

BOEING DESIGN MANUAL

BDM-5031

BDM-5031

**SAE/AISI 1006-1025
LOW CARBON STEEL**

REV A 05-APR-1993

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REVISION NOTICE

The Boeing Design Manual Revision Notice provides a brief description of the technical changes made to the BDM. The BDM should be reviewed in detail to determine the total extent of the revision.

Revision Synopsis: Revision A

Revision Description:

1. Deleted Expansion Coefficient, Thermal Conductivity and Specific Heat from FIGURE 2-1.
2. Added FIGURES 1-1 and 2-2.
3. Changed FIGURE 3-2 to be 3-3 and added new FIGURE 3-2.
4. Revised FIGURE 5-1 to add secant modulus curve and values for temper, thickness, test temperature, E_c , F_{cy} and n_c .
5. Revised FIGURE 6-1 to add strain curve and values for specification, thickness, E , F_{ty} , n_i , F_{tu} , e_{pu} and n_u .

BOEING DESIGN MANUAL**BDM-5031****1 GENERAL NOTES**

This design standard contains physical and mechanical properties for low carbon steels with a maximum of 0.25% carbon, per SAE/AISI 1006–1025.

1.1 General Characteristics

Low carbon steels are generally considered for applications that require low cost and ease of fabrication. They are readily welded by all methods of arc welding (see BDM-1405 for pre-heating and other welding requirements).

These materials have low strength and hardenability as compared to alloy steels. Grades of 1006–1025 low carbon steel above 0.15% carbon can be strengthened by cold-finishing, but the amount of increase in strength is not certain. Because of this, allowables in this BDM with the exception of 1025 are based on material strength in the “as-received” condition, which may be conservative for cold-finished material.

NOTE: Terms such as Preliminary Design Allowables, Firm Design Allowables, and Basis A, B, or S are defined in BDM-5000.

1.2 Applicable Specifications

Form	Condition	Specifications
Sheet, Plate and Bar	As Rolled	SAE J1397
Sheet and Strip	Cold Rolled	MIL-S-7952
Tubing	Normalized	MIL-T-5066
Bars	All	MIL-S-7097

FIGURE 1-1 APPLICABLE SPECIFICATIONS**2 PHYSICAL PROPERTIES**

Property	Temperature °F	Value or Range of Properties	Units
Density	70	0.284	lb/in ³
Electrical Resistance	70	16.9×10^{-6}	ohm-cm

FIGURE 2-1 PHYSICAL PROPERTIES

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2 PHYSICAL PROPERTIES (Continued)

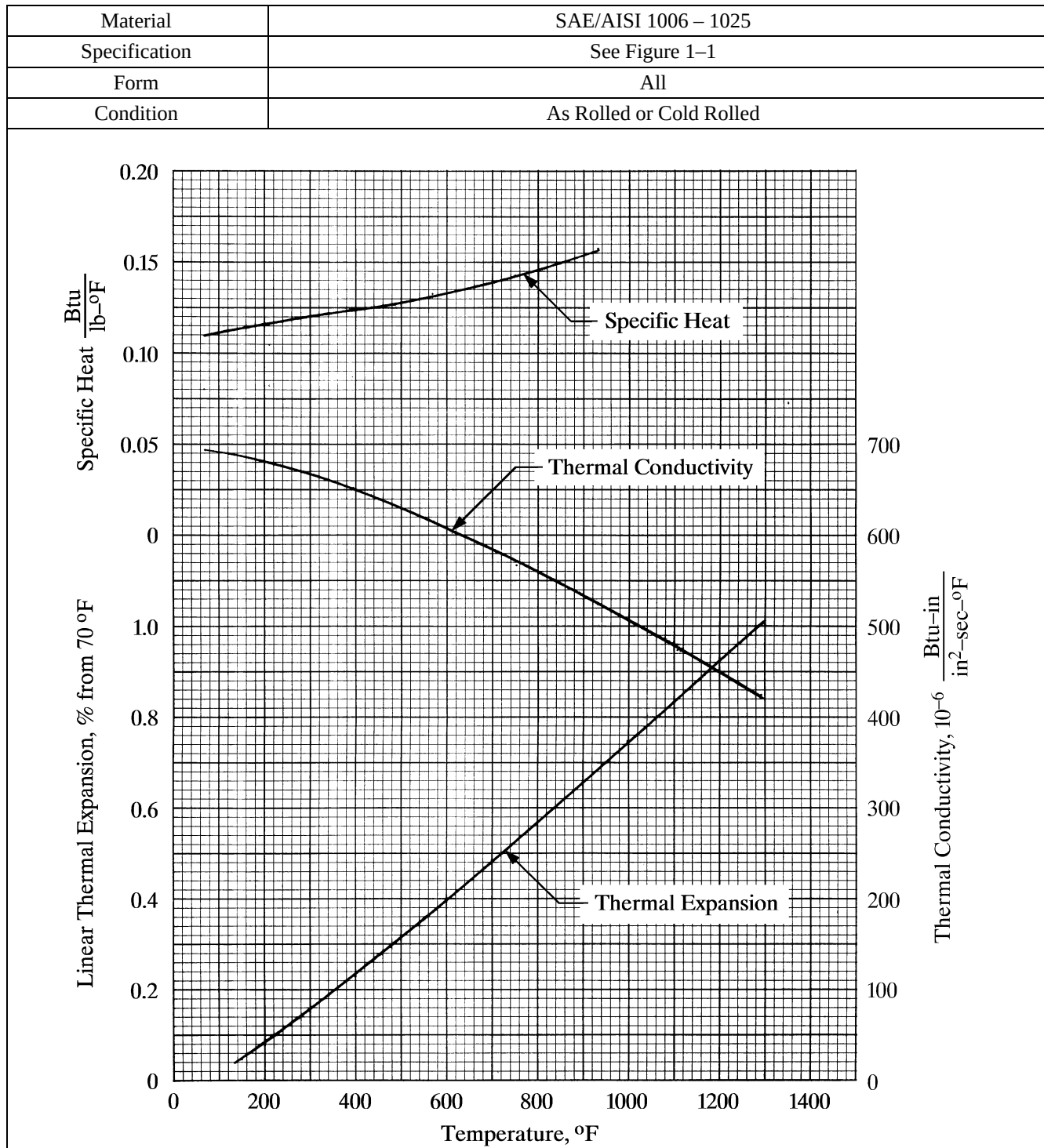


FIGURE 2-2 THERMAL PROPERTIES

SAE/AISI 1006-1025
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