1. **Main characteristics and applications**

It features excellent hardening penetration, good workability, polishing and photoengraving properties. This steel is used for plastic moulds of medium and big size. It can be subject to a nitriding treatment to improve its wear resistance.

Main applications: injections and thermoplastic extrusion moulds, rubber moulds, moulds carrier frames, containers.

2. **Comparable standards**

<table>
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<tr>
<th>UNI</th>
<th>W.Nr</th>
<th>DIN</th>
<th>AFNOR</th>
<th>AISI/SAE</th>
<th>BS</th>
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</thead>
<tbody>
<tr>
<td>1.2738</td>
<td>40CrMnNiMo8-6-4</td>
<td>~40CMND8</td>
<td>~P20 + Ni</td>
<td>~P20 + Ni</td>
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</tbody>
</table>

3. **Chemical analysis**

<table>
<thead>
<tr>
<th>C</th>
<th>Mn</th>
<th>Si</th>
<th>Cr</th>
<th>Mo</th>
<th>Ni</th>
<th>P+S</th>
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</thead>
<tbody>
<tr>
<td>0.35</td>
<td>1.30</td>
<td>0.20</td>
<td>1.80</td>
<td>0.15</td>
<td>0.90</td>
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<tr>
<td>0.45</td>
<td>1.60</td>
<td>0.40</td>
<td>2.10</td>
<td>0.25</td>
<td>1.20</td>
<td>0.030</td>
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</table>

4. **Critical points**

- **Ac1**: 710 °C
- **Ms**: 290 °C

5. **Supply Conditions**

Hardened and Tempered Normal HB 300 - 340

6. **Heat treatments**

- **Annealing**
  - Heat to 710 - 740 °C, with hold at minimum rate for 3 hours
  - Slow furnace cooling to 600 °C

- **Stress relieving**
  - To be carried out after machining and before the final heat treatment
  - Heating to 530 - 580 °C for 2 h

- **Hardening**
  - Preheating to 500 - 550 °C
  - Austenitizing at 840 - 880 °C
  - Oil or thermal bath cooling at 200 - 230 °C, then oil cooling according to the steel shape size
  - Quenched hardness 52 - 54 HRC

- **Tempering**
  - To be carried out after the hardening and when the steel is at 60 - 80 °C, at 500 - 600 °C according to the required hardness and with permanence for at least 2 h
  - Cooling in air
7 C.C.T. curve

Austenitizing temperature: 850°C

8 Tempering curve

Heat treatment diagram

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