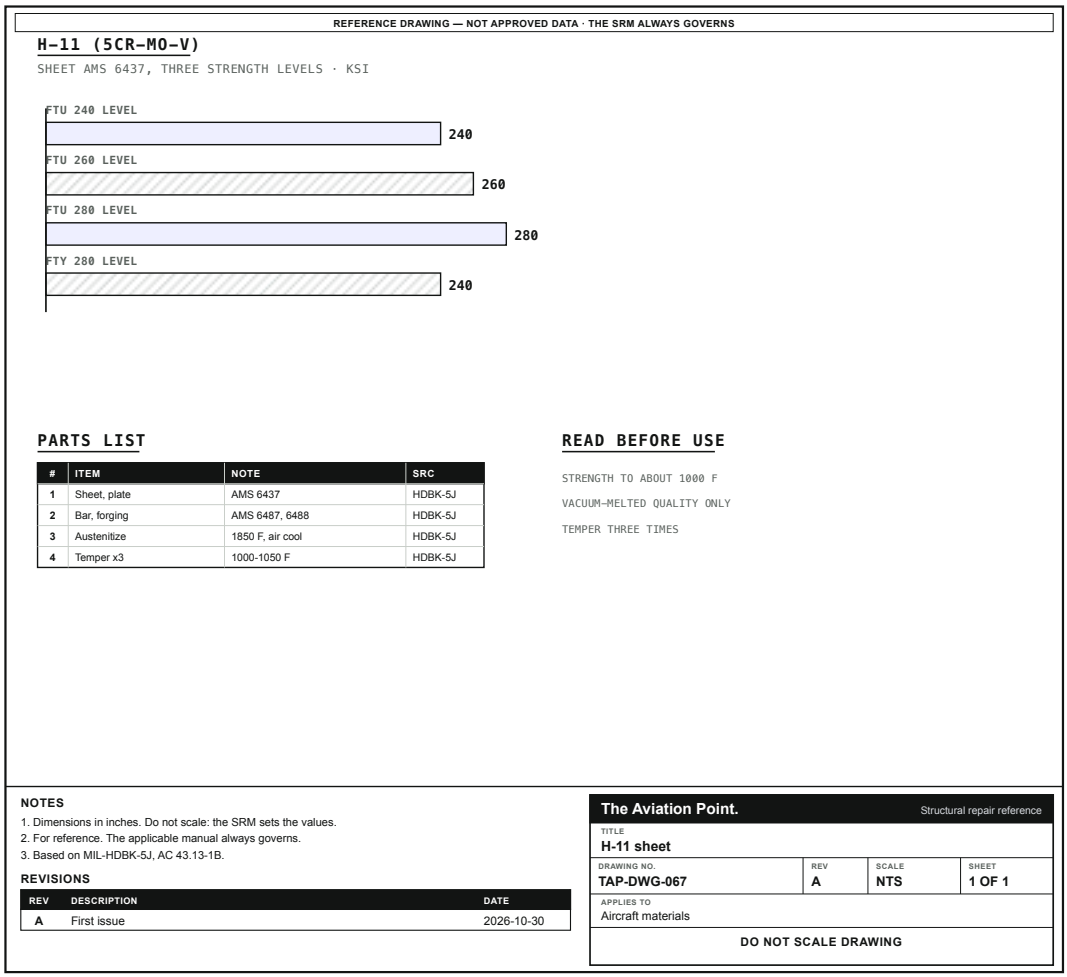
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H-11 Tool Steel (5Cr-Mo-V)

The air-hardening steel that keeps its strength to 1,000 °F.



H-11 (5Cr-Mo-V): sheet AMS 6437, three strength levels Values from MIL-HDBK-5J, S basis unless noted.

Key facts

Property	Value	Source
Name	MIL-HDBK-5J calls it 5Cr-Mo-V aircraft steel and lists AMS 6487 for it; the title of AMS 6487 names the same chemistry as H-11	MIL-HDBK-5J, par. 2.4.1.0 and Table 2.4.1.0(b); SAE AMS 6487 title
Composition	Chromium about 5 %, molybdenum about 1.3 %, vanadium about 0.5 %, carbon 0.38–0.43 %	SAE AMS 6487 title: 5.0Cr - 1.3Mo - 0.50V (0.38 - 0.43C) (H-11)
Temperature range	High strength up to 1,000 °F; air hardenable, little distortion in thick sections	MIL-HDBK-5J, par. 2.4.1.0 and Table 2.4.1.0(b); SAE AMS 6487 title
Quality	Consumable electrode vacuum-melted recommended for aerospace	MIL-HDBK-5J, par. 2.4.1.0 and Table 2.4.1.0(b); SAE AMS 6487 title
Sheet, strip, plate	AMS 6437	MIL-HDBK-5J, Table 2.4.1.0(d)
Bars and forgings	AMS 6487 and AMS 6488	MIL-HDBK-5J, Table 2.4.1.0(c)
Heat treatment	1,850 ± 50 °F, hold 15-25 min for sheet or 30-60 min for bar, air cool, temper three times for 2-3 h each, air cool	MIL-HDBK-5J, par. 2.4.1.0 and Table 2.4.1.0(b); SAE AMS 6487 title

Design allowables — 5Cr-Mo-V sheet, strip and plate, quenched and tempered

Property	240 ksi level	260 ksi level	280 ksi level	Unit
Ftu, LT	240	260	280	ksi
Fty, LT	200	220	240	ksi
Fcy, LT	220	240	260	ksi
Fsu	144	156	168	ksi
Elongation, LT, in 2 in (sheet over 0.050 in)	6	5	4	%
Elongation, LT, in 1 in	8	7	6	%
Tempering temperature	1,050	1,030	1,000	°F
Hardness	49–52	52–54	54–56	HRC

Educational reference only, not approved data. Always consult the applicable SRM, AMM, or AC 43.13-1B and your certifying authority.

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Key points

- **Vacuum-melted material.** The handbook recommends only that quality for aerospace.
- **Sheet values only here.** Bar values are in Table 2.4.1.0(c).

SOURCES · MIL-HDBK-5J, Metallic Materials and Elements for Aerospace Vehicle Structures · FAA AC 43.13-1B CHG 1 · MMPDS · SAE AMS 6487K, Steel, Bars, and Forgings 5.0Cr - 1.3Mo - 0.50V

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