Data Sheet

SOREL FORGE

PLASTIC MOLD STAINLESS STEEL SF-420

■ GENERAL:

AISI-420

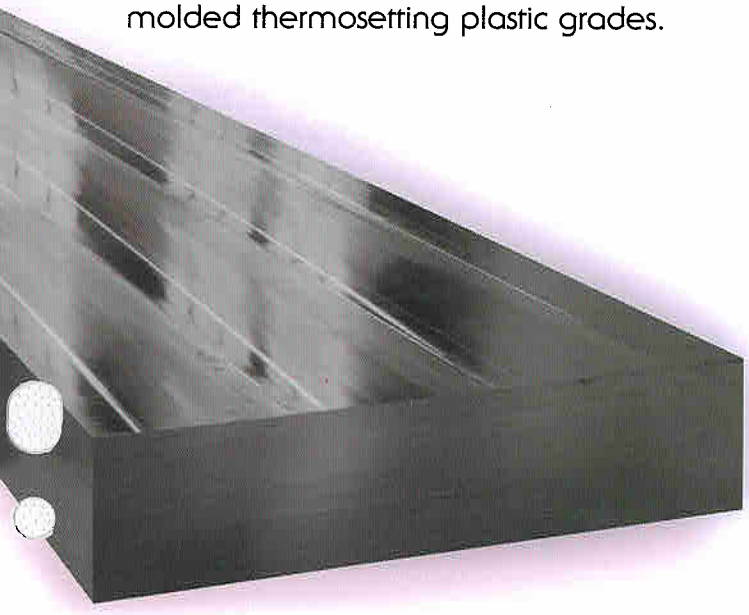
Delivery Condition:

Soft annealed to approx. 229 BHN (20Rc)

Typical Analysis (%)				
C	Mn	Si	Cr	Mo
.35	.50	.50	12.50	.20

SF-420 plastic mold stainless is a superior product for molding vinyl base or other corrosive plastics. It can be used for injection, compression and transfer molding. Maximum corrosion resistance is obtained when the steel is hardened and tempered in accordance with recommendations of this data sheet.

SF-420 is recommended for molding abrasive/filled materials, including injection-molded thermosetting plastic grades.



SF-420 is recommended for molds with long product runs, namely disposable cutlery and containers.

SF-420 is forged using a special densifying process which assures optimum consolidation of centers.

SF-420 is supplied in annealed condition.

SF-420 is available in standard incremental sizes in premachined condition.

SF-420 is weldable. We recommend the procedure described in this data sheet.

SF-420 annealed carries a machinability rating of 60-70% of an annealed 1.0% carbon tool steel, this based on the average cutting speeds for turning, boring, drilling, slab milling and end milling.

TYPICAL APPLICATIONS:

- Mold with long production runs
- Plastic and rubber molds requiring corrosion resistance namely; PVC and PET
- Molds stored or operated in humid environment
- Compression/transfer molds
- Injection mold for thermosetting materials
- Extrusion and pultrusion dies

HEAT TREATMENT

• Stress Relieving

For annealed material, machine to approximately 1/8" (3 mm) of final dimension. Heat the mold at a rate of one hour per inch (25.4 mm) of maximum thickness to 1200°F (650°C). Soak for 1/2 hour per inch (25.4 mm). Cool in furnace to 930°F (500°C) then freely in air.

• Hardening

Preheat temperature : 1250°F (670°C)
Austenitizing temperature : 1850°F (1010°C)
Quench : oil or air
Sizes over 5" (127 mm) should be interrupt oil quenched to insure uniformity of structure. 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.
Hardness : 48 to 50 HRC

Tempering between 800/1100°F (425/600°C) should be avoided.

N.B.: *Protect the part against decarburization and oxidation during hardening. Tempering at low temperature gives a high stress level in the mold and should be avoided.*

• Dimensional Changes

The dimensional changes during hardening and tempering vary depending on temperature, type of equipment and cooling media used during heat treatment. Thus, the tool shall always be manufactured with enough working allowance to compensate for dimensional changes. Use 0.15% as a guideline for SF-420.

WELDING

Good results can be achieved if proper precautions are taken : elevate working temperature, good joint preparation and proper choice of consumables. For best result after polishing and photo-etching use consumables with the same composition as in the mold.

• Standard Procedure for Welding SF-420

Preheat temperature
600/750°F (315/400°C)
Postheat temperature :
Annealed condition : Reanneal
Hardened condition : Temper at 50/70°F (10-20°C) below the original tempering temperature

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