

# PROCESS SPECIFICATION

## DELPHI SAGINAW STEERING SYSTEMS

TITLE Tool Material Heat Treatment NUMBER E-2649  
ISSUED BY C. R. Martin DATE 4/30/96 APPROVED BY \_\_\_\_\_  
REVISION C REV. DATE 08JL2003 SHEET 1 OF 1

- A. Material to be heat treated: **Vasco Die**  
**This is a general heat treat specification for the aforementioned material.**
- B. Heat treat as specified: (heat slowly)
1. Preheat slowly at 1550 to 1600°F.
  2. High heat at 1950°F.
  3. Still air quench to 125°F. or below
  4. Triple temper immediately, 3 hours at 950 to 1100°F. for each temper.
  5. Allow to cool to room temperature between each temper cycle.
- C. Stress relieve, if specified, after final machining at a temperature which is to 50 to 100° lower than the tempering temperature used. The stress relieving temperature should not, in any way, affect the hardness of the material.
- D. Using heat treatment shown above will give a hardness range of 45 to 60 Rockwell C. Required hardness will be noted on print. Heat treat accordingly.
- E. No carburization or decarburization allowed.
- F. Heat treatment certification, when requested, shall include:
1. Heat treat shop number
  2. P.O. number accompanying job
  3. Type of material heat treated
  4. Size and quantity of tooling batch heat treated
  5. Resulting hardness
  6. Xerox copy of material tracking chart containing furnace times and temperatures.
  7. Date when hardness tester last calibrated.
- G: Heat treatment per this specification is to be carried out only by approved sources as listed in specification E-2600.
- H: 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](http://www.delphisuppliers.com/vendor_documents/delphi-s/index.html)

Revision	Revision Description	By	Date
A	Distribution list updated.	CRM	5/16/96
B	Distribution list revised. Format updated.	DN	1/24/01
C	Note G revised. Note H added	DN	08JL2003

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.