

# DATA SHEET



**LATROBE SPECIALTY  
STEEL COMPANY**

Latrobe, PA 15650-0031 USA

Issue 2

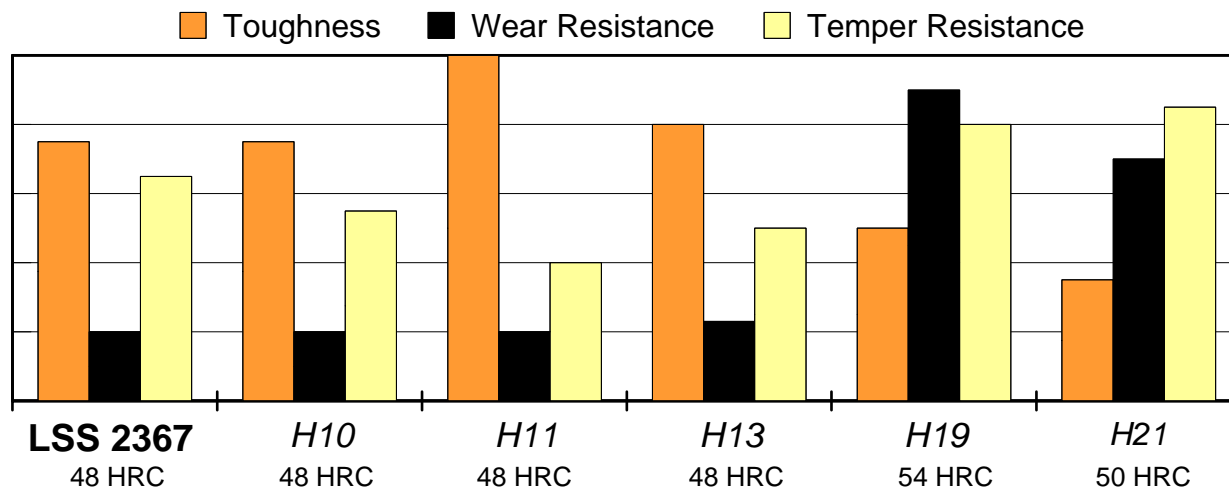
## LSS™ 2367 Hot Work Tool Steel DIN 1.2367

Typical Composition

C	Mn	Si	Cr	Mo	V
0.38	0.45	0.40	5.00	3.00	0.55

LSS 2367 is a chromium-molybdenum hot work steel that is similar to AISI H11 hot work steel, but which contains a higher molybdenum content. The higher molybdenum gives LSS 2367 better hot hardness and temper resistance, along with higher attainable hardness and deeper hardenability than the more common H11 and H13 hot work steels. Typical applications include extrusion tooling, hot forging dies, hot heading dies, hot shear blades, hot punches and mandrels, hot gripper dies, and die casting tooling for copper and brass.

### Relative Properties



### Physical Properties

Thermal Conductivity:

Temperature °F	Btu/hr-ft-°F	Temperature °C	W/m-°C
68	21.0	20	36.4
200	18.5	350	32.2
400	15.8	700	27.5

Machinability: 75-80% of a 1% carbon steel

Coefficient of Thermal Expansion:

Temperature °F	in/in/°F x 10 <sup>-6</sup>	Temperature °C	mm/mm/°C x 10 <sup>-6</sup>
68 - 212	6.62	20 - 100	11.9
68 - 400	7.00	20 - 200	12.5
68 - 600	7.08	20 - 300	12.6
68 - 750	7.12	20 - 400	12.8
68 - 900	7.20	20 - 500	13.1
68 - 1100	7.39	20 - 600	13.3
68 - 1300	7.50	20 - 700	13.5

# LSS™ 2367

## HEAT TREATING INSTRUCTIONS

(See Tech-Topics Bulletin 102 for a more thorough explanation of heat treating.)

### CRITICAL TEMPERATURES

Ae1: 1562°F (850°C)

Ar1: 1540°F (853°C)

### HARDENING:

**Preheating:** To minimize distortion in complex tools use a double preheat: 1150-1250°F (621-677°C), equalize, then raise to 1400-1500°F (760-816°C) and equalize. For normal tools, use only the second temperature range as a single preheating treatment.

**Austenitizing (High Heat):** Heat rapidly from the preheat.

Furnace or Salt: 1850-1975°F (1024-1080°C)

For maximum toughness, use 1850-1885°F (1024-1038°C)

For maximum hot hardness and heat checking resistance use 1950-1975°F (1066-1080°C)

**Quenching:** Air, pressurized gas, warm oil, or salt.

For pressurized gas, a minimum quench rate of approximately 50°F (28°C) per minute to below 1000°F (538°C) is required to obtain the optimum properties in the steel.

For oil, quench until black, about 900°F (482°C), then cool in still air to 150-125°F (66-51°C).

For salt maintained at 1000-1100°F (538-593°C), equalize in the salt, then cool in still air to 150-125°F (66-51°C)

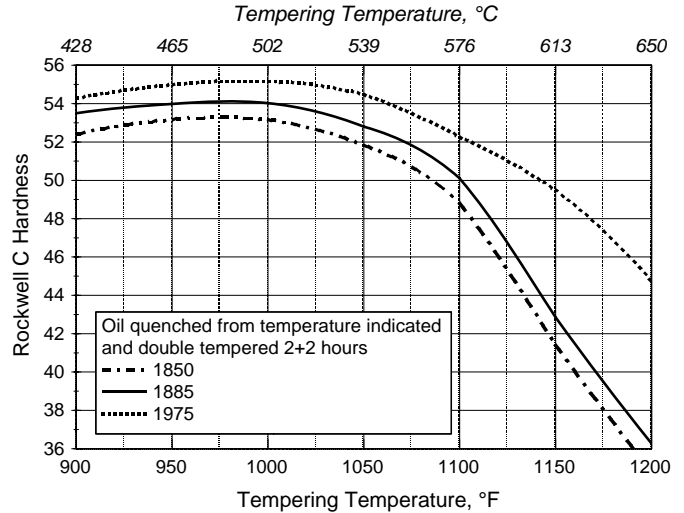
**Tempering:** Temper immediately after quenching. Typical temperature range is 1000-1100°F (538-593°C). Do not temper below 1000°F (538°C). Hold at temperature for 2 hours then air cool to ambient temperature. Double tempering is required.

**ANNEALING:** Annealing must be performed after hot working and before rehardening.

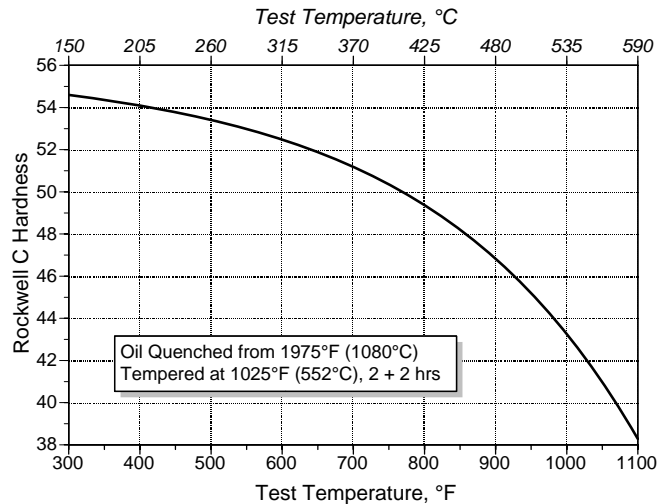
Heat at a rate not exceeding 400°F per hour (222°C per hour) to 1350-1450°F (732-788°C), and hold at temperature for 1 hour per inch (25.4mm) of maximum thickness; 2 hours minimum. Then cool slowly with the furnace at a rate not exceeding 50°F per hour (28°C per hour) to 1000°F (538°C). Continue cooling to ambient temperature in the furnace or in air. The resultant hardness should be a maximum of 235 HBW.

## HEAT TREATMENT RESPONSE

As Oil Quenched from	HRC
1975°F (1080°C), 20 minutes	57
1875°F (1024°C), 45 minutes	56



## HOT HARDNESS



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The data presented herein are typical values, and do not warrant suitability for any specific application or use of this material. Normal variations in the chemical composition, the size of the product, and heat treatment parameters may result in different values for the various physical and mechanical properties.