



58 Garnock Avenue
 Toronto, ON, Canada M4K 1M2
 Phone: 416 466-3144 toll free 888 442-5008
 Fax: 416 466-3807 www.fluidcenter.com

'Providing Tribological Solutions'

TECHNICAL NOTE DROPPING POINT

In this test a sample of grease is heated up in a tube and the temperature raised until the grease “drops”. The value is dependent on the thickener and to a lesser extent on the type and viscosity of the base oil. A high value is normally associated with higher temperature capabilities but this is not always the case. For example, the traditional calcium complex greases have relatively high dropping points but poor resistance to age hardening and thermal degradation. On the other hand the calcium sulphonate complex thickener in MOV Long Life also has a high dropping point but without the same deficiencies.

However, individual labs might find differences between their results and the "typical" value of 318°C (605°F) given in the MOV Long Life data sheet. Some differences are to be expected given the precision of the test itself and does not reflect a QA issue for the grease. Please consider the following;

1. Within Accepted Limits

Given below are the limits for MOV Long Life Grade 0. This allows a value as low as 232°C.

	Acceptance	Typical	Reject
Dropping Point, °F (°C)	≥450 (232)	572 (300)	<450 (<232)

2. Test Precision

The test used is ASTM D2265 which has the following precision statements valid 19 out of 20 times for measured dropping points ranging from 277 - 316 °C;

- a) repeatability (same operator, same sample) within 7°C
- b) reproducibility (different labs, same sample) within 12°C.

Consequently, a high and low can be different by 24°C and this also assumes that the lab used the thin walled test tube required for samples with dropping points >221°C.

3. Better Than Current Product

The dropping point for Nebula EP1 is given by Exxon as >260°C so MOV Long Life is expected to be higher even with the lower results reported by a specific lab. It is presumed that the same labs also got lower values for Nebula EP.

TECHNICAL NOTE - TESTING DROPPING POINT

4. Limitorque Specification

For SMB actuators it is given on page 12 of the manual, item #8 that the dropping point must be above 316°F. This is only 157°C. MOV Long Life is well above this value.

5. Interpretation

There can be a difference in the interpretation of when the grease drops. Some take it as the first time any oil or grease hits the bottom while others take it as being when there is a column of grease hitting the bottom. The grease manufacturer uses an automatic device, which eliminates this error. They also participate in ASTM Round Robin testing and their dropping point results reportedly come out about the middle.

6. Other tests

A sample of MOV Long Life Grade 1 was independently tested by Herguth Laboratories Inc. in California who reported >330°C. This was as high as their equipment went and this value was given in a Kinectrics (old OH Research) report commissioned by COG (Candu Owners Group) and also released by EPRI.

Other results for the Grade 1 are: First Energy 228 & 230°C but used a different method D-566 which reportedly has slightly worse reproducibility, Exelon reported 271 & 277°C, TVA 275°C and Forsythe 273°C. The COA value for those batches were all >318°C (>605°F). This shows the variation between labs.

Summary

Results can be both higher and lower than the "typical" value and the Certificate of Analysis value but a lower value does not represent a quality issue any more than a higher value suggests problems. The most likely cause is likely with the test procedure and the values usually obtained by that operator at that lab. When testing for the first time there is also not a reference that can be used to gauge what is 'normal'.

It is suggested that acceptance values take into account specific results relative to those of the manufacturer and take into account the results for previously used products.

If more information is required please call.