



Material Specifications

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Date Issued:	A-SEP05

ENGINEERING HEAT TREATMENT SPECIFICATIONS Through Hardening – Critically Stressed Carbon Steels (Superseded)

This specification has been superseded by CNH Material Specification MAT4050 (87317385) Quenching and Tempering. CNH MAT4050 shall be specified on all applicable new and updated drawings.

The controlled versions of CNH specifications and standards are published on the CNH Intranet site.

The documents are also available on the CNH electronic viewing system (e.g. eViewer). Suppliers are able to access these documents on CSCN (CNH Supplier Communications Network).

The superseded specification remains available for viewing following this page if needed.

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1. Scope

This specification covers the through hardening of critically stressed carbon steels and includes the following operations:

1.1 Austenitize

1.2 Quench

1.3 Temper

2. Application

This specification is intended for carbon steels where the optimum in physical properties is desired and normally no further stock removal is necessary.

3. Procedure

3.1 Condition of parts prior to heat treatment.

Parts shall be free of any scale, rust, or soils which could interfere with quenching.

3.2 Austenitize

3.2.1 Parts shall be heated in an environment which will not alter the carbon level of the surface of the part.

3.2.2 Parts shall be heated to a temperature at least 50°F above the upper critical temperature of the specified steel and held there long enough to insure complete austenization of the part.

3.3 Quench

Parts shall be quenched into a well agitated media which will produce the maximum hardness of the specified steel without causing cracking.

3.4 Temper

3.4.1 Parts shall be tempered for not less than one hour at a temperature required to produce the desired hardness level.

3.4.2 Parts should be transferred to the tempering furnace before they reach room temperature (70°F) in order to avoid cracking.

3.4.3 Tempering temperature optional unless otherwise specified.

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4.0 Interpretation of Print Requirements

- 4.1 Hardness shall be checked on the hardened surface after a light grind.
- 4.2 Hardness location shall be specified so that the part can be used after testing.

5.0 Microstructure

- 5.1 Parts will have a martensitic structure to a depth within the hardenability limits of the steel specified. Structure shall show evidence of complete solution.
- 5.2 Surface shall not display any appreciable change in carbon content after heat treatment.

6.0 Specify on Drawing

The drawing shall specify the following:

- 6.1 Prior heat treatment if required (Normalizing or Annealing).
- 6.2 Through (or Thru) Harden per Specification P-7.
- 6.3 Hardened as HB or HRC.
- 6.4 Location of hardness check.

(See Appendix for examples)

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