

Welding



[Repair welding of hardened and tempered condition]

- 1) Pre-heat to approx. 300°C (min. 200°C)
- 2) Weld at 200~300°C
- 3) Reheat immediately to tempering temperature but max. 400°C
Holding time at tempering: 3 hours
- 4) Cool in air to room temperature

Electrode: Hard-facing electrode (Ex. JIS DF-3B-B)

Composition (%): 0.50C, 0.4Si, 0.4Mn, 5Cr, 1.2Mo

Note: In case of multi-layer, “under-layer” is to be performed with austenitic stainless steel of welding rod.

Quench hardening



[If you will need Quench hardening]

Preheating temp.	Heat Treatment (°C)		Hardness after tempering (HRC)
	Austenitizing temp.	Tempering temp.	
700~800°C	900~950°C Oil	150~200°C Air	60min.



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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.

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G05

Flame Hardening Cold-Work Tool Steel

Features

1 Excellent Flame Hardenability

Sufficient surface hardness and hardened depth can be obtained by air cooling after flame heating. Proper range of hardening temperature is wide and the steel hardly becomes over-heated structure.

2 Good Machinability

G05 provides good machinability since a proper spheroidized annealing is being made.

3 Good Toughness and Wear Resistance

G05 provides good toughness and wear resistance, so that there scarcely grow crack and chip.

4 Good Weldability

G05 provides good weldability since the chemical composition is designed to aim at improvement of weldability reforming and repairing of dies.

Applications

1 Flame Hardening

For Blanking, Piercing and Trimming dies of sheet with thickness less than 1.6mm. It is especially for segment dies for Blanking of big shapes.

2 Quench Hardening

Blanking, Piercing, Press forming dies and other cold work dies.



DAIDO STEEL

Heat Treatment



[Flame hardening of the edge of tool]

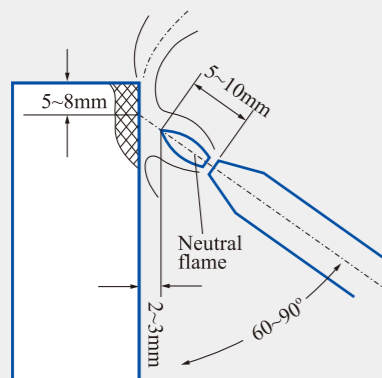
1	Working environment	Indoors where the constant brightness is kept.
2	Pre-heating	200 - 300°C (if too high, there is a danger of preventing sufficient hardness)
3	Heating	To be heated until it turns into light red color (aim. 950°C) then shift the heating area in turn, controlling the torch feeding speed.
4	Cooling	In air to room temperature.
5	Tempering	Not necessary, but if tempering of 150~200°C is done, the toughness gets improved.

● The standard of burner and gas pressure

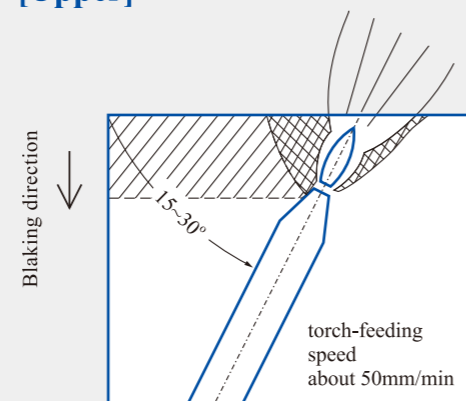
Burner	:	O₂	9.8MPa
(#100~300)		C₂H₄	1.7MPa
Burner	:	O₂	49MPa
(#1~2)		C₂H₄	4.9MPa

● The method of flame hardening

[Side]



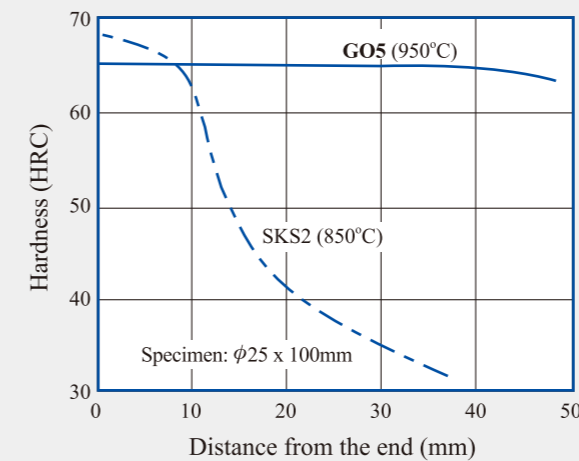
[Upper]



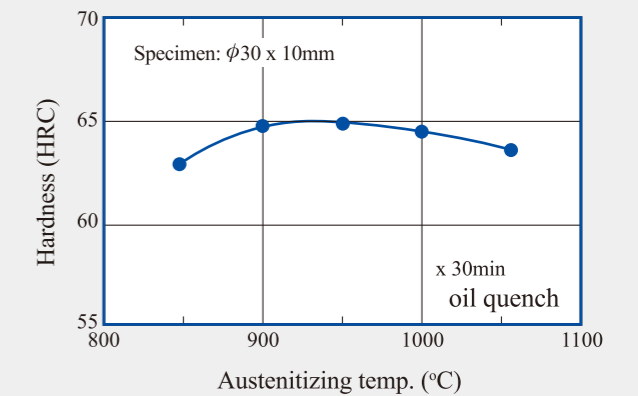
Technical Data (36Dia)



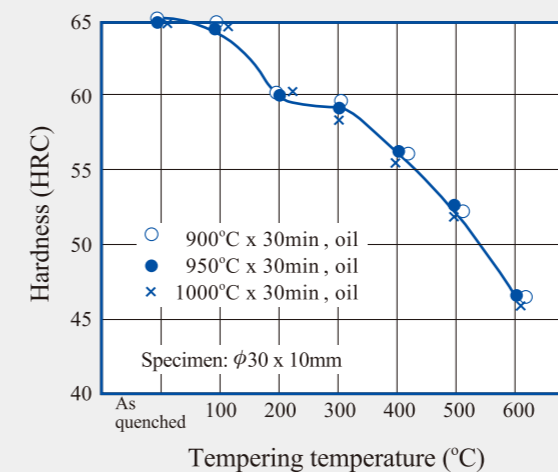
● Hardenability Curve (End Quenching)



● Hardness as a function of austenitizing temperature



● Hardness as a function of tempering temperature



● Distribution of Hardness of flame hardening

