

APPLICATION SHEET

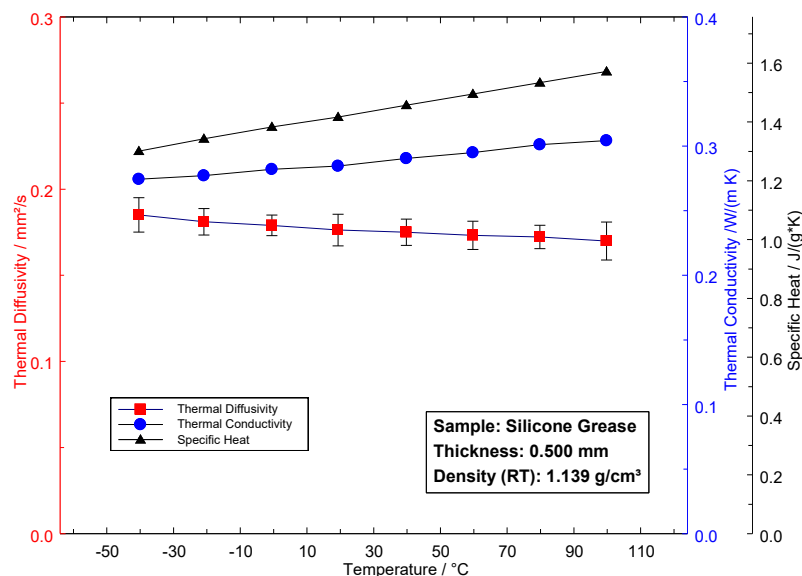
Organics · Food Industry
LFA 457 MicroFlash™

Liquid Sample Holder – Silicon Grease

Introduction

Silicone grease is used in a wide range of applications that require good thermal stability, high dielectric strength, inertness, corrosion and moisture resistance, low evaporation, and areas that require good lubricating properties over long periods without drying out. It is used as lubricants for rubber and plastic materials, protective coatings, valve and o-ring lubricant, release agents, electrical

insulators and sealants. These properties are necessary for use as a lubricant for incidental contact with food in food processing and packaging applications. For LFA measurements, a defined sample thickness is required which is realized using the special sample holder for liquids and pastes. In order to consider the heat transfer through the additional container parts from aluminum (crucible and lid), a 3-layer analysis (included in the software) was used to determine the thermal diffusivity of the silicon grease.



Test Conditions

Temperature range: -40 ... 100°C
Sample holder: Al/stainless steel for liquids
Sample thickness: 0.500 mm
Sample surface preparation: -
 c_p from DSC, standard: Sapphire

Test Results

For the thermophysical properties of silicon grease, nearly linear dependencies from temperature were detected. Typical for such materials is an increasing thermal conductivity with increasing temperature. The specific heat was measured using a DSC system. The example clearly demonstrates that the LFA method is not limited to solid materials with defined dimensions. Using the liquid sample holder with precise and well-known dimensions along with the capable mathematics (3-layer analysis), the measurement of pastes/liquids is possible with high accuracy within a short time.