

Development of a Standard to Determine the Tackiness of Greases

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Overview

Greases may vary in formula, which causes the variation in tackiness between different lubricants. Depending on the goals, some greases may be better suited to an application than others based on their tackiness.

Tackiness may be defined as the measurement of a material's adhesive and cohesive properties, and its' ability to form threads when pulled apart.

Techniques, such as the finger test, produce a qualitative measurement of the tackiness of a grease, but create issues in standardization due to imprecise and non-quantifiable conditions.

The Finger Test

The finger test is a simple, yet ineffective test to gauge the tackiness of a grease. The issue with the finger test lies in its inconsistency in reproducing results. By placing a sample between the thumb and index fingers and slowly pulling them apart to observe any "threading", the tester can roughly determine the tackiness of a grease. Though it is a very straightforward procedure, the finger test creates issues in standardization of measurement, because one tester may interpret a sample to be moderately resistant to separation, while another may interpret the sample to be highly resistant. The subjectivity and qualitative nature of the finger test complicates scientific procedures; however, a standardized, quantitative test provides a solution to this issue.



The K95200 Tackiness Tester

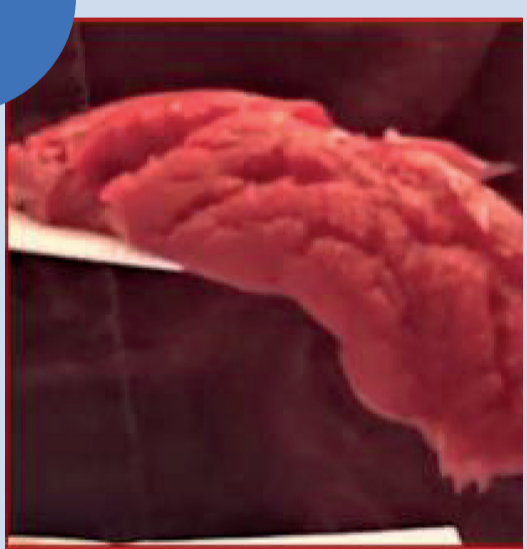
The K95200 is a grease tackiness testing instrument that utilizes the Kesternich Method to test the flow of greases at low temperatures. Using the same principles as the finger test, the grease sample is pulled apart by two metal plates to measure the resistivity to separation and "threading". The K95200 produces standardized, quantitative data that can be

reproduced consistently. By eliminating the subjectivity of the finger test, the K95200 allows for grease tackiness to be accurately compared between different testing personnel.



How the K95200 Works

1



Using a spatula, collect a sample of the grease to be tested. This sample will be dispensed into the K95200 from a syringe for a more accurate sample size.

2



Pack the grease sample into a small plastic bag, using a flat-edged tool to push the sample into an area as tight as possible at the corner of the bag to minimize air pockets.

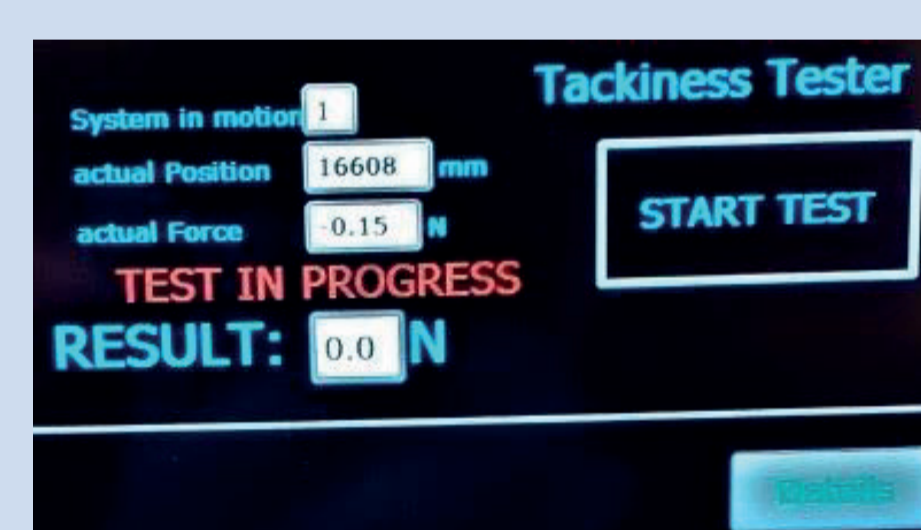
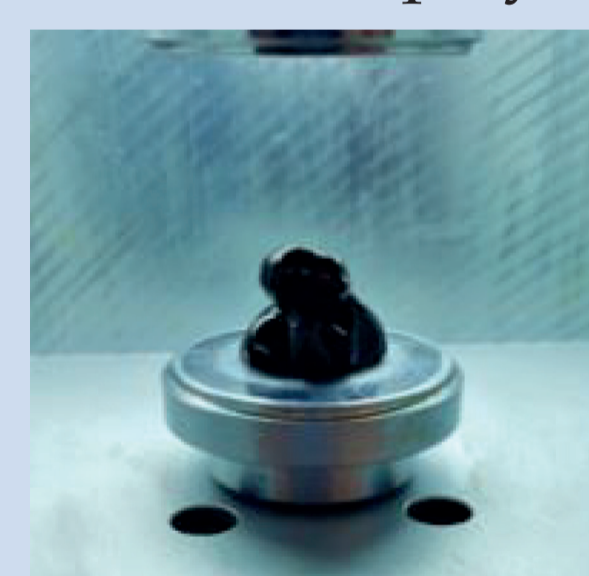
3



By snipping the tip of the bag, fill a syringe with at least 5 mL of the grease sample. Be sure to remove air pockets by tapping the syringe against a lab bench while filling the syringe.

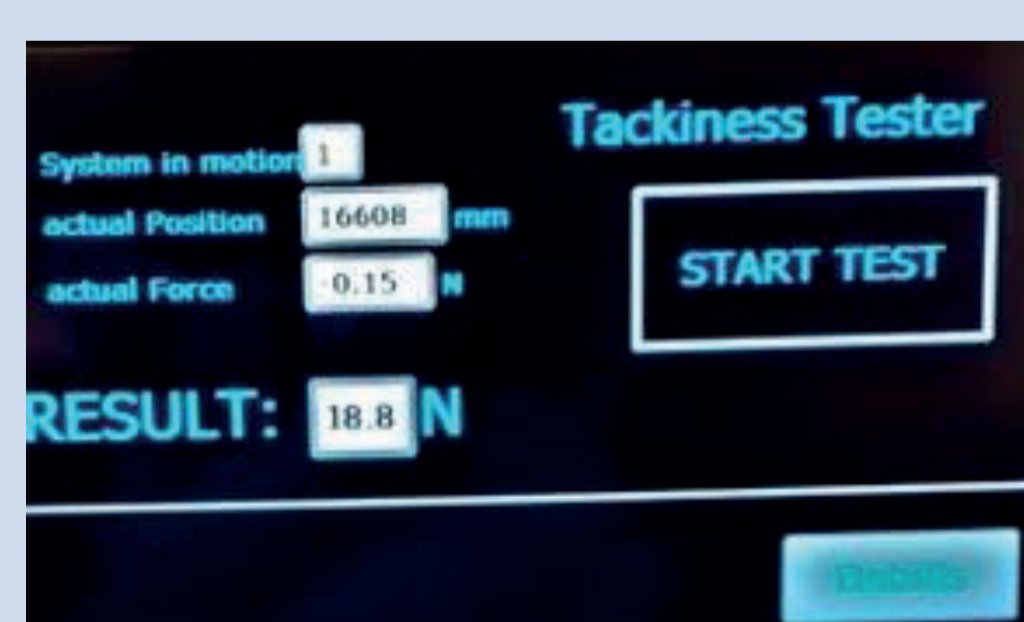
4

Using the syringe, apply 5 mL of the grease sample to the bottom metal plate of the K95200. To avoid air pockets, load the grease in a centered pile. Press start on the display screen to begin the test.



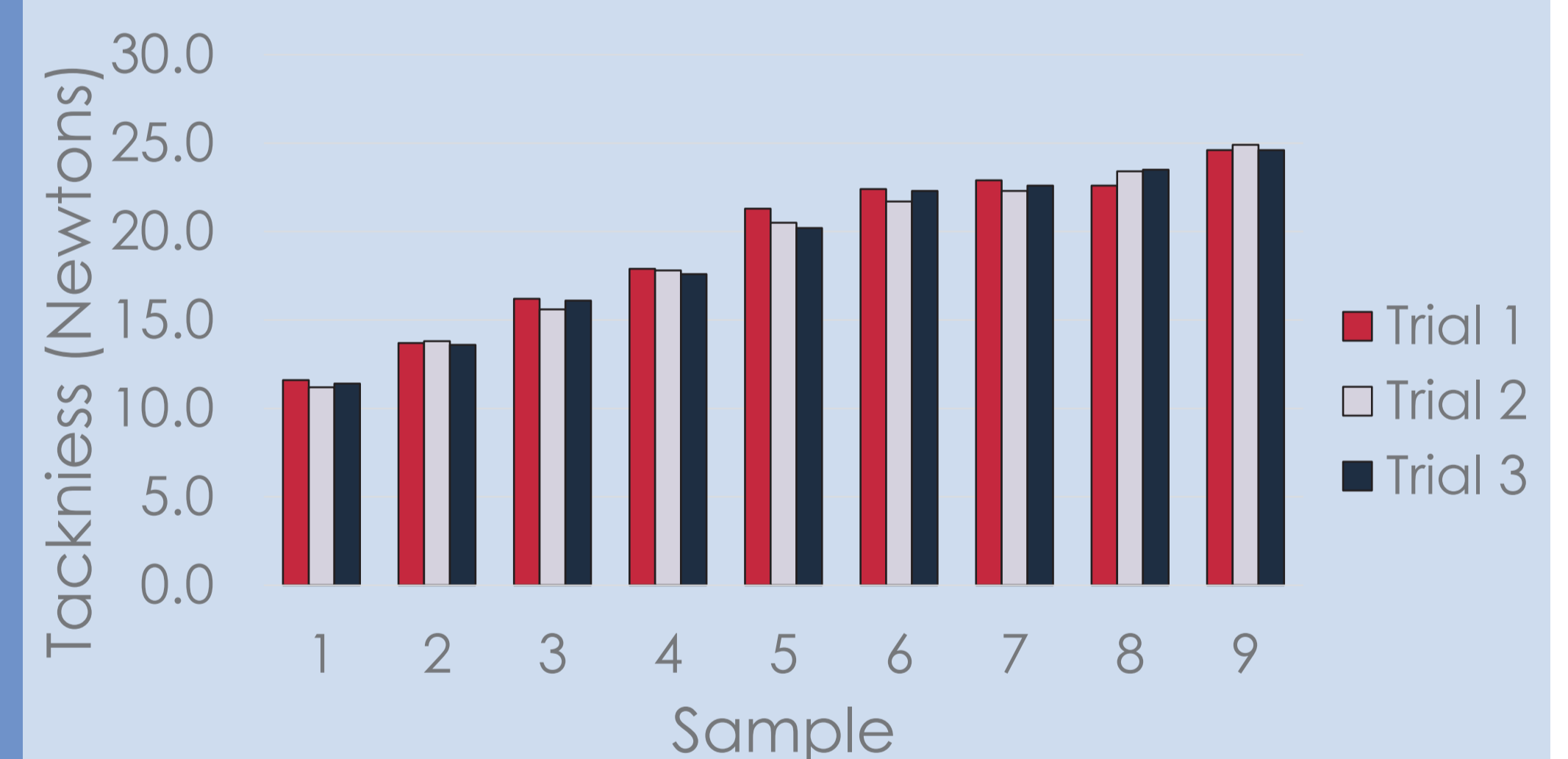
5

Wait for the instrument to complete testing. Measurements of the tackiness of the grease sample will be displayed on the data screen of the instrument.

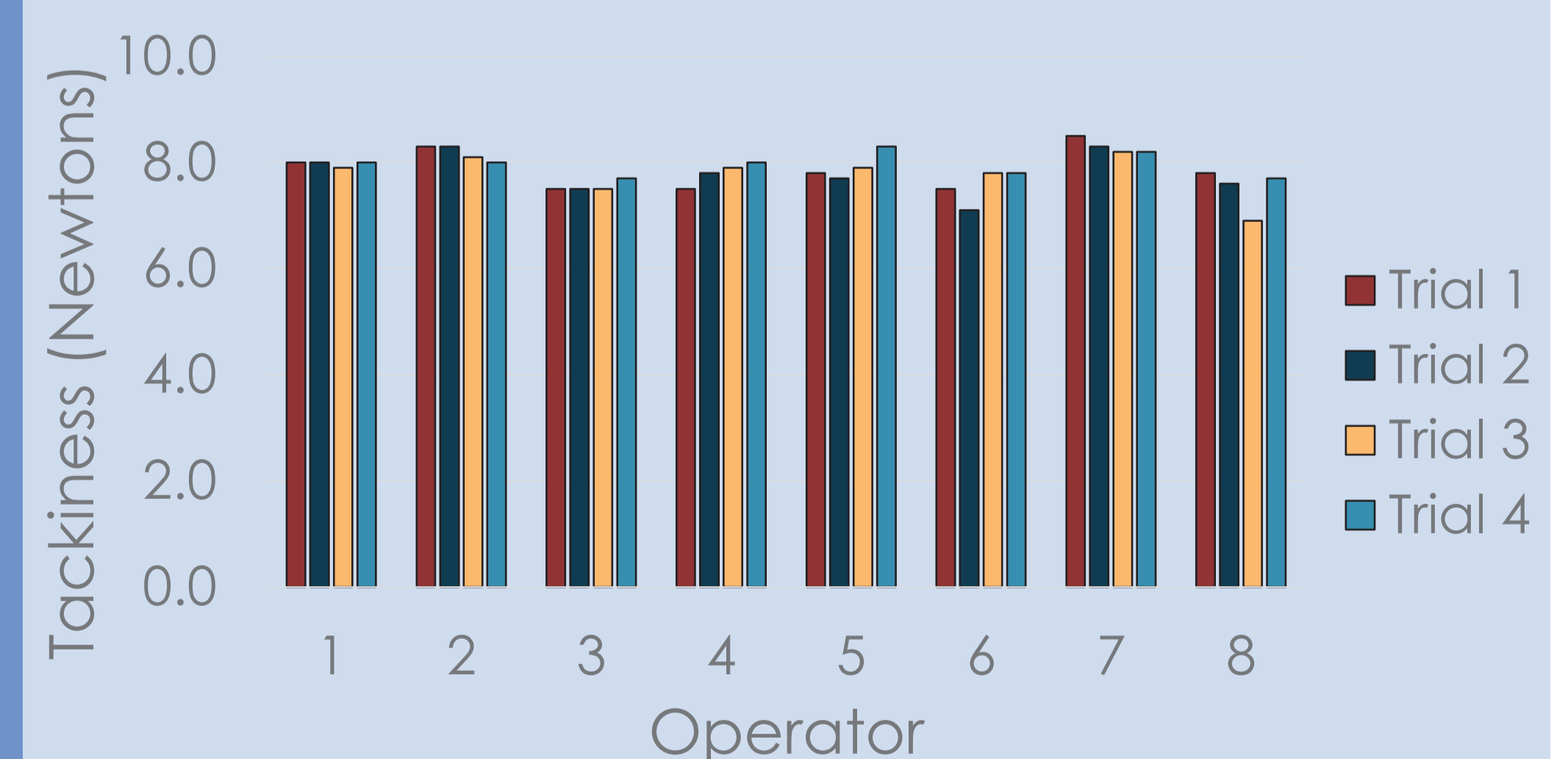


Data Analysis

The first graph displays the data collected from the measurements of the tackiness of nine grease samples between three trials. As shown, the tackiness is measured quantitatively by the K95200, allowing the samples to be accurately compared to one another.



The second graph displays the results of a single grease sample being tested by eight different operators, four trials each. The consistent measurements proves the high repeatability with the instrument.



Conclusion

The K95200 Tackiness Tester produces consistent and repeatable results that allow users to accurately assess the tackiness of a grease sample. By minimizing subjectivity and human error that are unavoidable with the finger test method, the K95200 standardizes grease tackiness testing and provides quantitative data to its measurements. The reliable methodology behind the instrument makes the K95200 an excellent tool for grease tackiness testing.