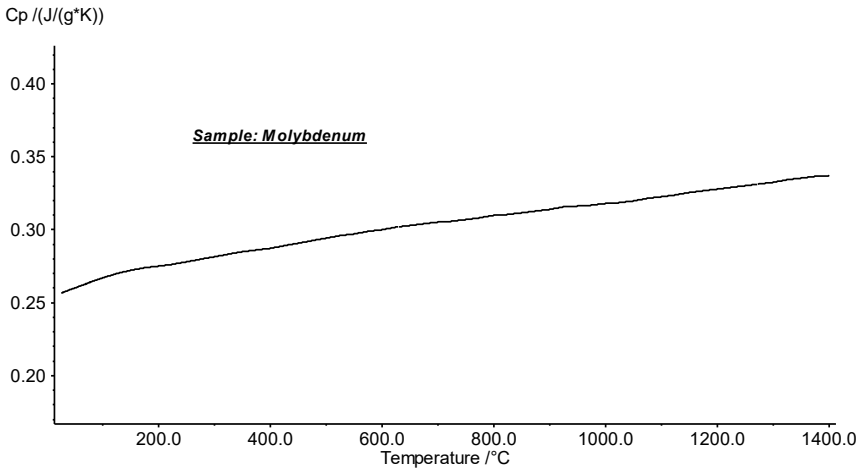
APPLICATION**SHEET**

Metals/Alloys · Aerospace
DSC 404 *Pegasus®*

Molybdenum

Introduction

Molybdenum is a rare earth metal. The pure metal is silvery white in color and very hard, and has one of the highest melting points (2623°C) of all pure elements. Over 2/3 of all molybdenum is used in alloys. Molybdenum is used to this day in high-strength alloys and in high-temperature steels. Special molybdenum-containing alloys, such as Hastelloys, are notably heat-resistant and corrosion-resistant. Molybdenum is used in aircraft and missile parts and filaments. Furthermore, it has some applications in the nuclear industry. Molybdenum finds use as a catalyst in the petroleum industry, especially in catalysts for removing organic sulfurs from petroleum products. Molybdenum is also used in some electronic applications like conductive metal layers in thin-film transistors (TFTs).



Test Conditions

Temperature range:	RT ...1400°C
Heating rate:	20 K/min
Atmosphere:	Argon at 50 ml/min
Sample mass:	213.04 mg
Crucible:	Pt with lid
Sensor:	DSC type S

Test Results

Presented in the plot is the specific heat of a pure molybdenum sample between room temperature and 1400°C. It can clearly be seen that the results increase nearly linearly with temperature. No overlapping effects were measured over the entire temperature range. This is expected for this kind of metal. Molybdenum is a material which is extremely sensitive to oxygen at elevated temperatures. Therefore, pure inert atmospheres are crucial for the analysis of such kinds of materials. As can be seen, the result obtained with the DSC 404 C does not show any indication of overlapping oxidations and results in a decrease in specific heat. This proved the outstanding vacuum-tightness of the system leading to extremely pure atmospheres in the test chamber.

NGB · Application Sheet 007 · E · 0521 · Technical specifications are subject to change.

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