



**Shell Lubricants**

# THE THREE C'S OF GREASE

**FROM GREASE – FILLING THE VOID**

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# THE THREE C'S OF GREASE

**What is the single most important characteristic of grease for proper lubrication? Viscosity.** It is the base oil viscosity that lubricates your application. Selecting a base oil that is too heavy can increase heat and negatively impact power efficiency and equipment life. Select a base oil that's too light, and the oil may not be able to carry the load leading to premature wear and possibly failure. Knowing the three Cs of grease can help extend the life of your equipment.

## COMPOSITION

There are many definitions of grease. The sponge analogy remains a good one. Grease is like a sponge filled with water where the sponge is the thickener, water is the oil containing performance additives. A more technical definition for grease is a lubricant consisting of a fluid containing property enhancing additives and which has been thickened by a thickening agent to the required consistency.

## CONSISTENCY

Consistency refers to how stiff a grease is. Greases range in consistency from being very fluid like oil to almost solid like a brick. The key is in the ratio of thickener to oil. More thickener creates a stiffer grease and less thickener makes a softer, more fluid grease. It is important to select the correct consistency for the grease to stay in your application and let the oil do its lubricating job. Consider the application when choosing consistency, and refer to your OEM manual.

Classifications range from triple zero (000) to grade 6. The 000 grade is the softest; the higher the grade number, the stiffer the grease. Lubricating greases having a consistency of NLGI 0 or softer are fluid at room temperature and are not likely to exhibit good sealing properties. NLGI 5 or stiffer greases primarily exhibit properties of a solid body at a state of rest.

The NLGI-number is useful to evaluate if the product can be expected to behave as a solid body at room temperature or if it will flow. It is not an indication of the performance characteristics beyond stiffness. A high NLGI-number is no voucher for excellent sealing properties, shear stability or load carrying capacity, etc.





### **How is Consistency Measured?**

Consistency is determined using test method ASTM D217 by dropping a cone with a well defined weight and geometry for 5 seconds into an equally well defined cup containing the grease that has been prepared i.e., worked, smoothed and tempered to 25°C.

The depth the cone falls into the grease is measured in tenths of millimetres and the value is then translated into an NLGI-grade. For example, an NLGI 2 grade grease means the cone falls to a depth of 265-295 tenths of a millimeter into the grease. The stiffer the grease, the less depth the cone falls. The measurement can be done before or after working but the reported value is normally that from working 60 strokes. Working is done by moving a plunger attached to a plate with holes in it up and down in the grease while it is in a well-defined cup. This provides a standard amount of movement to the grease before running the ASTM D217 test. Grease consistency can change during undisturbed storage, so working it before running the ASTM D217 test provides a better indication of grease consistency once the grease is in the application.

### **COMPATIBILITY**

It is very important to know which thickeners are in your plant. If they are incompatible, keep them separated and clearly identify their specific use. One common result of mixing incompatible thickeners is grease softening.

### **FOR MORE INFORMATION, CONTACT US**

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