
Tanaka Precious Metals Commences Supply of Ultra-compact Crystal Oscillator Package Bonding Material Able to Halve Material Cost on March 22

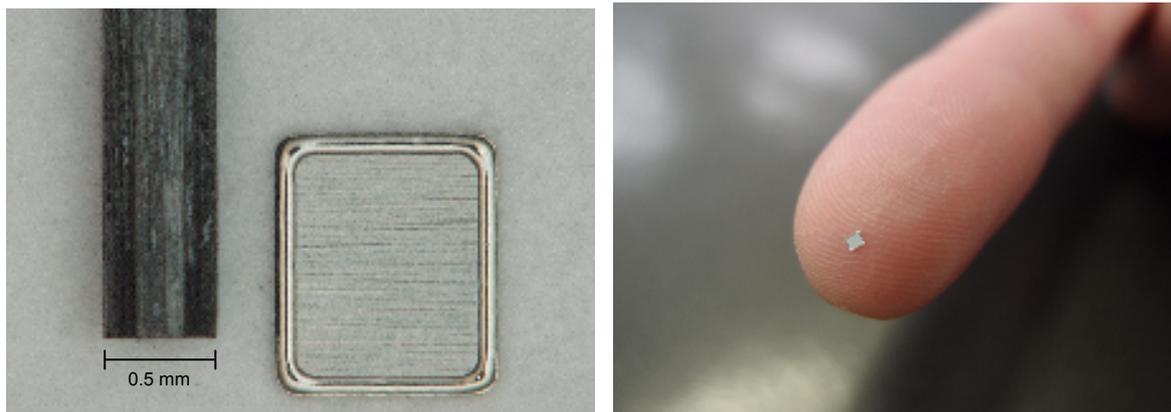
- Providing both high-density mounting and reduced material cost for electronics such as smartphones and for 1210 size -

Tanaka Holdings Co., Ltd. (a company of Tanaka Precious Metals, Head office: Chiyoda-ku, Tokyo; President & CEO: Hideya Okamoto) today announced that Tanaka Kikinzoku Kogyo K.K. (Head office: Chiyoda-ku, Tokyo; President & CEO: Hideya Okamoto), which operates the Tanaka Precious Metals' manufacturing business will commence the provision of samples of gold-tin alloy bonding material (AuSn alloy lid) which is able to seal ultra-compact crystal oscillators^(*) with a mounting area of 1.2 mm x 1.0 mm at half the material cost of conventional products from March 22 (Friday).

This AuSn alloy lid is a component to manufacture the so-called 1210-size crystal oscillators with a mounting area of 1.2 mm x 1.0 mm. The conventional 1210-size AuSn alloy lid Tanaka Kikinzoku Kogyo has provided as a prototype had a washer frame width of 0.15 mm and thickness of 0.015 mm. By combining high-precision press technology and precise rolling technology, the new product is able to provide the same air tightness and bond ability as the conventional product with a frame width of 0.10 mm and thickness of 0.010 mm. With the general composition of AuSn21.5 (78.5% Au, 21.5% Sn), it is possible to reduce material cost by approximately 53% compared to conventional products.

■ **With the development of high-density mounting of electronics, sealing methods using AuSn alloy are now widely used**

Lid is a component for vacuum sealing crystal oscillators used to control the electronic signals in mobile phones, smartphones, PCs and car-mounted devices. The miniaturization demand of the devices is required which associated with high-density mounting of electronic equipment has accelerated in recent years. The crystal oscillators mass-produced currently are generally 1.6 mm x 1.2 mm (1612-size), but the 1210-size is scheduled to be mass produced as the next-generation crystal oscillator in 2014.



The newly developed 1210-size crystal oscillator AuSn alloy lid

There are various methods for air-tight sealing of ceramic packages, and until now, methods using cheap lid materials, such as seam welding and direct seam method were the mainstream. However, because such methods have low productivity and there are space restrictions on roller electrodes used for welding, it has become difficult to seal compact size items (2.0 mm x 1.6 mm or less) as it has become necessary to be more compact and have a lower profile. Because of this, many manufacturers begin to adopt sealing methods using "furnace brazing" where the materials being welded are heated in a furnace. Sealing using furnace brazing enables sealing of compact items because electrodes are not used, and has the advantage of being able to provide high productivity due to the ability to perform sealing in batches. However, because AuSn alloy is used as the bonding material, the high cost of Au has been indicated to be an issue.

■ Successful development of a lid able to seal 1210-size items at half of the material cost

In order to resolve these issues, Tanaka Kikinzoku Kogyo has established manufacturing technology which is able to accurately position a 0.010 mm-thick AuSn alloy washer with a 0.10 mm frame width on a small 1.2 mm x 1.0 mm kovar base material and control the binding shape as a lid. Thus, this enables the same sealing reliability as conventional products while having a narrower frame width (0.15 mm→0.10 mm), and thinner (0.015 mm→0.010 mm) than conventional products. Because of the following features of this AuSn lid, it can demonstrate a high level of sealing reliability at a low material cost.

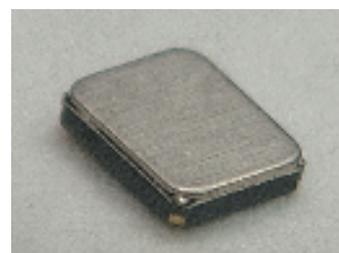
Features of the new 1210-size AuSn alloy lid

- Material cost is reduced by half while maintaining the same sealing reliability as conventional products
- AuSn alloy possesses excellent wettability and sealing reliability with less problems such as the occurrence of voids
- The alloy composition can be adjusted to match the conditions of use
- Due to the use of a design that prevents AuSn alloy flowing into the package, it provides a high level of sealing reliability with only the minimum necessary amount of alloy.

Tanaka Kikinzoku Kogyo will supply these 1210-size AuSn alloy lids to crystal oscillator manufacturers in Japan and overseas, and is aiming for 30 million yen in monthly sales as processing fee when mass production in 2014. Development will continue to improve sealing performance and support even more compact sizes such as 1008 and 0806 size in the future.

(*1) Crystal oscillator

A timing device for emitting a regular electric signal which plays the role of a pacemaker for ensuring the correct operation of various devices on a board. They are always installed on the boards of a variety of electronic equipment such as mobile phones, smartphones, PCs, car-mounted equipment, communication modules (Bluetooth near field communication standard, etc.) and LCD televisions.



■**Tanaka Holdings Co., Ltd. (Holding company of Tanaka Precious Metals)**

Headquarters: 22F, Tokyo Building, 2-7-3 Marunouchi, Chiyoda-ku, Tokyo

Representative: Hideya Okamoto, President & CEO

Founded: 1885

Incorporated: 1918

Capital: 500 million yen

Employees in consolidated group: 3,869 (FY2011)

Net sales of consolidated group: 1.064 trillion yen (FY2011)

Main businesses of the group:

Manufacture, sales, import and export of precious metals (platinum, gold, silver, and others) and various types of industrial precious metals products. Recycling and refining of precious metals.

Website: <http://www.tanaka.co.jp/english>

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Representative: Hideya Okamoto, President & CEO

Founded: 1885

Incorporated: 1918

Capital: 500 million yen

Employees: 1,663 (FY2011)

Sales: 1.036 trillion yen (FY2011)

Businesses:

Manufacture, sales, import and export of precious metals (platinum, gold, silver, and others) and various types of industrial precious metals products. Recycling and refining of precious metals.

Website: <http://pro.tanaka.co.jp/en>

<About the Tanaka Precious Metals>

Established in 1885, the Tanaka Precious Metals has built a diversified range of business activities focused on the use of precious metals. On April 1, 2010, the group was reorganized with Tanaka Holdings Co., Ltd. as the holding company (parent company) of the Tanaka Precious Metals. In addition to strengthening corporate governance, the company aims to improve overall service to customers by ensuring efficient management and dynamic execution of operations. Tanaka Precious Metals is committed, as a specialist corporate entity, to providing a diverse range of products through cooperation among group companies.

Tanaka Precious Metals is in the top class in Japan in terms of the volume of precious metal handled, and for many years the group has developed and stably supplied industrial precious metals, in addition to providing accessories and savings commodities utilizing precious metals. As precious metal professionals, the Group will continue to contribute to enriching people's lives in the future.

The eight core companies in the Tanaka Precious Metals are as follows.

- Tanaka Holdings Co., Ltd. (pure holding company)
- Tanaka Kikinzoku Kogyo K.K.
- Tanaka Kikinzoku Hanbai K.K.
- Tanaka Kikinzoku International K.K.
- Tanaka Denshi Kogyo K.K.
- Electroplating Engineers of Japan, Limited
- Tanaka Kikinzoku Jewelry K.K.
- Tanaka Kikinzoku Business Service K.K.