

# 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

