



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



国材料与试验协会

GJB

国家军用标准



动力机械工程师协会

EU

前欧洲标准化

AISI

美国钢铁学会



德国工业标准

AMS

航空航天材料规范



国际标准

JASO

日本汽车标准组织

EN

欧洲标准

JB

机械行业标准

UNS

统一编号系统

UNI

意大利标准



美国机械工程师协会

SS

瑞典标准



国家标准



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"