

H11 Tool Steel

Smiths High Performance



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Outstanding Impact Toughness

H11 Tool Steel is one of the most commonly used hot-worked steels on the market.

The alloy's main characteristic is outstanding impact resistance. H11 contains less vanadium when compared to other 'H' series tool steels, which improves impact resistance but reduces wear and temper resistance.

The alloy also offers superior resistance to thermal fatigue cracking and thermal shock. H11 is highly suitable for applications requiring the highest cracking resistance.

Production:

H11 is often referred to as H11 ESR because alloy production is via the electro-slag refining process. Although increased vanadium reduces temper and wear resistance, the alloy promotes excellent temper resistance and toughness. Minimal distortion is also observed during deep hardening and air hardening resulting from well-balanced chemistry.

Typical Applications:

- Drivetrain components
- Cranktrain components
- Camshafts
- Gears
- Pushrods
- Fasteners and con rod bolts
- Piston Pins

About Smiths High Performance

Smiths High Performance is a leading stockholder and supplier of high-performance engineering materials. We are material supply chain partners supporting high-technology market sectors.



Use in Motorsport:

Tool steel finds considerable use in race engine production, and H11 is no exception since tool steels offer improved performance compared to general engineering steels. Effective cracking resistance and minimal distortion are positive attributes which make H11 tool steel highly effective in producing race engine components.

Double or triple tempering may be required to unlock the enhanced performance characteristics of the alloy.



SCAN ME

Further technical data available on the reverse of this Datasheet

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*Chemical Composition (weight, %)

	C	Mn	Si	S	P	Cr	Mo	V	Ni	Cu	Fe	
Min.	0.38	0.20	0.80			4.75	1.20	0.40			Bal	
Max.	0.43	0.40	1.00	0.015	0.015	5.25	1.40	0.60	0.25	0.35	Bal	

* Properties as per AMS 6487

Physical & Mechanical Properties

Property	Imperial	Metric
Density	0.282 lb/in ³	7.81 g/cc
Melting Point	2600°F	1427°C
Tensile Strength	260 ksi	1792 MPa
Tensile Strength, Yield	215 ksi	1482 MPa
Elongation in 4D	8 %	8 %
Reduction of Area	30 %	30 %
Hardness, Rockwell C	52.5	52.5
Air cooled from 1800°F (982°C) for 45 minutes)		
Hardness, Rockwell C	56	56
Air cooled from 1850°F (1010°C) for 45 minutes)		
Hardness, Rockwell C	57	57
Air cooled from 1900°F (1038°C) for 45 minutes)		
Charpy impact	10.0 ft-lb	13.6 J
V-notch; air-cooled from 1850°F (1010°C) and then tempered at 535°C		
Charpy impact	20.0 ft-lb	27.1 J
V-notch; air-cooled from 1850°F (1010°C) and then tempered at 1200°F (650°C)		
Charpy impact	25.0 ft-lb	33.9 J
V-notch; air-cooled from 1850°F (1010°C) and then tempered at 700°F (370°C)		
Poisson's Ration	0.27 – 0.30	0.27 – 0.30
Machinability (relative rating for 1% Carbon Steel)	75-80 %	75-80 %

...where performance matters...

When you purchase high-performance materials from **Smiths High Performance**, you will join some of the biggest and best global engineering companies. We are a Tier 1 supply chain partner to the world's leading motorsport companies. Our unique business structure and ethos allow us to offer services otherwise unavailable in this market sector.

www.smithshp.com
info@smithshp.com


Unit 3, Juno Place
Stratton Business Park
Biggleswade SG18 8XP

Tel: +44 (0)1767 604 708



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