SSS **DBS** Colour Code: black **L6** **1.2714**

DIE BLOCK TOOL STEEL AISI WERKSTOFF No

C	Cr	Mo	Ni	V
0.56	1.10	0.50	1.70	0.10

Features and Uses

DBS is a tough hot working die block steel, which is resistant to tempering and has very good depth of hardening even in the largest sections.

It can be ordered in the annealed or pre hardened condition. The "as-supplied" heat treated condition is shipped from the mills direct to Sandersons in the hardness range of HB 333 –373 (HRC 35 – 39) This heat treated condition is ideal for many applications that require toughness and strength while machining of the impression is still possible.

Typical uses include hot working dies of all sizes and types, press dies, mould dies, extrusion dies, hot shear blades, embossing tools, and drop forging dies.

Heat Treatment

Annealing

Anneal preferably in a protective atmosphere to prevent decarburization at 650º / 700°C for at least 2 hours per 25 mm of ruling section. Cool at 10°C per hour with the furnace until the temperature falls below 300°C before removing from the furnace.

Stress Relieving

Where tools are heavily machined, ground or subjected to cold work, the relief of internal strains is essential before hardening. Stress relieving should be done after rough machining. To stress relieve, heat carefully to 650°C soak well and allow to cool slowly to room temperature.

Hardening

DBS can be oil or air quenched depending on the section size and desired hardness. Harden from 830º / 870ºC for oil quenching and 860º / 900ºC for air quenching. The hardness after oil quenching will be about HRC 58 and approximately HRC 56 when air quenched.

Quenching Media

Oil produces the desired hardness as does salt quenching but with both media distortion should be allowed for in the design.

Air hardening reduces the risk of cracking and even large dies can be air quenched with excellent results.

Tempering

Temper the tool for a minimum of 1 hour per 25 mm as soon as it reaches 50° / 70 °C usually between 400°C and 600°C according to the requirements of the job. A protective atmosphere is required above 300ºC. See tempering chart for details

Nitriding and Tufftriding

Nitriding gives a very hard surface, which is resistant to wear and erosion. DBS can be Nitrided in the "as-supplied heat treated" condition and the core of this material will not soften during the Nitriding process.

Tuftriding works well on smaller tools made from DBS imparting anti seize, anti galling and corrosion resistance to the part Once again, the tough core supports the tuftride layer and there is no dimensional movement.

Air Tempering Chart

HRC	Temp ºC
55	100
52	200
50	300
47	400
45	450
43	500
40	550
36	600
32	650

OIL Tempering Chart

Temp ºC	HRC
57	100
54	200
52	300
49	400
47	450
46	500
43	550
38	600
34	650