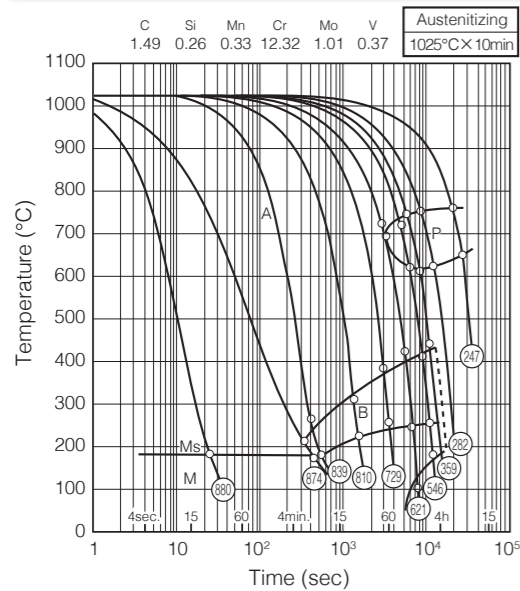


CCT diagram



Physical properties

Quenching: 1030°C×1h, Gas cooling
Tempering: 180°C×1h, Twice
Hardness: 62HRC

Temp.	20~100°C	20~200°C	20~300°C	20~400°C	20~500°C	20~600°C
Thermal expansion rate × 10 ⁻⁶ /K	10.6	11.9	11.8	12.0	12.2	12.2

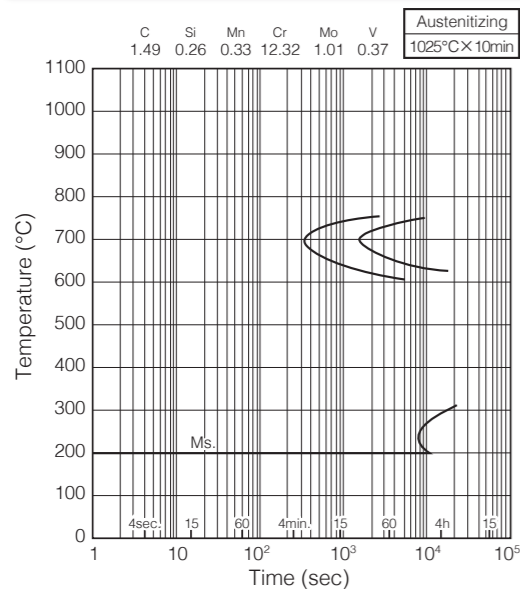
Temp.	25°C	100°C	200°C	300°C	400°C	500°C	600°C
Thermal conductivity W/m · K	16.9	19.7	21.1	22.5	24.0	25.2	28.2

* Accuracy of repeated measurements is about ±10%.

Temp.	25°C	100°C	200°C	300°C	400°C	500°C	600°C
Specific heat J/kg · K	467	525	559	587	644	686	779

Young's modulus	Rigidity modulus	Poisson's ratio
204GPa	78GPa	0.30

TTT diagram



Tokyo Head Office
(Tool Steel Overseas Marketing & Sales Dept.)

Daido Shinagawa Building, 6-35, 1-Chome, Konan, Minato-ku, Tokyo, Japan
Phone: +81-3-5495-1270 Fax: +81-3-5495-6739

Bangkok Office

Unit2-1, 22nd Fl., Silom Complex Bldg., 191, Silom Road, Silom, Bangrak, Bangkok 10500, Thailand
Phone: +66-2-231-3214 Fax: +66-2-231-3216

Daido Steel Group Europe GmbH

Insterburger Strasse 16, 60487 Frankfurt am Main, Germany
Phone: +49-69-29802867-0 Fax: +49-69-29802867-40

Daido Steel (America) Inc.

1051 Perimeter Drive, Suite 1175, Schaumburg, Illinois 60173, U.S.A.
Phone: +1-847-517-7950 Fax: +1-847-517-7951

Daido Steel (Shanghai) Co., Ltd

Room 1402, Ruijin Building, 205 Mao Ming Nan Road, Shanghai, 200020, China
Phone: +86-21-5466-2020 Fax: +86-21-5466-0279

Daido Steel (Shanghai) Co., Ltd
Guangzhou Subsidiary Company

Room 2601, No.8, Linhezhoug Road, Tianhe District, Guangzhou, 510610, China
Phone: +86-20-3877-1632 Fax: +86-20-8550-1126

www.daido.co.jp

DC11 is a Registered trademark or Trademark of Daido Steel Co., Ltd.

Document Disclaimer

The product characteristics included in this brochure are the representative values based on the result of our measurements, and do not guarantee the performance in use of the products. Please inquire the latest information to our department in charge as the information of this brochure is updated without previous notice as needed. Copyright © 2018 Daido Steel Co., Ltd. All rights reserved.

No.SC1801a 23.06.0.0 (DDD)

Daido's Cold Work Die Steel Series

DC11TM



Excellent Wear Resistance & Air Hardening General-Purpose Cold Work Die Steel

Features

- ◆ High cleanliness by vacuum degassing in refining process
- ◆ Favorable machinability: 20% better than that of SKD11
- ◆ High hardenability: Hardened by air cooling without the fear of quenching crack
- ◆ Small dimensional change by heat treatment: Suitable for precision dies
- ◆ High wear resistance: Suitable for trimming dies for stainless steel or high-strength steel
- ◆ High toughness

Main applications

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

Chemical composition

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

Heat treatment

Re-forging Temp. (°C)	Heat treatment (°C)			Hardness			Transformation Temp. (°C)*	
	Annealing	Quenching	Tempering	Annealed (HBW)	Quenched (HRC)	Tempered (HRC)	Ac	Ar
900~1100	830~880 Slow cooling	1000~1050 Air cooling	150~200 Air cooling (500~550 Air cooling)	≤ 255	≥ 62	≥ 61 (56~58)	815~875	765~705

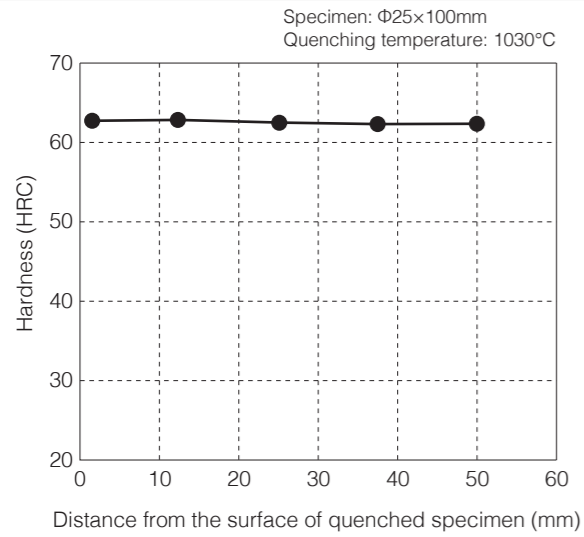
* Maximum heating temperature: 1030°C, Cooling rate: 100°C/h



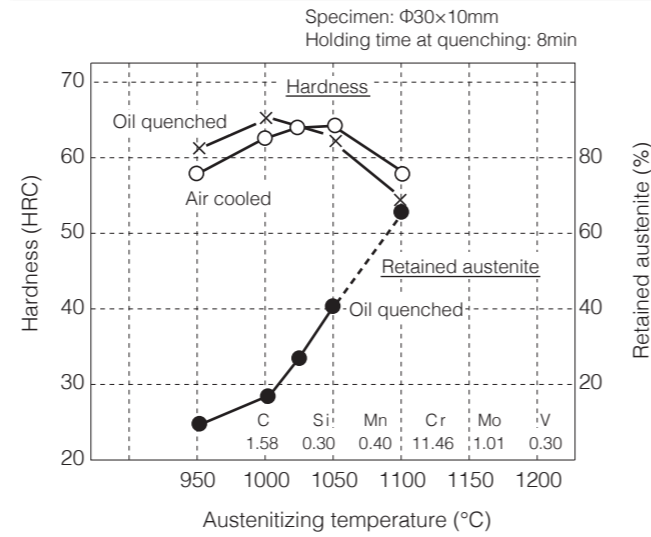
Properties

Material size: $\Phi 36$
(Except for Dimensional changes)

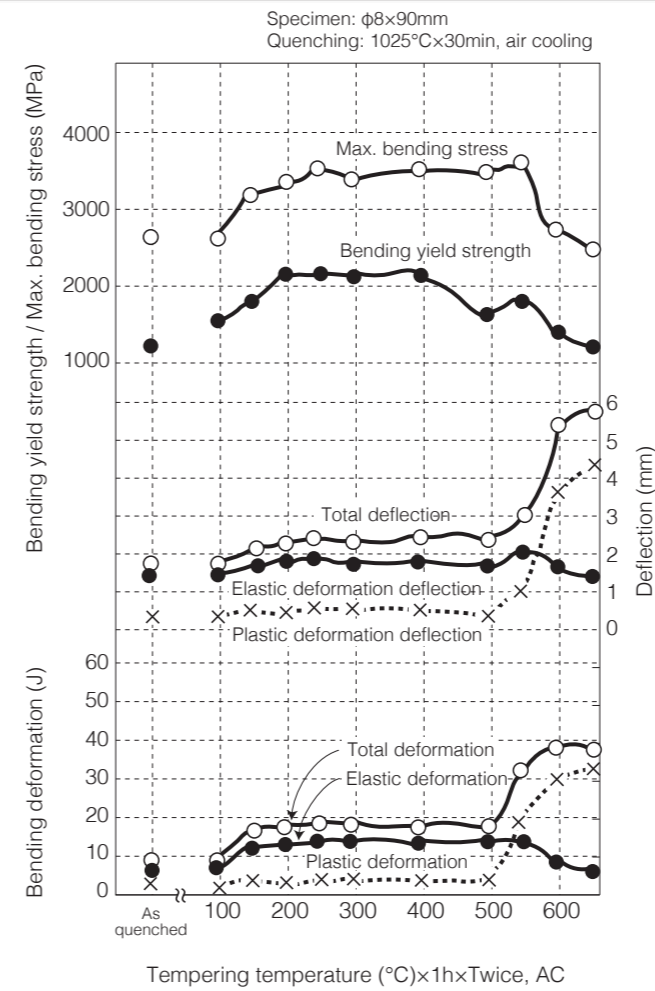
Hardenability



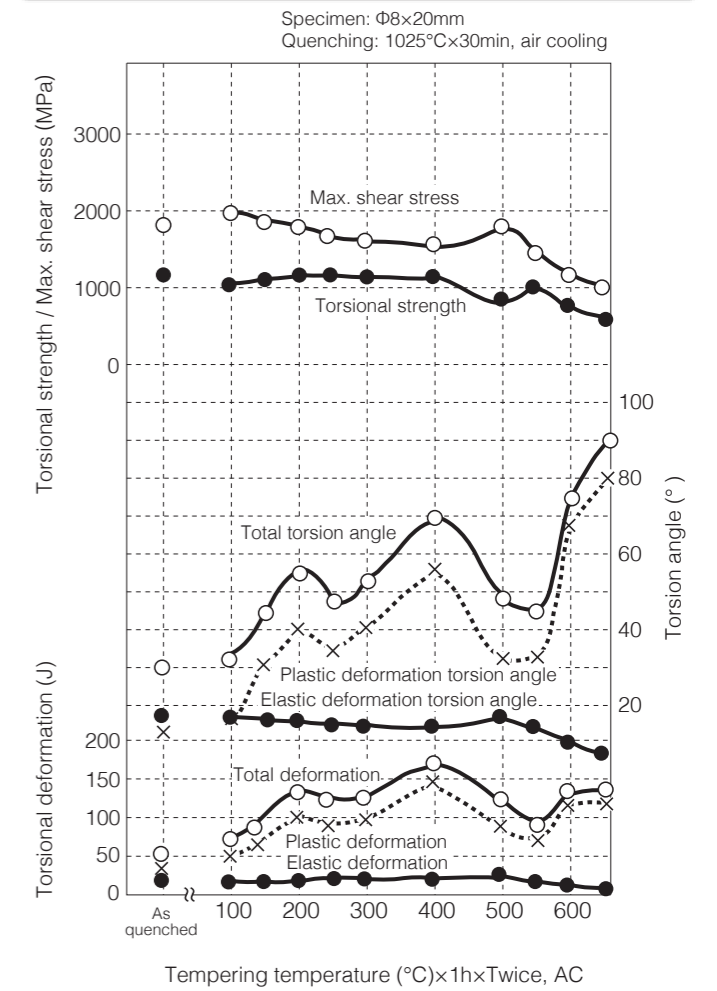
Quenched hardness curve and Retained austenite



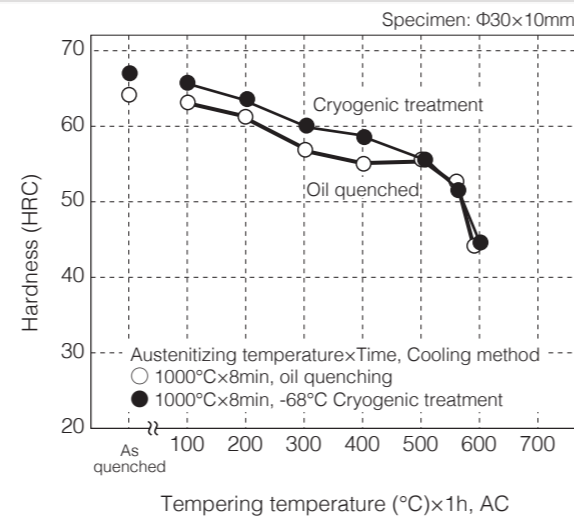
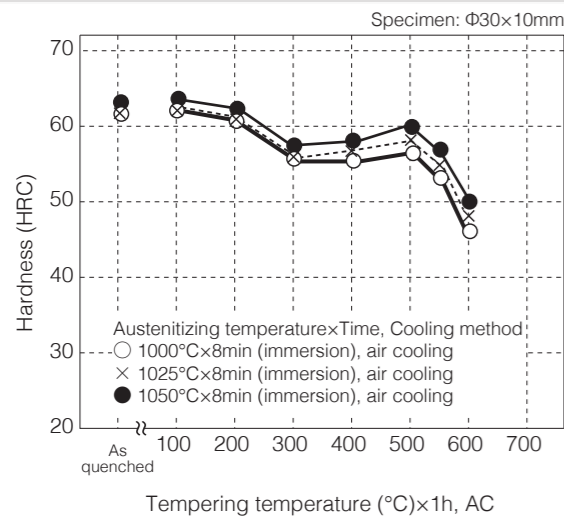
Static bending properties



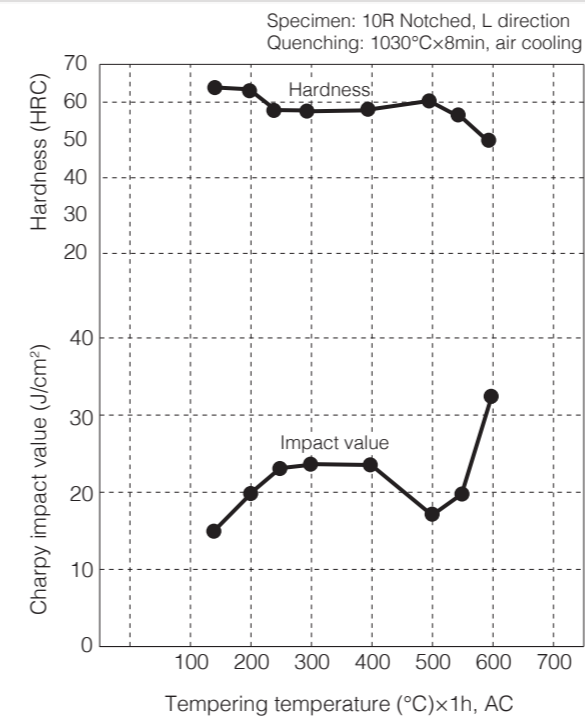
Static torsional properties



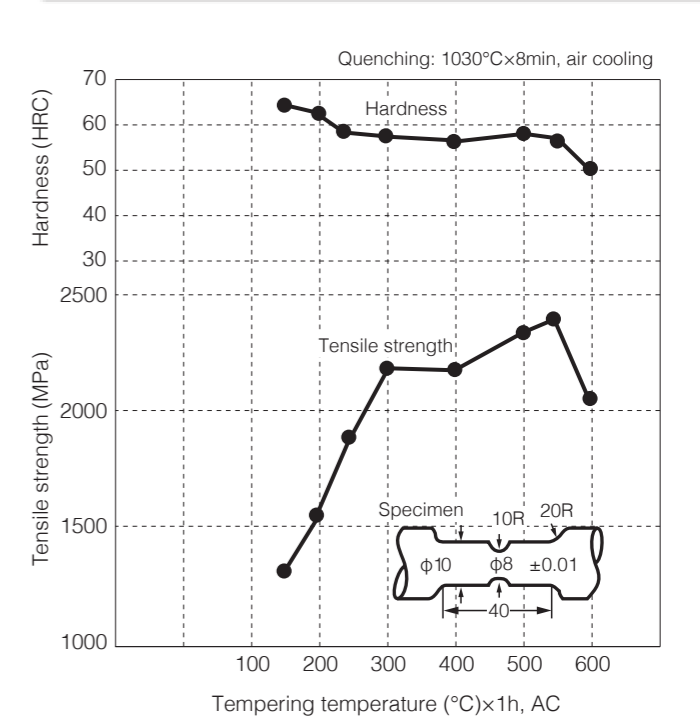
Tempering hardness



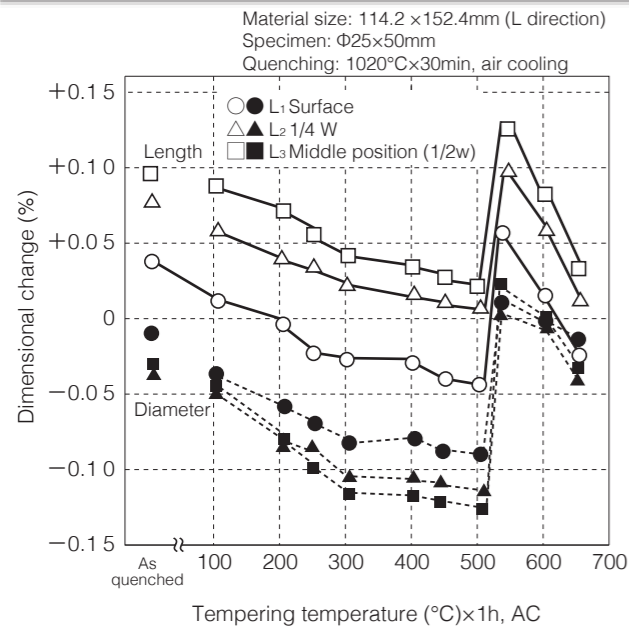
Toughness



Tensile strength



Dimensional change



Wear resistance

