

# Molycast™ MC1200

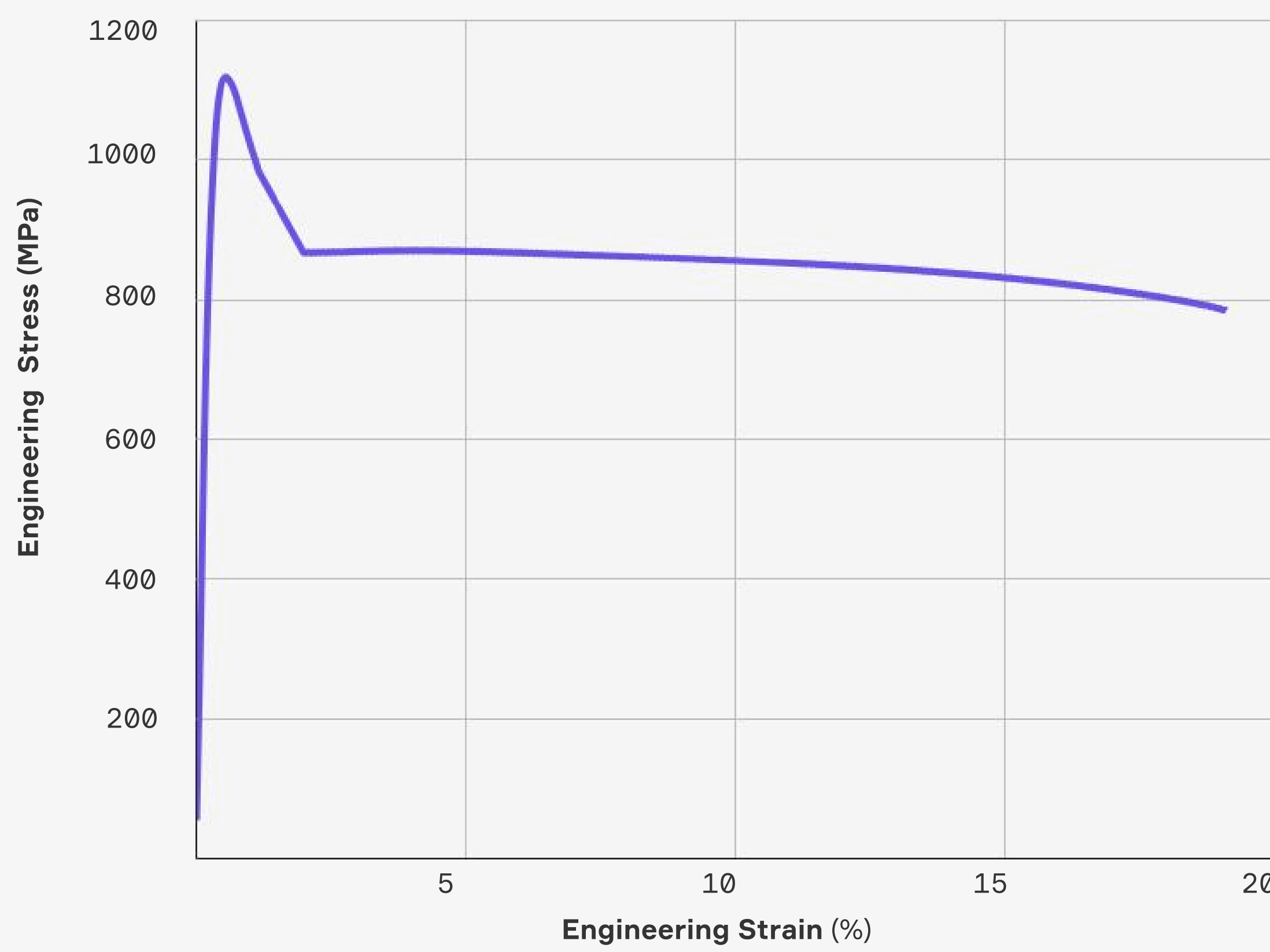
Molycast™ MC1200 is an isotropic, carbide and oxide reinforced molybdenum alloy manufactured through Foundation Alloy's proprietary MetalsFIRST™ process. MC1200 is the strongest commercially available molybdenum alloy, which not only delivers superior strength but also retains ductility at room temperature, even after repeated thermal exposure. MC1200 has a fine-grained, fully recrystallized microstructure in the as-sintered state and is completely isotropic, making it ideal for the most demanding applications requiring high strength, thermal stability, and uniform properties. MC1200 can be processed into semi-finished stock, near-net shape parts, and end-use components with ongoing development for additive manufacturing.

To learn more about MC1200 or place an order, reach out to [sales@foundationalloy.com](mailto:sales@foundationalloy.com).

The following technical data are taken from tests conducted on a limited number of laboratory production runs. Test data is aggregated from multiple sample batches and is in the as-sintered state. All information and data should be considered representative or typical only and should not be used for specification purposes.

## Tensile & Physical Properties

Tensile yield strength (ductility) can be adjusted between 950 MPa (35%) and 1250 MPa (1%) based on processing parameters



## Test Sample after 3-Point Bend Test



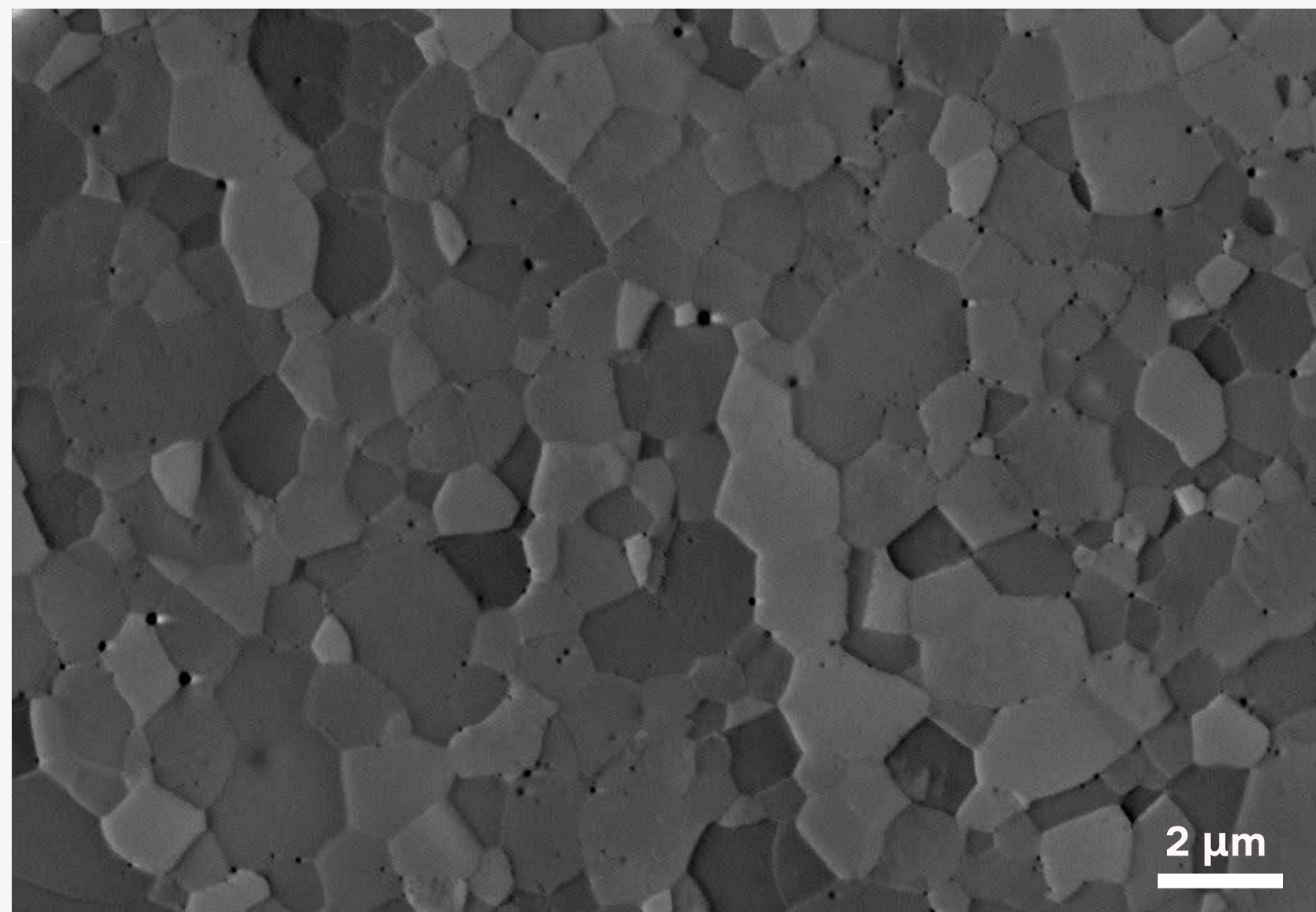
Achieves room temperature ductility and high-strength in the as-sintered state

## Physical Properties

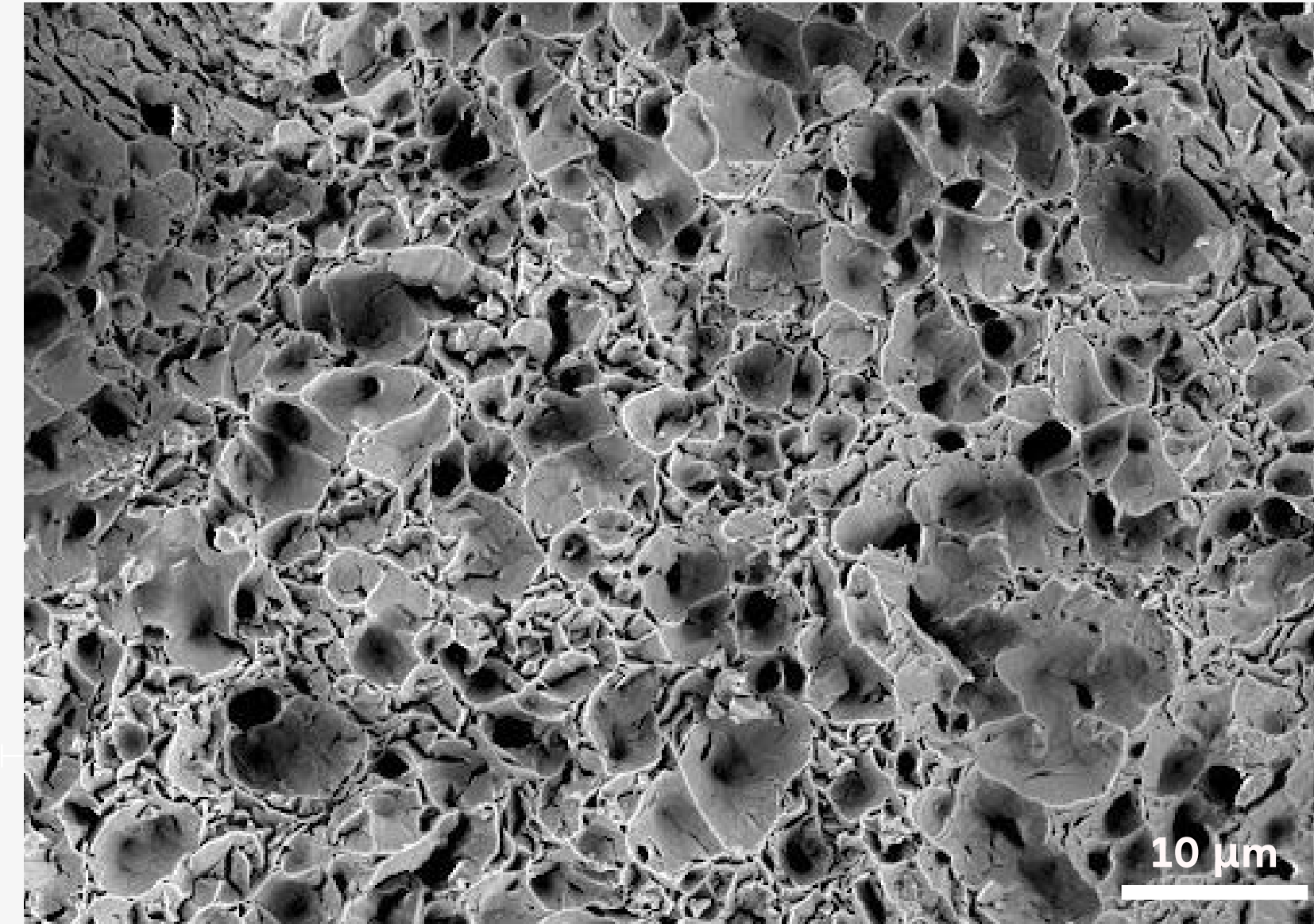
Relative Density	98+ %
Coefficient of Thermal Expansion	$5.3 \times 10^{-6}$ (1/°C at 25 °C)
Young's Modulus	300 GPa
Thermal Conductivity	140 W/(m*K)

## Composition & Microstructure

Fine, uniform grain structure with fully isotropic properties



MC1200 grain structure



MC1200 fracture surface

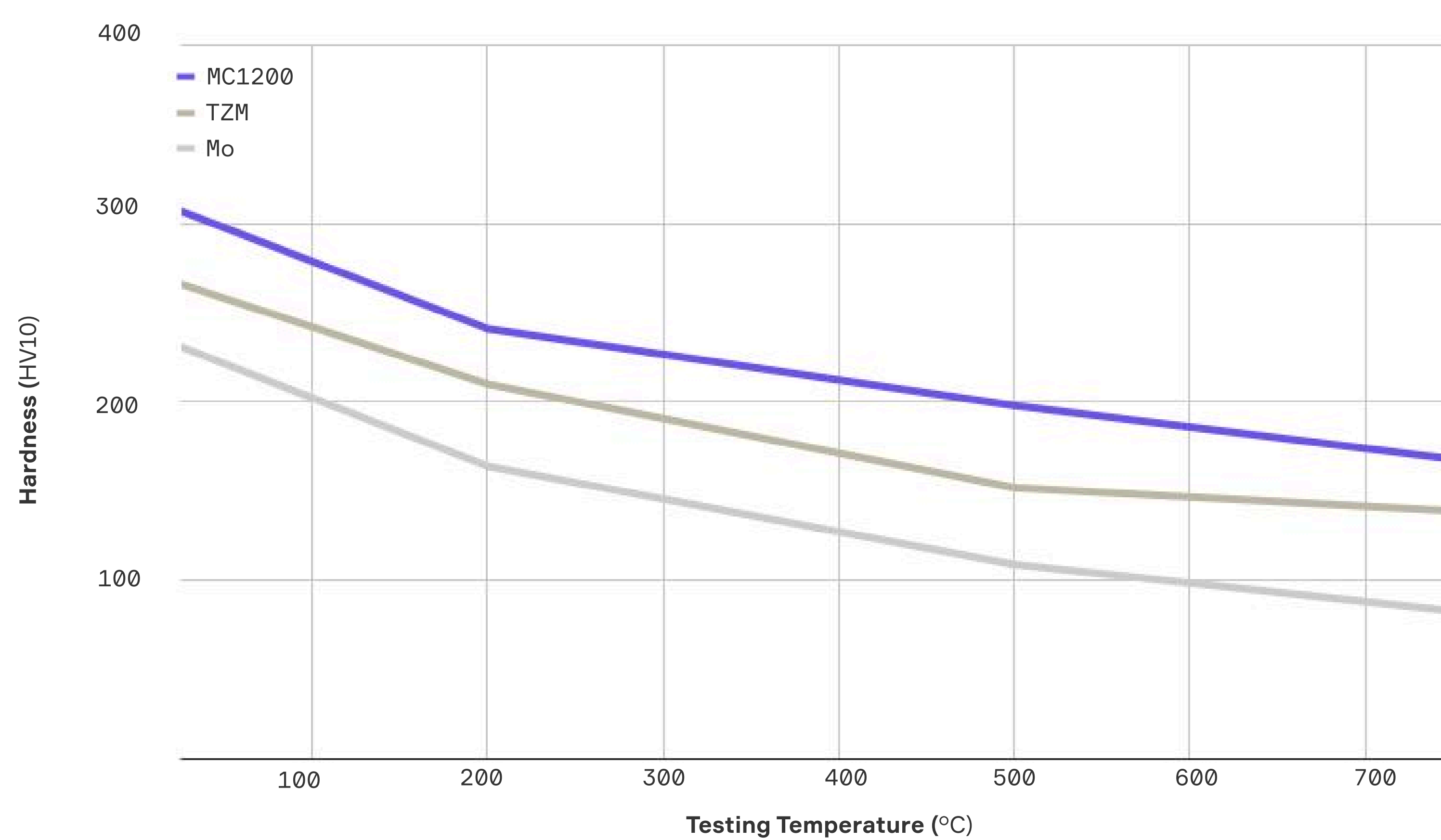
## Composition wt%

Mo	Balance
C	<0.095 %
O	<0.0325 %
N	<0.002 %
Zr	0.15 - 0.5 %
Other	Trace

## Elevated Temperature Properties

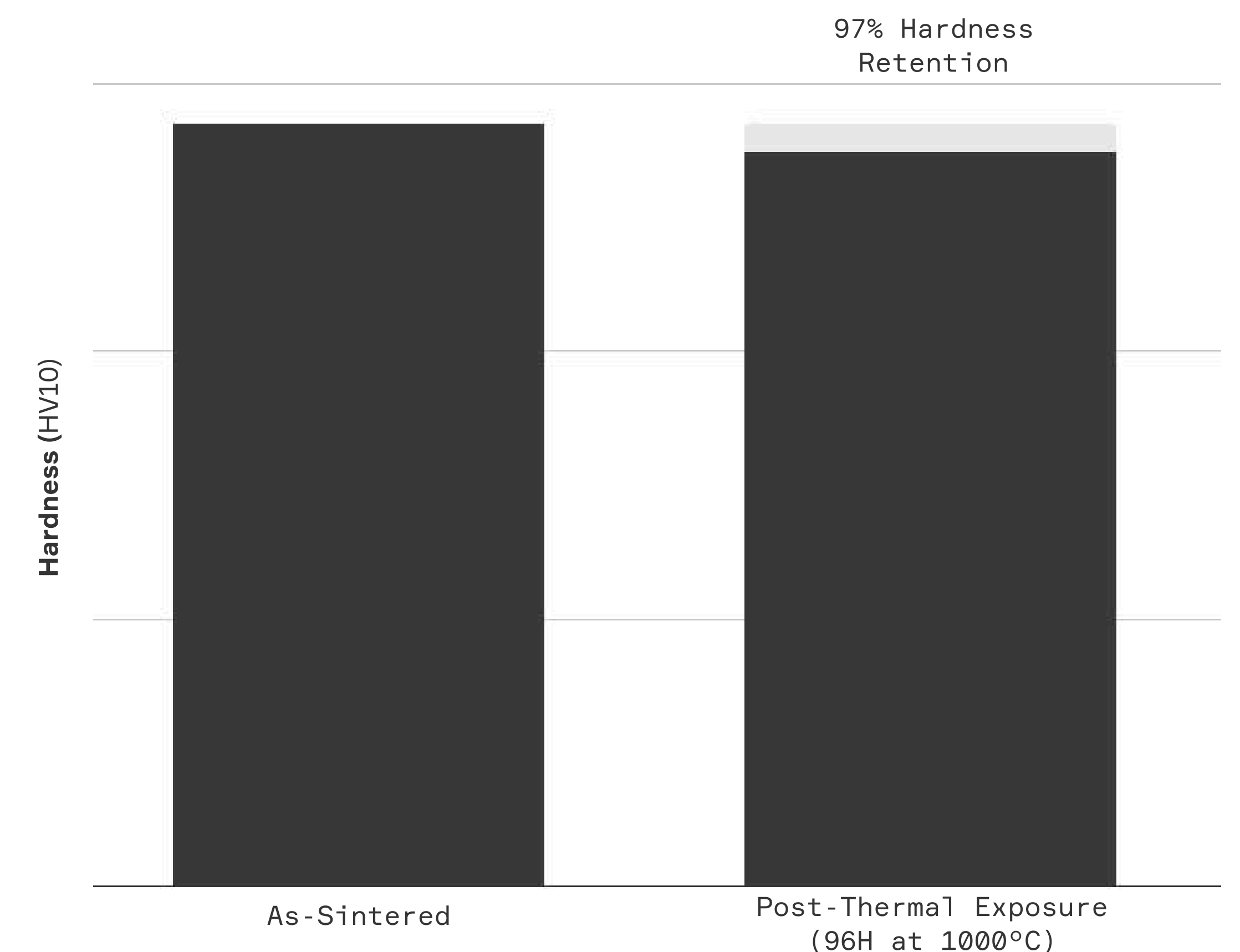
Higher hardness than stress-relieved Mo or TZM, and stable properties after thermal exposure

### Elevated Temperature Hardness



Hardness values for Mo- and TZM- rod material (stress relieved condition)\*. Hardness for MC1200 ( as-sintered condition).

### High Temperature Exposure



\*Hot hardness data for stress-relieved TZM and Mo was sourced from Plansee Molybdenum Properties website: <https://www.plansee.com/en/materials/molybdenum/Properties.html>