

Materials field

Hitachi Research Laboratory

Department of Green Materials and Process Research

Hitachi, Ltd., web site [26th Nov 2012 News Release] <http://www.hitachi.com/New/cnews/121126a.html>

220-300°C low-melting glass for hermetic sealing

Gold-tin solder level temperatures achieved



【Achievement】

Hitachi, Ltd. and Hitachi Chemical Co., Ltd. today announced the successful joint development of a 220-300°C low-melting temperature glass ("low-melting glass"). This glass was developed as a low temperature sealant which does not contain regulated materials*1 such as lead which presents a high environmental load or easily vaporized halogens such as fluorine or iodine.

*1 Regulated materials: Materials regulated by RoHS, REACH, etc.

■ Characteristics

1. A new technique was developed to control the glass-network structure to allow the stable introduction of silver ions with the effect of significantly reducing the melting temperature to 220-300°C.
2. Sealing temperature control was achieved by adjusting the amount of silver ion introduced into the glass structure.
3. Superior water/vapor resistance was achieved by reducing cations which easily bond with water molecules.
4. Features of the glass developed
 - (a) Does not contain lead or halogens.
 - (b) May be heated with various heat sources such as hot plates, infra-red lamps, various lasers, etc.
 - (c) Able to be heated and used as a seal in atmosphere, vacuum or in nitrogen gas, due to a glass structure composed of only oxides.

■ Plan

The Hitachi Group will continue to actively pursue the development and practical application of new technologies to reduce environmental load.