

DATA SHEET



LATROBE SPECIALTY
STEEL COMPANY

Latrobe, PA 15650-0031 USA

NITRALLOY N™ VAC-ARC® PREMIUM NITRIDING STEEL

Typical Composition	C	Mn	Si	Ni	Cr	Mo	Al
	0.24	0.60	0.30	3.50	1.15	0.25	1.25

GENERAL CHARACTERISTICS

Nitralloy N is an age hardenable nitriding steel. The age hardening capability of the alloy permits the core strength to be developed while the surface is being nitrided. VAC-ARC remelting is employed to provide preferred ingot solidification and superior microcleanliness.

FORGING

Heat uniformly to 2000-2025°F (1093-1107°C). Do not forge below 1700°F (927°C). Air cool after forging.

HEAT TREATMENT

Normalize: 1750°F (954°C) and air cool. Hold at temperature 1 to 4 hours.

Harden: 1650°F (899°C) and oil quench. Hold at temperature for ½ hour per inch of cross section.

Temper: 1200-1250°F (649-677°C) and air cool. Hold for 1 hour per inch of cross section. The tempering temperature should not be below 1200°F (649°C) to realize the maximum benefit of age hardening.

Age Nitride: 975-1050°F (524-566°C). The nitriding temperature, time, and method will vary depending upon the requirements of the final product.

TYPICAL MECHANICAL PROPERTIES (CORE)

	Heat Treatment			
	A		B	
	ksi	MPa	ksi	MPa
U.T.S.	132	910	180	1241
Y.S.	115	793	170	1172
Elongation (%)	22		16	
RA (%)	59		50	
Hardness (HRC)	29		41	

A: 1650°F (899°C), oil quench, temper 1200°F (649°C).

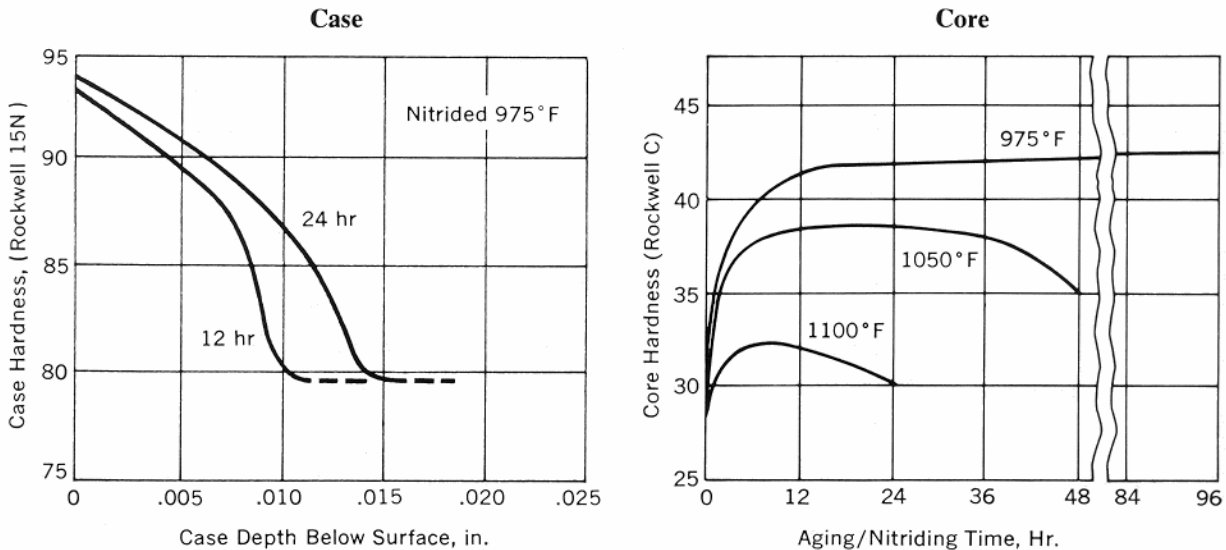
B: A + age at 975°F (524°C) for 20 hours.

NITRALLOY N™ VAC-ARC®

EFFECT OF AGING TEMPERATURE ON IMPACT PROPERTIES

48 Hour Nitriding (Aging) Temperature		Hardness HRC	Charpy V-Notch Impact Value at Room Temperature	
°F	°C		ft-lbs.	Joules
940	504	42	12	16.3
970	521	42	14	19.0
1000	538	40	18	24.4

EFFECT OF AGING / NITRIDING ON CASE & CORE



Pre-Nitriding Treatment: 1650°F (899°C) oil quench, 1200°F (649°C) temper, air cool

APPLICATIONS

Aircraft Gears, Shafts, Pinions, Crankshafts, Cams, Camshafts, Bolts.

SPECIFICATIONS

The following list of industry specifications is offered for general familiarization and cross-reference purposes. This should not be considered a complete listing.

AMS 6475 (Air Melt)
299-947-042 (Bell Helicopter)

FORMS AVAILABLE

Billets; hot rolled round, square, and flat bars; rough turned, centerless ground, or cold drawn bars.



**LATROBE SPECIALTY
STEEL COMPANY**

Latrobe, Pennsylvania 15650-0031 U.S.A.
Phone: (724) 537-7711 Fax: (724) 532-6316
www.latrobesteel.com