Data Sheet

SOREL FORGE

PREHARDENED DIE STEEL SF-2714

GENERAL:

DIN	1.2714
UNI	56 NiCrMoV 7
AFNOR	55 NCDV 7

Delivery Condition:

Hardened and tempered

Hardness Range :	**H-B**	**Rc**
Class 1	388-429	42-46
Class 2	341-375	37-40
Class 3	302-331	32-36
Annealed	229 approx.	20 approx.

SF-2714 is a strong alloy steel of a balanced chromium, nickel and molybdenum composition. It has good retention to tempering and ability of full quenching and tempering.

SF-2714 is melted by electric arc furnace, ladle refined and vacuum degassed to ensure superior quality.

SF-2714 is made by the "densified method" a specialized forging technique whereby tool steel can withstand the shock loading characteristic of metal forming process. This process is designed to achieve more uniform isotropic physical properties, higher strength and freedom of internal discontinuities.

SF-2714 is usually forged with the grain flow parallel to the length dimension, but a block can be cross forged on die designer request i.e. grain flow in width direction.

SF-2714 is characterized by :

Excellent through hardening characteristics resulting in uniform surface/center hardness distribution, even in very large sections. Hardness lost due to mass in very low. A high level of toughness and ductility, particularly above 200°F (95°C), in transverse as well as longitudinal directions.

SF-2714 is ultrasonic tested to very stringent acceptance levels.

Typical Analysis (%)

C	Cr	Ni	Mo	V
0.55	1.10	1.70	0.50	0.07

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SF-2714

TYPICAL APPLICATIONS:

- Hot forging dies
- Forming dies
- Bending and Embossing tools
- Special molds for plastics and other material forming
- Die holders
- Extrusion rams
- Inserts
- Holder tools

HEAT TREATMENT:

SF-2714 is delivered in hardened and tempered conditions and requires no additional heat treatment. However, if a different hardness than that provided is required, the following instructions are recommended:

Soft annealing

1. Protect the steel, charge into a furnace at a temperature of 600°F (315°C) or lower, heat at a maximum rate of 200°F/hour (110°C/hour) to 1450°F (790°C).
2. Soak at 1440 - 1460°F (780 - 790°C) -1/2 hour per inch (25.4 mm) of least dimensions or a maximum of six (6) hours.
3. Cool at about 20°F/hour (10°C/hour) to 800°F (430°C), followed by cooling freely in air. The annealing cycle should yield a hardness of approximately 229 HB (20 Rc).

Hardening

1. Protect the steel, charge into a furnace at a temperature of 600°F (315°C) or lower, heat at a maximum rate of 200°F/hour (110°C/hour) to 1550°F (845°C).
2. Soak at 1550 - 1600°F (840 - 870°C) -1 hour per inch (25.4 mm) of least dimensions.
3. After soaking at 1550 - 1600°F (840 - 870°C), drop the temperature of the part to 1450°F (790°C) before oil quench. This drop in temperature will reduce quenching hazards such as breakage and warpage.
4. Withdraw from oil bath when the surface temperature of the part reaches approximately 500°F to 600°F (260 - 315°C) and immediately place in tempering furnace at 400°F (205°C).

Tempering

1. Allow temperature of die to equalize at 400°F (205°C).
2. Heat the part uniformly to tempering temperature.
3. Soak at tempering temperature for one (1) hour per inch (25.4 mm) of least dimension.

Since part size, furnace and quenching media affect the final hardness, the below tempering temperatures are only a guide for specific hardnesses.

Temperature: °C	540	560	580	600	620	650
Hardness: Rc	44	42	40	38	34	30

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