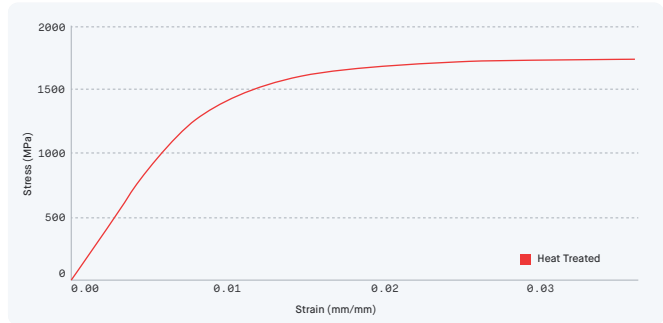


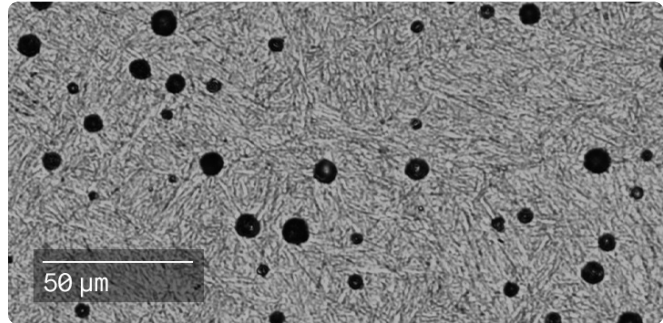
[Material Data Sheet]

# H13 v.2 Tool Steel



**COMPOSITION %**

|    |          |
|----|----------|
| Cr | 4.8-5.5  |
| Mo | 1.1-1.7  |
| Si | 0.8-1.2  |
| V  | 0.8-1.2  |
| C  | 0.3-0.45 |
| Mn | 0.2-0.6  |
| P  | 0.03 Max |
| S  | 0.03 Max |
| Fe | balance  |



Studio system heat treated microstructure

**MECHANICAL PROPERTIES**

|                                      | Standard  | Studio System™ 2<br>After Quench & Temper ** | Wrought<br>Heat Treated, for Reference ** |
|--------------------------------------|-----------|--|---|
| Yield strength - xy (MPa)            | ASTM E8M  | 1370   | 1620                                      |
| Ultimate tensile strength - xy (MPa) | ASTM E8M  | 1700   | 2065                                      |
| Elongation at break                  | ASTM E8M  | 2.8%   | 9.1%                                      |
| Young's modulus (GPa)                | ASTM E111 | 196  | -   |
| Hardness (HRC)                       | ASTM E18  | 46   | 56  |
| Density (g/cc)                       | ASTM B311 | 7.36   | 7.8                                       |

**ATTRIBUTES & APPLICATIONS**

- Hot work tool steel
- Surface can be carburized or nitrided
- Die cast dies
- Extrusion dies
- Punches
- Medium wear resistance

**OTHER STANDARD DESIGNATIONS \***

- UNS T20813
- DIN 1.2344
- JIS SKD61

\* Listed designations are for reference purposes only. Composition and mechanical properties may vary.

\*\* Heat treated samples were austenitized at 1040 °C for 30 minutes, air cooled, and then double tempered at 570 °C for 1 hour per temper.

End-use material performance is impacted (+/-) by certain factors including but not limited to part geometry and design, application and evaluation conditions, etc.

Tensile properties, hardness and density data reported are mean values minus 1 sigma.