

Data Sheet



SOREL FORGE

CARBON STEEL BLOCK *SF-1*

■ GENERAL:

AISI-SAE 1055

Delivery Condition:

Normalized and tempered to approx.
229 BHN (20 Rc)

SF-1 is a general purpose carbon steel.

SF-1 is melted by electric arc furnace, ladle refined and vacuum degassed to ensure superior quality.

SF-1 is forged using a 5000 ton press equipped with wide dies. Those characteristics combined with a minimum of 3 to 1 reduction ratio enhance effectively the density and provide homogeneity of the steel.

Typical Analysis (%)		
C	Mn	Si
.55	.75	.25

SF-1 is supplied in normalized and tempered condition.

SF-1 offers excellent machinability.

SF-1 is compatible with the EDM process. We recommend removing the white oxide layer prior to texturizing.

SF-1 is weldable. Good results can be achieved if proper precautions are taken: elevate working temperature, good joint preparation and proper choice of consumables.



■ TYPICAL APPLICATIONS:

- Build-up material for tools
- Base plates for tools in plastic molding
- Prototype molds
- Base plates for pressure casting dies
- Die holders
- Structural components

■ HEAT TREATMENT

• Hot Forming

Hot forming :

1950 -1500°F (1050-800°C)

Cooling : slow in furnace

Attainable Hardness : approx 200 BHN

• Hardening

Preheat temperature : 1250°F (670°C)

Austenitizing temperature:

1650°F (900°C)

Quench : oil or water

Temper immediately when the tool reaches 150°F (65°C)

Tempering : temperature range between 480°F and 800°F (250°C and 420°C)

Temper twice with intermediate cooling to room temperature.

Attainable Surface Hardness : (42 to 48 Rc)

N.B.: *Protect the part against decarburization and oxidation during hardening.*

Tempering at low temperature gives a high stress level in the part and should be avoided.

• Soft annealing

Temperature range:

1250-1350°F (680-730°C)

Slow cooling in furnace

Attainable Hardness : approx 290 BHN (31 Rc)

■ PROPERTIES

• Thermal Conductivity

W m x °K	20	350	700°C
	49.3	40.5	30.1

• Linear Thermal Expansion

µm m x °K	20	350	700°C
	11.0	13.1	14.8

■ WELDING

• Standard welding procedure for SF-1

- Preheat at a temperature in between 500 to 930°F (260 to 500°C)
- Use consumables with the same chemical composition as the part.
- Postheat at 1050°F (565°C)



**SOREL
FORGE**

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