Nickel and Jewellery

Nickel Stewardship

Nickel has a long history of being used in precious metal alloys and in inexpensive costume jewellery.

In precious metal jewellery, nickel along with other metals such as zinc, manganese, and palladium are added to gold in varying amounts to alter the base colour of gold to produce white gold. In addition to being a whitening agent for white gold, nickel also increases the durability and strength of the piece.

Costume jewellery items are commonly plated with nickel to obtain a bright finish. Nickel can also be found in inexpensive jewellery in the base metal for finishes such as chromium, gold, or rhodium.

Nickel has long-been recognised as an element that when in direct contact with the skin for prolonged periods of time can cause an allergic reaction amongst individuals already allergic to nickel or, less commonly, can lead to the development of an allergy to nickel. This advisory note seeks to guide manufacturers and consumers of precious and inexpensive jewellery on how to minimise the risk of nickel-related contact dermatitis.

Assessing the risk

Two critical factors should be taken into account when assessing and managing the risks associated with nickel allergy contact dermatitis. Firstly, the ability and rate at which a material surface releases nickel when exposed to sweat; and secondly, the nature of the contact with the skin.

The level of risk therefore depends on a number of factors – pattern of article use, the environment in which the jewellery article is worn, and the degree of susceptibility of the individual to nickel dermatitis.

If the jewellery is exposed to a healing wound, as may be the case with earrings and body piercing jewellery, there are special considerations to be made. See separate “Nickel and Body Piercing” Advisory Note that deals with this case in greater detail.

Recommendations

For manufacturers of precious metal jewellery:

In manufacturing jewellery articles for the EU market, comply with the EU Nickel Directive [94/27/EC, as amended]. The EU Directive requires that the rate of nickel release for jewellery that comes into direct and prolonged skin contact not exceed 0.5 micrograms per square centimetre per week.

Be aware that different nickel-containing white gold alloys will have different properties and thus different rates of nickel release when in direct and prolonged contact with the skin.

Typically, high-palladium white gold with a palladium content of 10% or more will have nickel release rates that comply with the EU Nickel Directive.
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For products such as external parts of watchcases, watch straps, or posts on earrings, use an appropriate grade of stainless steel. Type 304L or Type 316L are the most common of these.

**For consumers:**
If you are in the European Union: All products intended for direct and prolonged contact with the skin should comply with the Nickel Directive and will be safe for the vast majority of consumers.

If you are not in the European Union and are allergic to nickel or wish to limit your skin contact exposure to nickel:

- Examine the product literature for information on possible nickel content. If there is no nickel present the product literature will often say so.
- When there is doubt about the presence and form of nickel used for skin contact surfaces, ask the retailer if the product in question would be acceptable for sale in the EU. If the retailer cannot provide the necessary information, it becomes a judgement for the consumer whether to proceed with the purchase.
- In the case of white gold jewellery, ask about the palladium content of the white gold. Levels of 10% or more are desirable.
- In the case of inexpensive gold-plated jewellery, be aware that there may be nickel underneath the gold and that the gold layer will be thin and soft and subject to wear.

Advice for consumers on this and other subjects is also available on our website www.nickelinstitute.org.

**Nickel Institute policy and practice**
As part of the Nickel Stewardship programme, the Nickel Institute proactively engages with relevant associations such as the Council for Responsible Jewellery Practices, and with retailers such as Wal-Mart, to educate and communicate information about the general topic of nickel allergic contact dermatitis.

Much research and peer review work has been undertaken in collaboration with the industry about the general topic of nickel allergic contact dermatitis. Current work includes the investigation of alternative nickel surface formulations that would pass the EU Nickel Directive standard for nickel release while preserving the aesthetic look of nickel.

The Nickel Institute participates in CEN (the European standards organisation) work on the standards associated with the implementation of the Nickel Directive. The Nickel Dermal Advisory Panel (NDAP) is an international group of dermatologists that advise the Nickel Institute on matters of dermal research and clinical practice.

The Nickel Institute will work with any individual, industry sector, dermatological association or government agency to increase knowledge, improve practices or educate consumers. The Nickel Institute supports the use of regulation similar to that that exists in the European Union to reduce direct and prolonged skin contact with high nickel release materials in consumer goods.

**Useful reference information**
Further detailed information on the topic of contact dermatitis, further detailed information is contained in 'Nickel Allergic Contact Dermatitis - Statement of Position of the Member Companies of the Nickel Institute’ and ‘Nickel Allergic Contact Dermatitis – Basic Science Paper’, available on our website www.nickelinstitute.org.

If you have any questions or inquiries regarding the use of nickel in the manufacture of jewellery or consumer items, please direct them to Peter Cutler at: pcutler@nickelinstitute.org.

Be aware that different nickel-containing white gold alloys will have different rates of nickel release. To avoid nickel allergy, make sure that the jewellery article complies with the EU Nickel Directive.