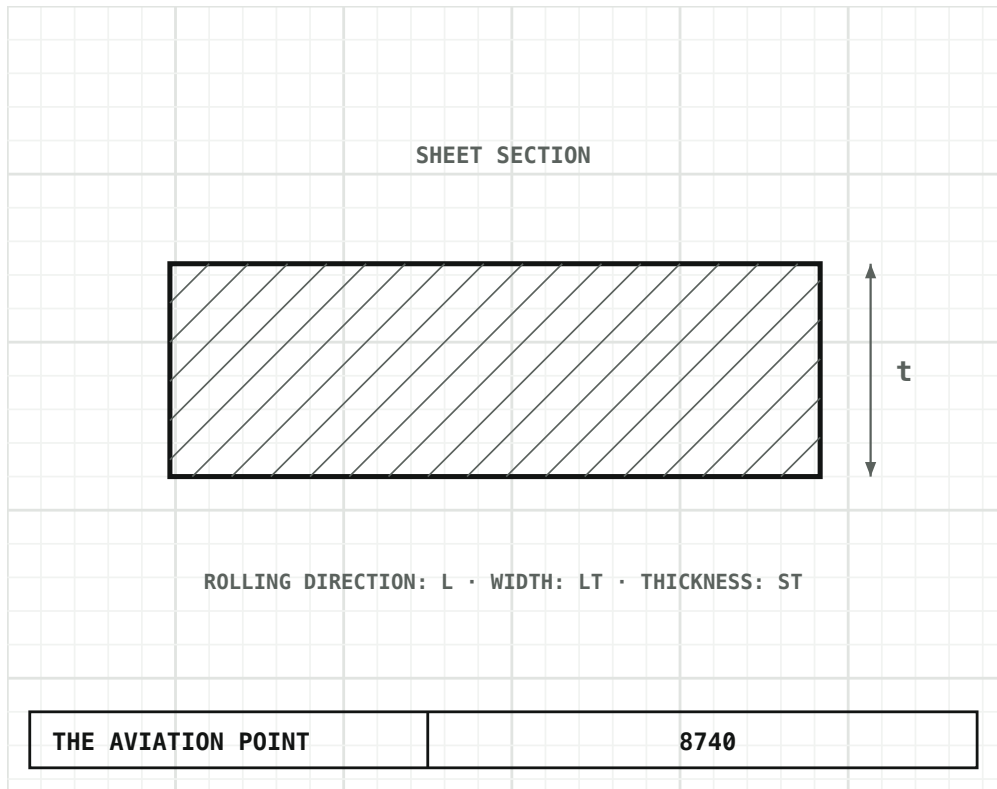
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8740 — alloy steel

The nickel-bearing alternate to 4140.



Schematic

Designation

Item	Value
Designation	8740
Class	Steel and stainless
Type	alloy steel

Composition

Item	Limit	Source
Composition	Nickel 0.40–0.70 %, chromium 0.40–0.60 %, molybdenum 0.20–0.30 %, carbon about 0.40 %	Metal supplier's AISI 8740 datasheet

Properties

Property	Value	Source
Role	AISI 8630, 8735 and 8740 are the alternates to 4130, 4135 and 4140	MIL-HDBK-5J, par. 2.3.1.0
Sheet, strip, plate	AMS 6358	MIL-HDBK-5J, Table 2.3.1.0(a)
Bars and forgings	AMS-S-6049 (noncurrent), AMS 6327, AMS 6322	MIL-HDBK-5J, Table 2.3.1.0(a), (c3)
Tubing	AMS 6323	MIL-HDBK-5J, Table 2.3.1.0(a)
Condition for design values	Quenched and tempered	MIL-HDBK-5J, Table 2.3.1.0(c3)

Design values — AISI 8740 bars and forgings, quenched and tempered

Property	S basis	Unit
Ftu	125	ksi
Fsu	75	ksi
E	29.0	10^3 ksi
G	11.0	10^3 ksi
Density	0.283	lb/in^3

Only Ftu and Fsu are listed here: the table prints one block for 8630 and 8740 with several specifications and thicknesses (1.500 and 1.750 in appear), and the 8740 yield and bearing columns cannot be separated reliably from the printed layout. Read Table 2.3.1.0(c3), p. 2-19, for them. Design values apply only to parts whose Ftu has been substantiated by quality control testing (footnote b).

Notes

- **Partial table only.** Yield and bearing values are not reproduced here; open Table 2.3.1.0(c3).
- **No welding or bend data** in the public documents.

SOURCES · MIL-HDBK-5J, Metallic Materials and Elements for Aerospace Vehicle Structures · FAA AC 43.13-1B CHG 1 · MMPDS · Metal supplier's AISI 8740 datasheet

SCAN · OPEN THIS DATA SHEET
theaviationpoint.com/parts/materials/8740/

Reference data. The aircraft manufacturer's documentation (SRM / IPC) takes precedence.