

# Material Properties – Synaptite Grade 2

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## Material description

Molybdenum based metal matrix composite fabricated by Electro-Sinter-Forging for welding and brazing electrodes.

This material shows a low conductivity/ high hardness ratio, without using Tungsten, Beryllium, Cobalt, Nickel and Chromium, while providing very little deformation at elevated and high temperatures.

## Physical characteristics at 20°C

	<b>Grade 2</b>
<b>Mass density</b> [g·cm <sup>-3</sup> ]	9.4-9.7
<b>Melting point</b> <sup>†</sup>	2'643°C
<b>Electrical conductivity</b> <sup>†</sup> [%IACS] [MS·m <sup>-1</sup> ]	14.5-16.5% <sup>†</sup> 8.4-9.6
<b>Thermal conductivity</b> <sup>*</sup> [W·m <sup>-1</sup> ·K <sup>-1</sup> ]	61-70
<b>Specific heat capacity</b> <sup>x</sup> [J·K <sup>-1</sup> ·g <sup>-1</sup> ]	0.268

<sup>†</sup>estimated

<sup>†</sup>measured by phase-sensitive eddy current test method (DIN EN 2004-1)

<sup>\*</sup>calculated by Wiedemann-Franz Law

<sup>x</sup>calculated by rule of mixtures

## Mechanical characteristics

	<b>Grade 2</b>
<b>Mass density [g·cm<sup>-3</sup>]</b>	9.4-9.7
<b>Hardness [HV<sub>30</sub>] @RT</b>	440-460

## Health and Safety

No substances classified under the Annex XVII to REACH are used in this group of materials. Cobalt, Chromium, Nickel, and Beryllium free.