

## Market proven, advanced standards

DuRAH 61 is an all-purpose hot work tool steel developed by SeAH CSS' empirical data and technology that has greater stability and performance than the standard steel grade, STD 61. The product delivers greater applicability with higher red hardness and improved heat check resistance, which makes it excellent for any industry or environment. DuRAH 61 has demonstrated its excellence and set a new set of standards, resulting in the biggest domestic market share.

Excellent red hardness

Improved heat check resistance

Heat treatment transformation resistance

Improvement of anisotropy

### Applications

Suitable for most hot work such as hot forging moulds, Al/Cu extrusion moulds and die casting moulds



Extrusion



Die Casting

### Chemical Composition

Steel Grade		Chemical Composition (wt%)						
SeAH CSS	KS/JIS	C	Si	Mn	Cr	Mo	V	Other
DuRAH 61	STD 61	0.35	0.80	0.25	4.80	1.00	0.80	-
	SKD 61	0.42	1.20	0.50	5.50	1.50	1.15	-

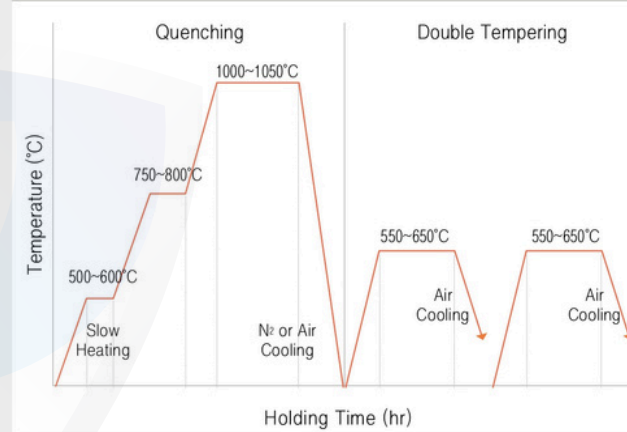
### Physical Properties

Thermal Expansion Coefficient ( $\times 10^{-6}/^{\circ}\text{C}$ )	Specific Gravity ( $\text{g}/\text{cm}^3$ )	Thermal Conductivity ( $\text{W}/\text{m}\cdot\text{K}$ )	Young's Modulus (GPa)
11.3 (25~200°C)	7.75	24.6 (20°C)	210

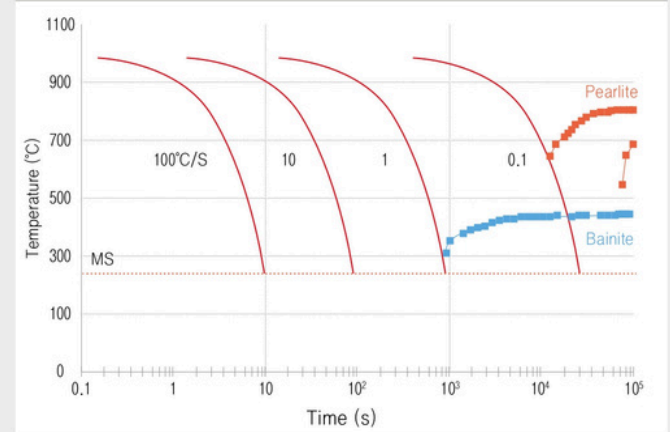
### Heat Treatment

- Spheroidizing annealing: After gradually heating to 820~870°C, the temperature is maintained for 1 hour per inch and then annealed slowly (15 to 30°C/hour) to 500°C, which is then followed by air cooling.
- Stress relief: Heating to 650°C and maintaining this for a certain period of time before cooling slowly to 500°C through annealing

#### QT Heat Treatment



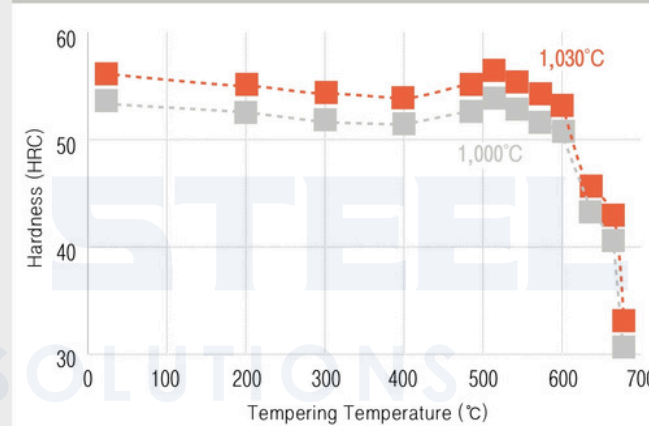
#### CCT Curve



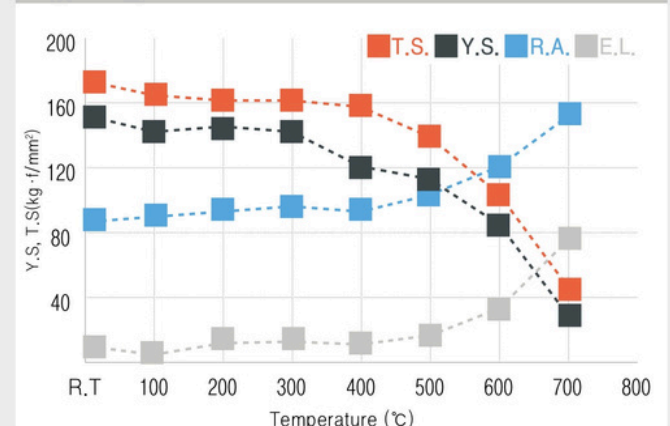
### Mechanical Properties

- DuRAH 61 retains its strength at high temperatures due to the solid-solution strengthening of hardening elements and secondary hardening effect.

#### Heat Treatment Hardness

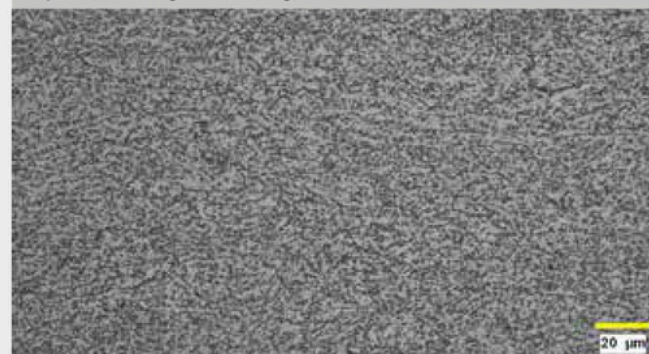


#### High Temperature Characteristics



### Microstructure

#### Spheroidizing Annealing



#### Quenching & Tempering

