THIS ARTICLE COULD SAVE YOU A LOT OF MONEY

NEA is proud of the quality of metal we serve to the glass & ceramic hermetic seal industry, providing the opportunity for making the best seal.

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High Reliability

By Dick Geoffrion, President, N.E.A., Inc., Oakland, NJ

If you buy fabricated parts in the glass-to-metal seal industry, you may have already had problems. Something that is frequently happening to some buyers of such fabricated parts: they have been hurt because of the quantity of inferior material that is on the market.

You must have and certainly deserve to receive only parts made with high reliability material for your hermetic seals - such as those made with our F15 Alloy (Kovar). Here's why.

Some materials are coming on the market from sources that simply do not understand the metallurgical quality needed to manufacture a high-reliability glass-to-metal seal. Most reroll service centers do not understand the necessary criteria of the glass-to-metal and ceramic-to-metal industry. Reroll distributors quite often change the temper, the grain structure, the hardness, transformation properties, and will even occasionally deposit copper or other metallics on the surface from rolling mills that have previously rolled many other alloys, and have not been cleaned between jobs.

Such items are very often not reported on the Certificate of Conformance that you receive. Instead, they copy and send to you the parameters given to them by the original producer.

One result of poor product from reroll sources is outgassing which in turn could cause excessive bubbles in seals or plating blisters which might cause the finished product to fail.

Another result: transformation property changes could cause the glass seal to fail.

Foreign metallic deposits on the surface could affect the oxidation process which will diminish the strength of the seal and will fail standard hermeticity tests.

And finally, grain growth could cause trouble in forming.

Material purchased from fabricators of stampings, deep draw, lead frame, base and lid suppliers or special machine assemblies represents still another problem category.

Unfortunately, many of these suppliers do not understand the metallurgical quality needed to manufacture a glass-to-metal or ceramic-to-metal seals. Some guidance to your part supplier is needed with a recommendation like NEA as the supplier of quality material for glass sealing applications. Many innocently buy whatever is out in the market not knowing the problems that bad or marginal material could cause you, the producer of the hermetic glass-to-metal seals

Inferior material has hurt buyers of fabricated parts in the glass-to-metal seal industry.

Sintered Powder - Real Trouble

Material from sintered, powder metallurgy and extruded product directed at this industry create problems all their own. Powder metallurgy sources have caused many a company great loses over the years because of outgassing and plating problems. Another major problem has been the use of binders to extrude the material which is part of the manufacturing process.

The process used to drive the binders out has a record of inconsistency which wreaks havoc with porosity and outgassing, blisters in plating and potentially leaky seals can and will fail when put into use.

Another major problem has been in the area of oxidizing the material. Many people have experienced weak seals because they have a problem putting on the proper oxide. Who needs something that might make a seal that will eventually leak because the poor oxide failed to perform the proper interface in forming the hermetic seal? NEA material is vacuum melted and will eliminate these problems when properly processed.

With the end of the Cold War, some material has been entering the U.S. from third-world and former communist countries. From what we have seen, these sources are selling material with many inclusions, excessive transformation, poor grain size, end stringers, surfaces with lines, scratches, indentations and deep draw breakout, which will cause many failures.

Beware of material that is AOD (Argon Oxygen Decarbonization) processed; this material is not acceptable as you will experience blisters in plating, inclusions, and outgassing with this nonhomogeneous form of making ASTM F15 Alloy (Kovar).

National Electronic Alloys Inc. supplies nickel/iron/cobalt alloy, (Kovar), ASTM F15 Alloy 29/17 Alloy material that is vacuum melted or vacuum remelted. Our material is more homogeneous and stable. We supply more Kovar from stock that is certified to -196°C transformation-free material than anyone else we know of.

Semiconductor Background

Working in both the semiconductor and the glass-to-metal sealing industry has taught us to understand the quality of the product needed to make good seals. Our company only offers top quality product since we know that when you invest your money in the finished product, you want to maximize your yields and do not want to waste money on product that could give you a defective matched seal. The material we sell certifies to no transformation down to and including -196°C, which represents significantly better quality than what is called for in ASTM and MIL I specifications. This material quality is a direct result of our using the latest in computer-controlled vacuum-melting technology. The computers assist the manufacturer in analyzing and adjusting the heat while the metal is in its molten form - putting three major elements together in an alloy that is much more precise, homogeneous and stable than had previously been possible. This vacuum-processed, highly stable material helps the processor to make better parts in addition to giving the seal company a better, more stable alloy with which to work. This high-quality material is a result of the demand for a more stable material for the military, armament, aerospace, semiconductor, hybrid, computer and communications industries.

There are those in the metals industry who will argue that it is not necessary to require material certified to -196°C. The reason they make this contention is because it is simpler for them to make the metals certified for -78 to -80°C and pass transformation tests. Because we are a supplier to the glass and ceramic seal producer, these people know that our product is manufactured using the latest, cutting-edge, high-quality technology. The result: material that is metallurgically superior to anything else out there, and will assure you that you have done the very best that is possible for your own customers.

For more information, contact: National Electronic Alloys, Inc., 3 Fir Court, Oakland, NJ 07436. Phone: 800-524-4309 or 877-260-9333 or 201-337-9400; fax: 201-337-9698. E-mail: sales@nealloys.com. Web: www.nealloys.com.

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