United Cast Bar

UCB DATA SHEET USA

Continuously Cast Iron

Unibar 65-45-12 ASTM A536

(Comparable with Unibar 500+, conforms to EN16482 EN-GJS-450-12C)
GUIDANCE ONLY

Characteristics

Unibar 65-45-12 offers superior machinability to other ferrous materials, specifically milling and drilling applications, it combines good wear resistance, strength (tensile), fatigue and ductility, electrical conductivity and magnetic permeability, noise and vibration damping are also good in this grade.

Size Range

UNIBAR STANDARD SIZES AND SUPPLY	
Round	1" – 27½"+ (25 – 698.5mm)
Square	1" x 1" – 24.6" x 24.6" (25mm x 25mm – 625mm x 625mm)
Rectangle	Up to 29½" x 21½" (750 – 550mm)
Supply condition	As-cast, turned, peeled, milled and cut
Length	Standard 12`, other lengths available (3658mm)

Chemistry

ELEMENT	TYPICAL %
Carbon	3.25 – 3.70
Silicon	2.40 – 3.00
Manganese	0.10 – 0.60
Sulphur	0.005 – 0.020
Phosphorous	0.015 – 0.080
Magnesium	0.04 – 0.07
Others/Alloying	Residual
Iron	Balance

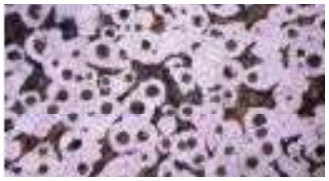
Typical Ranges (Analysis at the discretion of UCB)

Brinell Hardness (BHN)

Test 10mm dia Ball 3000Kg load depending on section size. Hardness readings are taken across the entire section of the bar. Hardness values for rectangles depend on the ratio of height to width and can be supplied upon request.

Microstructure

Contains Type I & II nodular (spheroidal) graphite, in accordance with ASTM A247. The rim contains approximately 200/250 nodules/ mm2, and is predominantly ferritic (>70%) with the core containing 90/150 nodules/mm2. The core matrix is mixed ferritic/pearlitic (10–50% pearlite). Chill carbides will be less than 5%, well dispersed.



(Photo 100x magnification)

Heat Treat Response

Unibar 65-45-12 can be oil quenched and surface hardened, this material can also be surface hardened by most other conventional methods. Can be Austempered however higher pearlitic grades 80-55-06 and 100-70-02 are recommended.

Mechanical Properties

MATERIAL GRADE	MATERIAL SECTION inches (mm)	TENSILE (UTS) lbs/Sq inch (N/mm²)	0.2% Proof Stress lbs/Sq inch (N/mm²)	ELONGATION %	HB	MATRIX
Unibar 65-45-12 Comparable with Unibar 500+	1 – 27½" + (25 – 698.5)	65,000 (448)	45,000 (310)	12	131 - 217	Predominantly Ferritic

Taken from mid-radius of cast bar, not separately cast test bar.

Grade colour code

Density

7.3 g/cc