钢铁之家
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全球钢号百科！

Global Steel Grade Encyclopedia

涵盖的行业或国家与地区类别

ASTM 国材料与试验协会
GJB 国家军用标准
SAE 动力机械工程师协会
EU 前欧洲标准化
AISI 美国钢铁学会
DIN 德国工业标准
AMS 国空航天材料规范
ISO 国际标准
JASO 日本汽车标准组织
EN 欧洲标准
JB 国机械行业标准
UNS 统一编号系统
UNI 意大利标准
ASME 美国机械工程师协会
SS 瑞典标准
GB 国家标准
JIS 日本工业标准

DATA SHEET

SHELLDIE®

~AISI H11 - W.Nr. 1.2343 - X37CrMoV5-1

HOT WORK TOOL STEEL

TYPICAL APPLICATIONS

- Tooling for Aluminum Die Casting
- Aluminum and magnesium extrusion dies
- Die inserts and forging dies
- Plastic Mold Dies
- Cores, sleeves and slides

GENERAL

Delivery Condition:
Annealed to 229 BHN Max.
EFVD, ESR or VAR

Non-NADCA: **SD®**
NADCA Grade E: **SDQ® ESR or VAR**

ShellDie® is a high quality tool steel with high impact resistance. They also has good wear and heat checking resistance at high temperature.

SD® is a H11 modified type steel with higher molybdenum for added heat resistance over standard H11. Alloy composition is balanced in order to reduce primary carbide formation for improved fracture toughness.

SD® and **SDQ®** have an excellent combination of high strength and toughness at high temperature and can reach hardnesses typically in the 42 to 52 HRC with standard hardening procedures by most vacuum heat treating operations.

Typical Chemical Analysis - % weight

C	Mn	Si	Cr	Mo	V
0.36	0.55	0.50	5.15	1.85	0.35

SD® is forged using a special densifying process which assures optimum consolidation of centers.

SD® is forged on our largest presses equipped with wide dies assuring maximum deformation during forging process.

SD® is characterized by :

- Improved wear resistance
- Improved heat checking resistance
- Improved fracture toughness
- High temperature strength
- High impact resistance

SD® and SDQ® are 100% ultrasonic tested to very stringent acceptance levels.

SDQ® can be supplied pre-certified to NADCA standard #207 Grade E on request.

DATA SHEET

HOT WORK TOOL STEEL

SHELLDIE®

HEAT TREATMENT

ANNEALING

Temperature: 1500-1550°F (815-845°C)
Rate of cooling: 25°F (15°C) max per hour
Typical annealed hardness: 229 BHN Max.

Key parameter of the NADCA recommended procedure for hardening dies for die casting service are:

HARDENING

Rate of heating: slow
Preheat Temperature: 1200-1300°F (650-705°C)
Hardening Temperature: 1810-1885°F (985-1030°C)
Time at temperature: 30-45 minutes
Quenching to 300°F (150°C)

TEMPERING

Tempering Temperature: 1050°F (565°C) minimum

STRESS RELIEVING

Temperature: 50-100°F (30-55°C) below final tempering temperature and slow cool to 875°F (470°C), then air cool.

Note: Provided technical data and information in this data sheet are typical values. Normal variations in chemistry, size and conditions of heat treatment may cause deviations from these values. We suggest that information be verified at time of enquiry or order. For additional data or metallurgical assistance, please contact us.

SIZE SD®
(Finished / approx.)

Max weight	16 330 kg	36 000 lbs
Max section	0.90 m^2	1 400 sq in
Max width	1 270 mm	50″
Max thickness	760 mm	30″