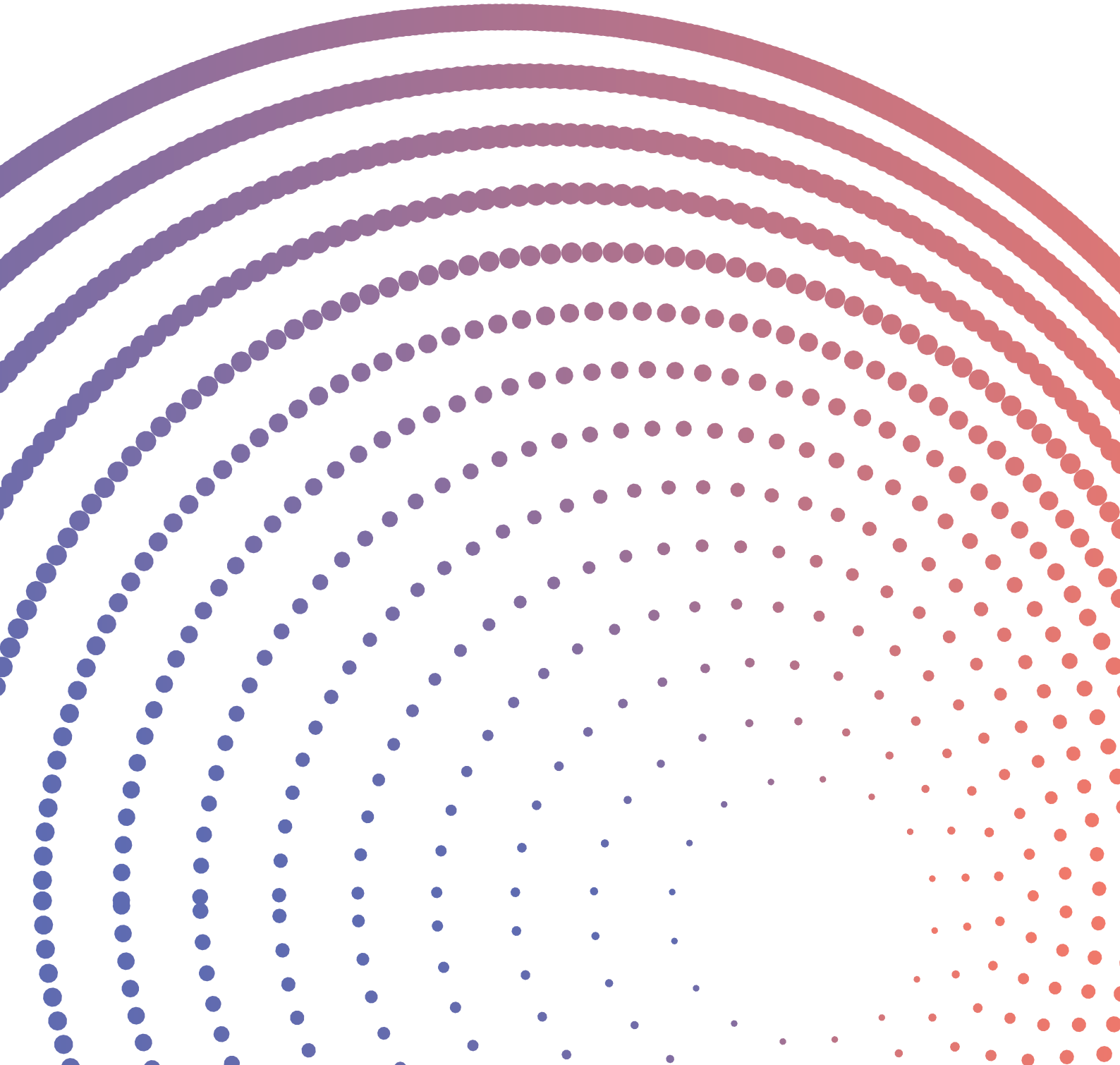
Specialised Wheel Materials

Micro Alloy Wheels for Superior Performance

MOLYCOP
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Railway Rolling Stock

Engineered



Specialised Wheel Materials Overview

Comsteel has developed new materials and designs for specific applications requiring high-hardness and wear-resistant wheels. Comsteel's Micro Alloy wheels use Micro Alloying elements that improve wheel properties and enable higher axle load applications.

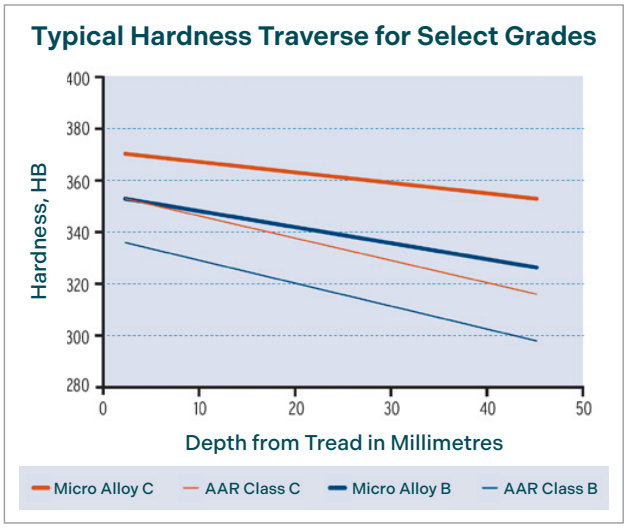
Micro Alloying technologies allow an increase in hardness without increasing carbon levels by not compromising on wheel thermal susceptibility.

In addition to reduced wear through harder materials, Micro Alloy wheel materials offer improvements in fracture toughness and resistance to rolling contact fatigue through improved yield and tensile strength.

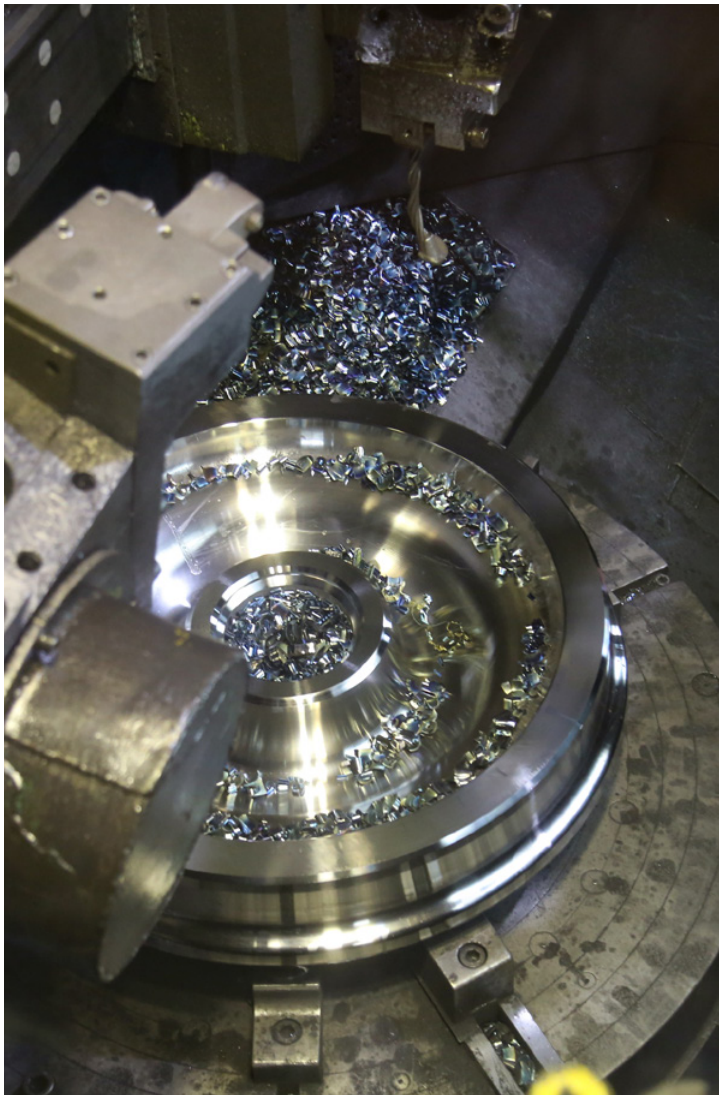
Sophisticated inspection techniques and accredited quality assurance systems ensure optimum product quality.

Micro Alloy wheel properties

- High axle loads: 40+ tonnes
- High hardness
- Superior wear resistance
- Improved fracture toughness
- Superior resistance to surface and subsurface rolling contact fatigue
- Improved resistance to spalling.







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The Micro Alloy range

Micro Alloy wheels have been developed in different grades for use in Heavy Haul coal and iron ore haulage and locomotive applications.

Micro Alloy B

Micro Alloy B wheels were developed in the early 1990s for high-speed passenger, locomotive and freight applications. They are typically used when high hardness is desirable and for heavier braking applications where higher-carbon Class C materials are not suitable.

They have been used for over 30 years in Australia and internationally without any critical failures. In excess of 60,000 wheels are in service.

Micro Alloy C

Micro Alloy C wheels are typically used where higher hardness is required for higher axle loads and moderate braking applications. They have been proven in service for over 35 years.

Nuvan

Comsteel manufactures a 'Nuvan' range of products that feature high fracture toughness resulting in greater resistance to brittle fracture and, therefore, improved wheel safety.

The Nuvan wheel has been developed in two grades to meet the chemical composition and hardness requirements of both AAR M 107 Class B and Class C.

The Nuvan B wheel material is typically used for locomotives in heavier braking applications and harsh operating environments. The Nuvan C wheel material is typically used for locomotives in moderate-to-light braking applications and for passenger vehicles with non-tread braking.





Grade	Rim Hardness	Typical Material Properties		
		YS (MPa)	UTS (MPa)	Fracture Toughness ($MPa.m^{0.5}$)
Micro Alloy B	321 - 363 HB	790	1150	62
AAR Class B	302 - 341 HB	670	1050	53
Micro Alloy C	341 - 388 HB	855	1240	47
AAR Class C	321 - 363 HB	760	1150	41

If you're interested in exploring Molycop's products and services, we're here to help.

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