

Environmentally-compatible low-melting vanadate glasses awarded the Environment Award



The lead-free low-melting point vanadate glasses developed

Hitachi, Ltd. and Hitachi Chemical Company, Ltd. were awarded the 38th Environment Prize co-sponsored by The Hitachi Environment Foundation and The Nikkan Kogyo Shimbun, Ltd., for the development of environmentally-compatible low-melting vanadate glasses.

■ Features of the technology awarded

Lead-free low-melting vanadate glass was developed which can be used as adhesives to join materials during electronic component assembly at a low temperature of 350-400°C.

The glasses developed can flexibly control their thermal expansion coefficient, the ratio of volume increment corresponding to rising temperature, thus allowing it to fit with various materials such as ceramics, glasses, semiconductors, and metals which have differing coefficients. Due to this feature, these glasses are expected to be applied as adhesives and coatings for high-performance electronic devices requiring high air-tight seals and high reliability such as crystal devices and IC packages.

Trial samples of the glass have been provided in powder and paste form, and it is expected to be available on the market within this financial year.

A word from the development team

We have improved water resistances of the glasses by modifying their microstructures. The glasses have attracted much attention as an eco-friendly alternative to harmful low-melting lead glasses and expensive gold-tin eutectic solders.