

Vendor Acknowledgement of K-Monel Heat Review

1. Recent investigations into mechanical property failures of fasteners manufactured from NiCuAl (K-Monel) material that was produced by Special Metals Corporation (formerly INCO Alloys) of Huntington, West Virginia has found eighty (80) heats of material which may not meet the mechanical property requirements of QQ-N-286 throughout the heat. In 1994, Special Metals Corporation implemented a process change that eliminated the addition of extra aluminum at the toe of each NiCuAl (K-Monel) ingot resulting in the toe portion of the heat being non-homogeneous in comparison to the rest of the heat. Due to cropping practices at Special Metals Corporation, material from the toe of the ingot with non-homogeneous aluminum content was not cropped from production material prior to shipment. A recent study has shown that the aluminum concentration in the toe portion of the ingot could be as low as approximately 2.0% with a corresponding yield strength as low as approximately 40,000 PSI. QQ-N-286 specifies an aluminum content of 2.3% minimum and a yield strength of 90,000 PSI minimum or 85,000 PSI minimum for material $\geq 1"$. As a result of the investigation, the eighty (80) heats listed in Table I are considered suspect of having problems with insufficient aluminum content and an inability to consistently attain the required minimum yield strength.
2. You are requested to review your records of in stock and in process K-Monel material from the Special Metals Corporation for the suspect heat numbers listed in Table I below. You are prohibited from providing raw stock or finished products made from the suspect K-monel heats. If suspect heats are intended to be used, contact the PHNS & IMF contracting officer for adjudication of the material.

Table I - List of Suspect Special Metals Corporation K-Monel Heat Numbers

M00J6KG	M00J7KG	M01J1KG	M02J8KG
M02J9KG	M03J8KG	M04J2KG	M04J6KG
M04J7KG	M06J5KG	M06J8KG	M11J2KG
M11J3KG	M11J4KG	M11J5KG	M15J6KG
M17J2KG	M17J3KG	M17J4KG	M18J7KG
M19J7KG	M21J2KG	M22J7KG	M22J8KG
M23J2KG	M24J5KG	M26J8KG	M26J9KG
M27J9KG	M28J4KG	M30J9KG	M31J9KG
M33J7KG	M34H4KG	M35H0KG	M35J0KG
M35J7KG	M35H8KG	M36H7KG	M36J2KG
M36J3KG	M37J4KG	M39J3KG	M41J1KG
M41J2KG	M41H3KG	M41J3KG	M41J7KG
M41J8KG	M44J4KG	M44J6KG	M45J2KG
M45J8KG	M45J9KG	M46J7KG	M52H9KG
M61J8KG	M61J9KG	M62J5KG	M64J4KG
M64J5KG	M64J6KG	M67H2KG	M67J4KG
M69J1KG	M70J6KG	M73J4KG	M76H6KG
M80H2KG	M80H3KG	M84H9KG	M85H0KG
M88H6KG	M88H7KG	M89H5KG	M89H6KG
M92H0KG	M95H7KG	M97H8KG	M99H3KG

K-Monel Raw Stock Requirements

QQ-N-286, Nickel Copper-Aluminum (K-monel)

1. All nickel-copper-aluminum alloy (K-500) raw stock, and K-500 raw stock used in the manufacture of finished products shall be procured to QQ-N-286 Revision G with slow strain rate tests done by the following approved laboratories:

- a. Huntington Alloys, a Special Metals Company
3200 Riverside Drive
Huntington, WV 25705
- b. Metallurgical Consultants, Inc.
4820 Caroline
PO Box 88046
Houston, TX 77288-0046
- c. Naval Surface Warfare Center, Caderock Division
Code 614
9500 Macarthur Blvd
West Bethesda, MD 20817-5700
- d. Teledyne Allvac
2020 Ashcraft Ave.
Monroe, NC 28110
- e. Mannesmann Rohrenwerke
Mannesmann Forschungsinstitut (MFI)
Postfach 251160
47251 Duisburg
Germany

f. Westmoreland Mechanical Testing and Research Inc.
Attn: Andrew Wisniewski
P.O. Box 388
Youngstown, PA 15696-0388

g. ThyssenKrupp VDM USA, Inc.
Attn: D. C. Agarwal
11210 Steeplecrest Drive, Suite 120
Houston, TX 77065-4939
Phone: (281) 955-6683