

Grease

Testing & Analysis



Why test grease?

Grease is known to cater to the lubrication requirements for approximately 80-90% of the bearings used. Grease analysis plays a crucial part in the course of predictive maintenance. Like every lubricant, used grease has the potential to identify critical wear in machinery. A grease analysis can also verify the fitness of a specific type of grease for definitive applications or machinery. But does every bearing lubricated with grease need to be tested? probably not. Viswa's team of tribological experts guide during the entire course of grease analysis from sampling methods to recommendations on re-greasing intervals and guidance.

Standard Grease Tests

- ASTM D566 | Dropping Point of Grease
- ASTM D1403 | Quarter & Half Cone Penetration of Grease
- ASTM D1404 | Deleterious Particles in Lubricating Grease
- ASTM D1742 | Oil Separation from Lubricating Grease during Storage
- ASTM D1743 | Corrosion Preventative Properties of Lubricating Grease
- ASTM D1831 | Roll Stability of Lubricating Grease
- ASTM D2595 | Evaporation Loss of Lubricating Greases
- ASTM D4048 | Copper Corrosion from Lubricating Greases
- ASTM D7342 | Water Stability Test
- ASTM D942 | Oxidation Stability of Lubricating Greases
- ASTM D1264 | Water Washout Characteristics of Lubricating Grease
- ASTM D4693 | Low-Temperature Torque of Grease Lubricated Bearings
- US Steel DM43 | Grease Mobility



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Grease Sampling - Why is it important?

Unlike lube oils, In-service grease sampling can get complex. Firstly, if the bearing assembly need to be dismantled and sent to the lab for analysis or if the grease can be accessed without dismantling the bearing assembly. Two questions arise with the above complexities;

1. How effective will the analysis be?
2. Is the sample representative of the actual condition of both the grease and the bearing?

With the first question, given a scenario where an industry is facing repeated bearing failures, it may not be possible to dismantle the housing and assembly for hundreds of gears. Instead, data obtained from just a few bearings can be used to deduce the root cause of failure as most lubrication-related failures originate from the same root cause.

The second issue might get a little tricky because it is dependent on the realization of the technician as different information gets collected in different parts of the system where the grease is in service. That is, the grease sample which best represents the evidence of contamination, wear and degradation will be found near the load zone of the bearing than the grease that has been pushed out.

Performance tests

Four Ball Lubricity & EP

The four ball lubricity and EP (Extreme Pressure) tests are used to determine the wear resistance offered by grease under extreme conditions. They are done as per ASTM D2266 and ASTM D2596.

RULER

This test is used to determine the Remaining Useful Life (RUL) of the lubricant by linear sweep voltammetry. This helps in optimization of re-greasing intervals.

Analytical Ferrography

This technique is used to systematically analyze the suspended wear debris and other solid contaminants to determine the root cause behind abnormal wear and failure.

