikely, but some additives are antagonistic toward others and diminished performance is the result[2]. For example, diluting two different EP additives with each other, may not withstand the loads of either one at full strength.

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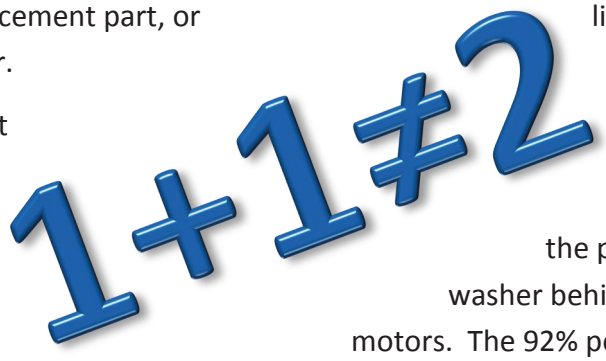
Changing to an Incompatible Grease

Of course, the easy way to eliminate the risk of grabbing the wrong grease gun and inadvertently mixing incompatible greases is to consolidate to one grease. However, we still have to deal with the potentially incompatible grease that is already in the machine.

So what can we do if we want to change to a new grease that we know is incompatible with the existing grease? We may not even know what type of grease is in a newly acquired machine, whether the machine is new or used. The same issue arises when we use a greased replacement part, or send a machine out for repair.



If the lubrication point is easy to clean, clean it prior to applying the new grease. A 5th wheel would be an example, where disassembly, cleaning, and reassembly is not complicated or difficult.

If the bearing or fitting is not sealed or shielded, just pump in enough new grease to purge the old grease. In a U-joint that contains black grease and you are changing to red grease, just keep pumping until red grease comes out of all four corners.

For other bearing or fittings where changing to a new and incompatible grease--shorten the service interval. That zerk that you were supposed to hit every day--hit two or three times a day for the first couple days. If you see oil leaking out during the change-over--grease it again right away.

There are very few places where changing grease types involves significant risk. In these cases, disassemble, clean out the old grease, and reassemble. In some cases, it will be more practical to stay with the current grease. An electric motor bearing may be an example. If grease gets into the windings because it softened due to incompatibility, it can cause the motor to fail. Greasing more often is not a good strategy in an electric motor because over-greasing can short it out, even when using the same grease without change.

Managing Different Grease Types

In operations that require more than one type of grease, the challenge is in keeping the greases segregated. Say, for example, that the electric motors came with polyurea grease in them, but all the heavy equipment uses lithium grease. You can label your grease guns and tag the electric motor zerks to identify the correct grease. Or buy a red grease gun for the polyurea grease, and put a red washer behind the zerks on the electric motors. The 92% percent of men that are not colorblind should be able to match them up.

CenPeCo Greases

CenPeCo greases are among the more compatible types. All of our greases use either lithium complex or 12-hydroxy lithium thickeners, with the exception of our 5th Wheel Grease, which uses a calcium thickener. So, changing from one CenPeCo multi-purpose grease to another is safe.

Also, lithium complex and lithium greases are far and away the biggest sellers, accounting for 68% of North American production last year[3]. So, you are a lot more likely to find a client using one of these grease types than an incompatible grease.

Advise customers to take the precaution of shortening their greasing interval at first when they are switching from an incompatible grease type. We have never heard on an issue, but there is no reason to take a chance.

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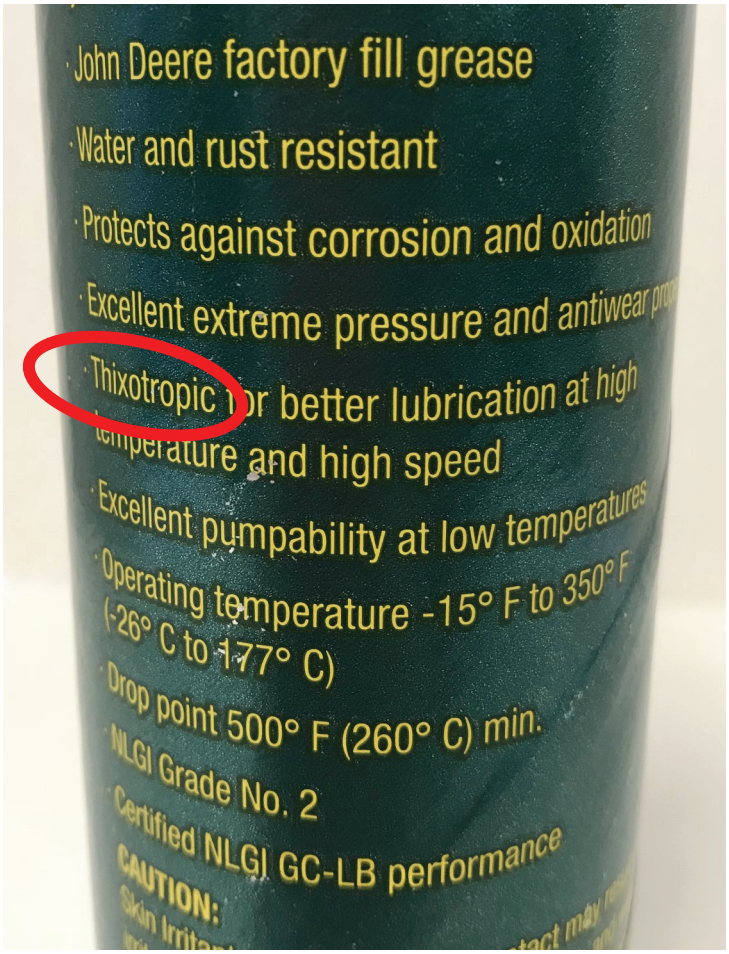
Watch Out for…

There are a lot of different brands of incompatible grease out there, but CenPeCo salesmen are likely to run into two in particular—John Deere and Schaeffer.



Although John Deere has different types of greases, John Deere SD Polyurea Grease, which they claim is compatible with most other types of grease, is listed first on their website[4] and is their factory fill. CenPeCo does not offer a polyurea grease because they are thixotropic. In other words, they get thinner under shearing forces or during agitation. Perhaps that is a good thing if you are trying to squeeze the last little bit of energy efficiency out of a high speed industrial bearing, but it is arguable as to whether it is the best choice for heavy equipment.

Then consider that the typical John Deere customer, whether ag or construction, is likely to have other brands of equipment that recommend lithium or lithium complex grease. Nearly every company or individual is going to use the same grease in all of their equipment, without even thinking about compatibility. Polyurea grease just seems like an odd choice from the market leading tractor manufacturer.

Then there is Schaeffer. All of the multi-purpose Schaeffer greases listed on their website[5] are aluminum complex, bentone (clay), or polyurea, which are the three most incompatible grease types on the market. These three thickeners combined account for less than 20% of all grease manufactured in North America. So, assume incompatibility between CenPeCo grease and Schaeffer grease, and recommend more frequent grease intervals at first.

Reasonable Precaution

CenPeCo greases are among the most compatible on the market. When switching a customer from a potentially incompatible grease to CenPeCo, recommend the necessary precautions. Finally, you may want to warn existing customers against changing to potentially incompatible products.

Perhaps the best strategy is to choose a CenPeCo grease, and then continue to use that grease forever.

References

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5) "High Performance Greases." *Schaeffer Oil | Specialized Lubricants*, www.schaefferoil.com/greases.html.