

## HOT WORK TOOL STEEL – AISI H13

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**AISI H13 Hot Work Tool Steel** air hardening, with good toughness, resistance to abrasion and high red hardness. It resists softening to 550°C and has good resistance to heat checking. Will Nitride with a case hardness over 1000 V.P.N. Generally supplied annealed to HB 230 max.

### Typical Applications:

Hot punches and dies for blanking, bending, swaging and forging, hot extrusion dies for aluminium, cores, ejector pins, inserts and nozzles for aluminium, tin and lead die casting.

### HEAT TREATMENT

**Forge:** at 900°C – 1100°C  
Cool slowly and anneal immediately

**Anneal:** at 850°C – 870°C  
Cool slowly in furnace

**Stress Relieve:** at to 600°C – 650°C  
Cool in still air

### Typical Chemical Analysis

<b>Carbon</b>	<b>0.40%</b>
<b>Silicon</b>	<b>1.00%</b>
<b>Chromium</b>	<b>5.30%</b>
<b>Molybdenum</b>	<b>1.40%</b>
<b>Vanadium</b>	<b>1.00%</b>

### Related specifications:

AS 1239	H13A
ASTM A 681	H13 UNS T20813
BS 4659	BH13
BS EN ISO 4957	X40CrMoV 5-1
JIS G 4404	SKD 61
Werkstoff	1.2344 X40CrMoV5-1

**Harden:** Preheat at 650°C – 850°C  
Raise to 1020°C-1050°C  
Cool in air, oil or into salt bath held at 500°C-550°C and then air cool.

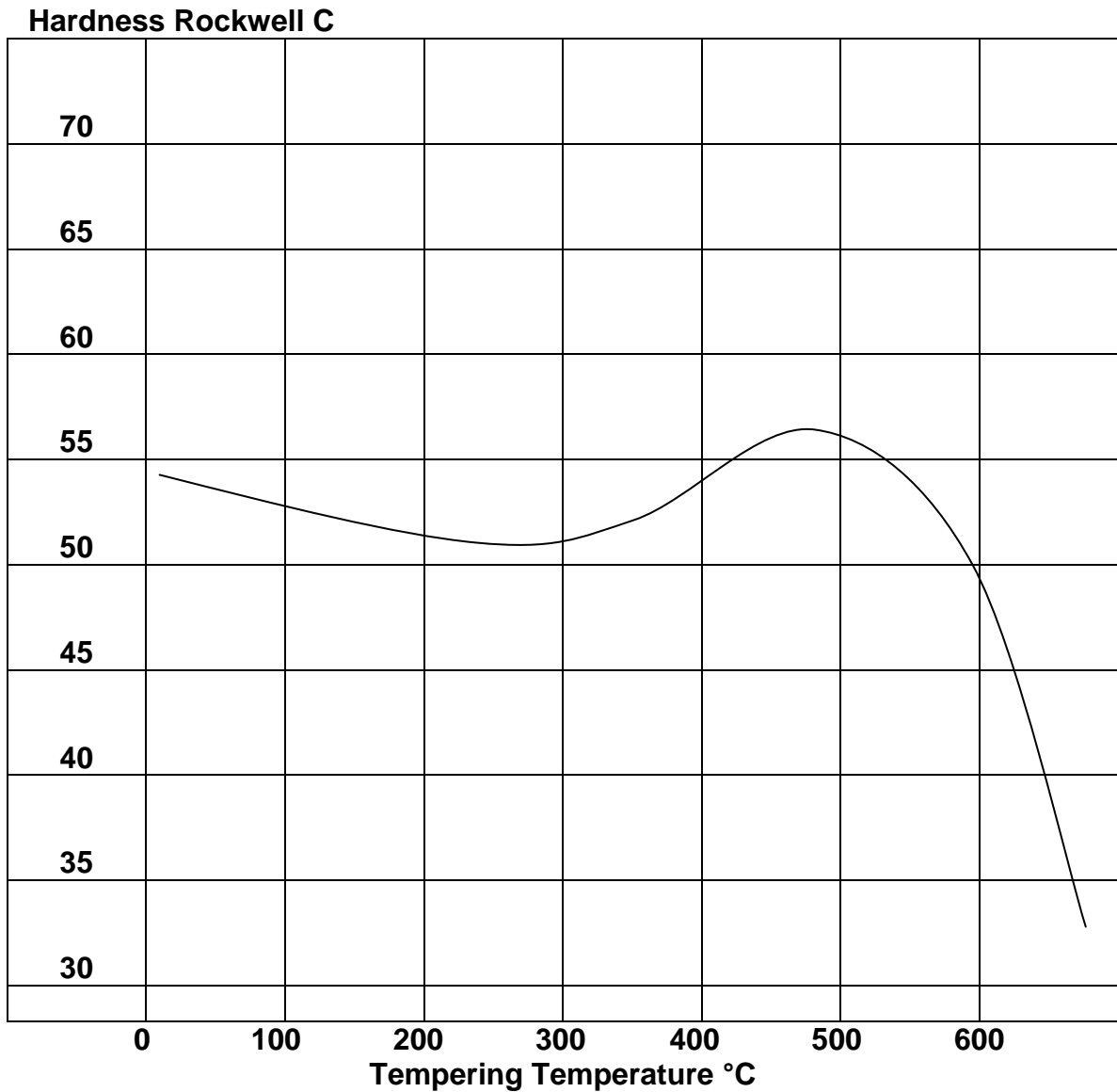
**Temper:** at 500°C – 650°C  
Cool in still air  
Double tempering recommended

### Typical Hardness / Applications – Air cooled at 1020°C–1050°C & tempered

Temper	HRC	Typical Applications
<b>500°C</b>	<b>53 – 55</b>	Swaging dies
<b>550°C</b>	<b>52 - 54</b>	Ejector pins & nozzles for tin, lead or zinc die casting
<b>575°C</b>	<b>50 – 52</b>	Blanking & bending dies. Aluminium die casting dies
<b>600°C</b>	<b>47 – 50</b>	Gripper and header dies.
<b>610°C</b>	<b>46 – 49</b>	Forging dies and inserts, extrusion dies, mandrels etc.
<b>620°C</b>	<b>44 – 48</b>	Hot shears, forming dies and punches.

Heat treatment and typical hardness for guidance only

**TYPICAL TEMPERING CURVE – AISI H13**



**Section: 30mm – Air cooled at 1020 – 1050°C**

**Double tempering recommended**