

EN31 / 535A99

100Cr6 1.3505 AISI 52100

MATERIAL DATA SHEET

Parkside Steel

(Stockholders) Ltd

ISO 9001 | BSI FS 86692

Est. 1977 | Co. 01325509

01623 687 660

OVERVIEW

535A99 (formerly EN31) is a high-carbon, low-alloy chromium steel made for rolling contact and abrasive wear. Around 1% carbon with 1.4% chromium forms dense carbides on heat treatment, giving 60–64 HRC through the section and the fatigue resistance to take high-cycle multi-axial loading without subsurface flaking. Supplied spheroidised annealed at roughly 210 HB so the bar can be machined; hardening and tempering are carried out afterwards. Not weldable, and low in impact toughness — a wear grade, not a shock-load grade.

TYPICAL APPLICATIONS

- Ball and roller bearings, bearing rings
- Camshafts and gudgeon pins
- Small gear components and clutch parts
- Small cold work rolls, blanking dies
- Forming tools and precision punches
- Lathe centres and collets

SUPPLY & PROCESSING

Supply: Black round bar 60–200mm.
Condition: Spheroidised annealed, ~210 HB (250 HB max). Machine before hardening.
Hardening: 830–850°C, oil quench, temper at once.
Weldability: Not recommended.
Certification: 3.1 Inspection Certificate standard.

GRADE EQUIVALENTS

Standard	Designation
BS 970:1955	EN31
BS 970:1991 (withdrawn)	535A99
BS EN ISO 683-17	100Cr6
Werkstoff No.	1.3505
AISI/SAE	AISI 52100 (ASTM A295)

CHEMICAL COMPOSITION (% by weight)

Designation	C	Si	Mn	P max	S max	Cr	Ni	Mo
535A99	0.90–1.05	0.15–0.35	0.25–0.45	0.025	0.025	1.35–1.65	0.30 max	0.10 max

MECHANICAL PROPERTIES

Condition	Hardness	Tensile (N/mm ²)	Notes
Spheroidised annealed (as supplied)	~210 HB (250 max)	–	Machining condition
Oil quenched & tempered	60–64 HRC	2000–2300	Varies with section
Maximum attainable	up to 62–65 HRC	–	Low temper, small sections

Indicative values. Properties vary by section size, quench medium and tempering temperature. Confirm with Parkside Steel.

TO ORDER / GET A QUOTE

01623 687 660 sales@parksidesteel.uk.com
parksidesteel.co.uk
No minimum order. Same-day collection available.

PARKSIDE STEEL (STOCKHOLDERS) LTD

Byron House, 4 Willow Drive
Sherwood Park, Annesley
Nottinghamshire NG15 0DP
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