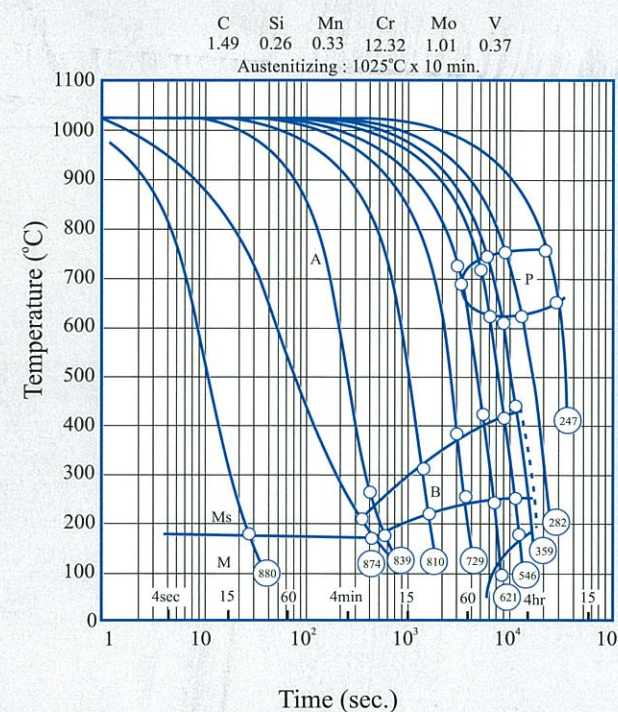
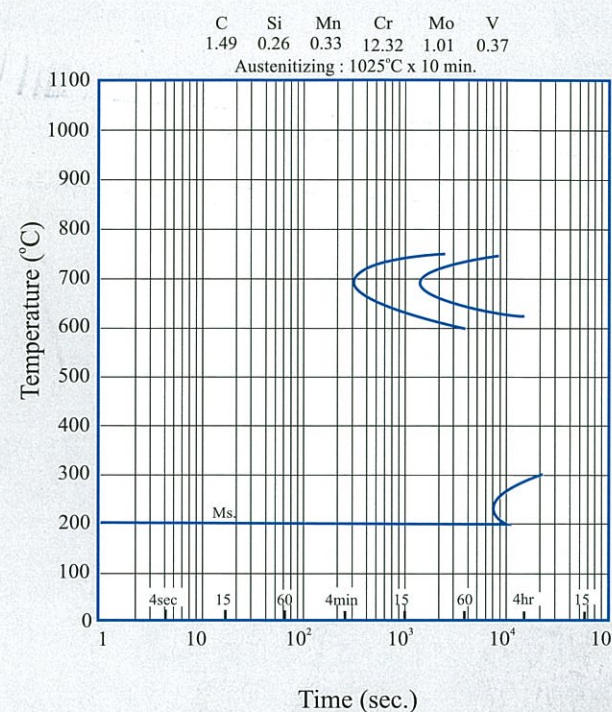


Continuous Cooling Transformation Diagram



Isothermal Transformation Diagram



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IMPORTANT NOTE

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DC11

High Wear Resistance & Air Hardening General-Purpose Cold Die Steel

Features

- 1 High cleanliness by vacuum degassing in refining process
- 2 Favorable machinability : 20% better than that of SKD1
- 3 High hardenability : Hardened by air cooling without the fear of quenching crack
- 4 Small dimensional change by heat treatment : Suitable for precision dies
- 5 High wear resistance : Suitable for trimming dies to work stainless steel and hard blanks
- 6 High toughness

Applications

Application	Hardness	Application	Hardness
Trimming dies	HRC 58~62	Precision gauges	HRC 60~65
Forming rolls	HRC 58~63	Thread rolls	HRC 60~63
Phillips head forming dies	HRC 57~62	Cold hobbing press hobs	HRC 58~65
Fuller	HRC 58~63	Cold forging dies	HRC 58~62
Shearing blades	HRC 50~65	Thermo-setting resin forming dies	HRC 56~61



DAIDO STEEL

Chemical Composition



DAIDO Brand	Applicable JIS	Chemical composition (%)									
		C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V
DC11	SKD11	1.40 ~ 1.60	≤ 0.40	≤ 0.60	≤ 0.030	≤ 0.030	≤ 0.25	≤ 0.50	11.00 ~ 13.00	0.80 ~ 1.20	0.20 ~ 0.50

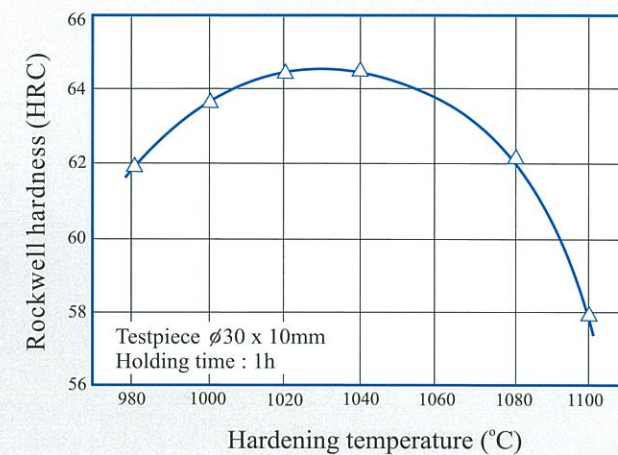
Heat Treatment



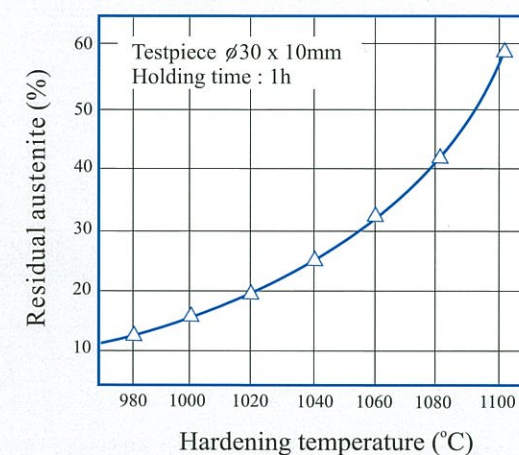
Forging temp. (°C)	Heat treatment temperature (°C)			Hardness			Transformation temperature (°C)*	
	Annealing	Hardening	Tempering	Annealing (HB)	Hardening (HRC)	Tempering (HRC)	Ac	Ar
1100~900	830~880 Slow cooling	1000~1050 Air cooling	150~250 Air cooling (500~530) Air cooling	≤ 255	≥ 61	≥ 58	815~875	765~705

*Maximum heating temperature: 1030°C

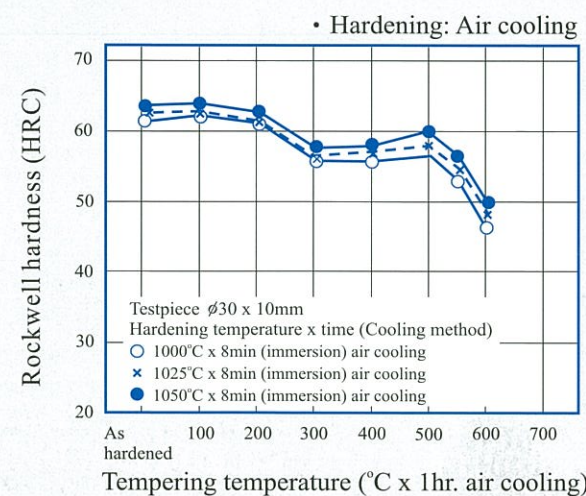
Hardening Hardness Curve



Residual Austenite (%)



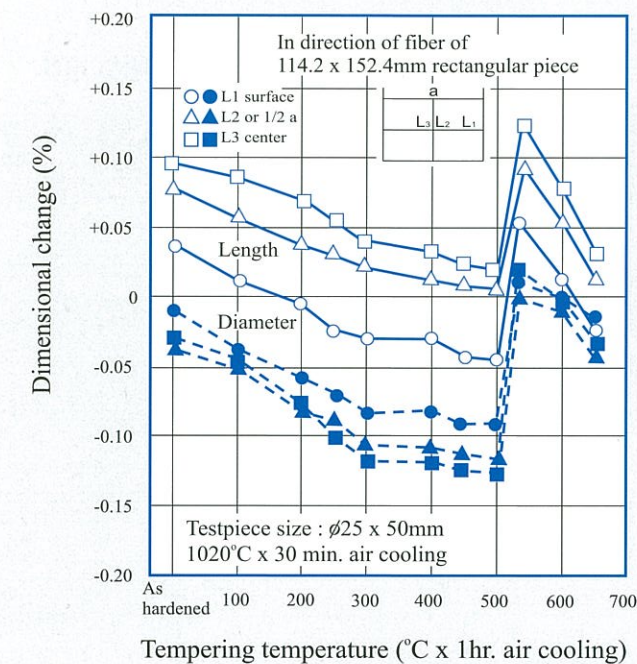
Tempering Hardness Curve



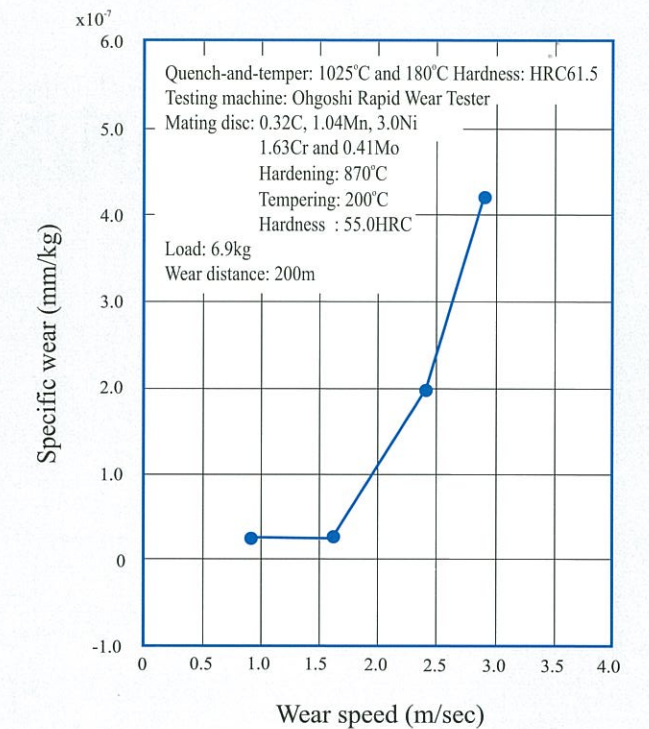
Quality Characteristics



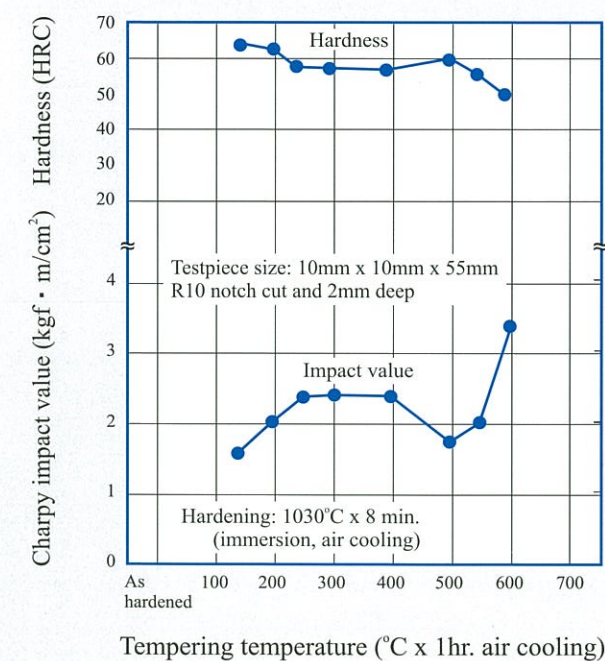
Dimensional change by Heat Treatment



Wear Resistance



Impact Resistance



Tensile Characteristics

