

PROCESS SPECIFICATION

DELPHI SAGINAW STEERING SYSTEMS

TITLE Tool Material Heat Treatment – CPM 1V NUMBER E-2657
ISSUED BY J. Burke DATE 6/23/08 APPROVED BY [Signature]
REVISION _____ REV. DATE _____ SHEET 1 OF 1

- A. Material To be Heat Treated: CPM 1V
- B. Heat Treat as Specified: (heat slowly)
 - a. Preheat slowly to 840 to 870°C and equalize
 - b. High Heat 1065-1095°C, hold 10-15 minutes
 - c. Gas quench with positive pressure(2 bar minimum) to below 125°C. Optional: Interrupted salt or oil quench to 540°C then air cool to below 50°C.
 - d. Triple Temper at 540-650°C for required hardness levels.
- C. Stress Relieve, if specified, after final machining at a temperature which is 30°C less than original tempering temperature for 2 hours, then furnace cool or cool in still air.
- D. Using heat treatment shown above will give a hardness range of 49-60HRC. Required hardness will be noted on print. Heat treat accordingly.
- E. No carburization or decarburization allowed.
- F. Tooling must have holes cleaned of all salt.
- G. Heat treatment certification, when requested, shall include:
 - a. Heat Treat Shop Number
 - b. P.O. Number accompanying job
 - c. Type of Material Heat Treated
 - d. Size and quantity of tooling batch heat treated
 - e. Resulting hardness
 - f. Xerox copy of material tracking chart containing furnace times and temperatures.
 - g. Date when hardness tester was last calibrated.
- H. Heat treatment per this specification is to be carried out only by approved sources as listed in specification E-2600.
- I. All printed copies of this specification are FOR REFERENCE ONLY. The latest revision can be viewed on-line at: http://www.delphisuppliers.com/vendor_documents/delphi-s/index.html

Revision	Revision Description	By	Date

Note: The above specifications were developed without considering whether patents may or may not be involved.
In all cases, therefore, the supplier shall be required to assume patent liability.