

Improve Your Tooling Performance with MacLean Additive

L-40 Tool Steel Powder

Revolutionizing Tooling with Proprietary L-40 Tool Steel Powder

MacLean Additive is pushing the boundaries of manufacturing with advanced 3D printing solutions powered by our proprietary L-40 tool steel powder. Our expertise in Laser Powder Bed Fusion (LPBF) technology delivers cutting-edge solutions for tooling, fixtures, and hot and cold forming dies that outperform traditional methods.

Why Choose MacLean Additive?

End-to-End Capabilities

From application development and design, 3D printing and validation leveraging MacLean-Fogg's 100 years of manufacturing history.

High Hardness & Impact Resistant

Hardness of 43-46 HRC with 60 J Charpy Impact V-notch toughness.

Enhanced Performance & Longevity

Our solutions enable conformal cooling channels, reducing cycle times and extending tool life.

Crack-Resistant & Highly Printable

Unlike traditional tool steels such as H13, L-40 resists cracking even at larger sizes.

Eco-Friendly & Cobalt-Free

Designed for superior performance while being safer and more sustainable.

Versatile Heat Treatment Options

Can be carburized or nitrided to high hardness.

Featured Applications

Fixtures & Jigs

Optimized for strength, precision, and durability

Forging Dies & Tooling

High-impact resistance, longer wear life

Die Casting

Limits soldering issues, extends tool life



Properties - Stress Relieved**L-40**

| | |
|----------------------------------|--------|
| Density (%) | 99.9 + |
| Hardness Rockwell (HRC) | 43-46 |
| 0.2% Offset Yield Strength (MPa) | 1180 |
| Ultimate Tensile Strength (MPa) | 1430 |
| Elongation (%) | 15 + |
| Charpy Impact V-Notch (J) | 60 + |

Thermal Properties**L-40**

| | |
|--|--------------------|
| Coefficient of Thermal Expansion ppm / °C @ 20°C | 11.2 |
| Thermal Conductivity W/(m*K) @ 25°C / 200°C / 500°C | 17.3 / 21.1 / 23.6 |
| Specific Heat J/(Kg*K) @ 25°C / 200°C / 500°C | 442 / 525 / 642 |
| Melting Point C° | 1506 |

Hardening Treatments**L-40**

| | |
|------------------------------------|---------|
| Case Hardening - Carburizing (HRC) | 58 - 62 |
| Case Hardening - Nitriding | 70 + |

Powder Properties**L-40**

| | |
|-----------------|------------|
| Density g/cm3 | 7.78 |
| Distribution µm | -53 / + 15 |

Chemistry (Weight %)**L-40**

| | |
|-----------------|-------|
| Carbon (C) | < 0.3 |
| Chromium (Cr) | 10.5 |
| Nickel (Ni) | < 3.0 |
| Molybdenum (Mo) | < 5.0 |
| Copper (Cu) | < 1.0 |
| Niobium (Nb) | < 1.0 |
| Nitrogen (N) | < 0.2 |

Packaging

25 lbs (11.3 kg)

Graph 1: Hardness vs. CVN Impact Toughness after different Aging Heat Treatments

