liquid bright gold resinate

GG 991BD-H H for spray

Heraeus Precious Coatings is a global manufacturer of precious metal decoration products for ceramics and glass. Heraeus profits from over 100 years experience in ceramic and glass decoration designs, which has always made the department a pioneer in the development of precious metal colours. Modern precious metal preparations have to meet high demands on different types of substrates – such as on porcelain, tiles, drinking glasses, flacons and bottles. Decorations have to achieve good mechanical and chemical resistance such as dishwasher durability.The products supplied by Heraeus Precious Coatings include: Bright gold and platinum products, silk-matt gold and platinum products, burnish gold and platinum products, lusters and metallo-organic preparations for technical use.

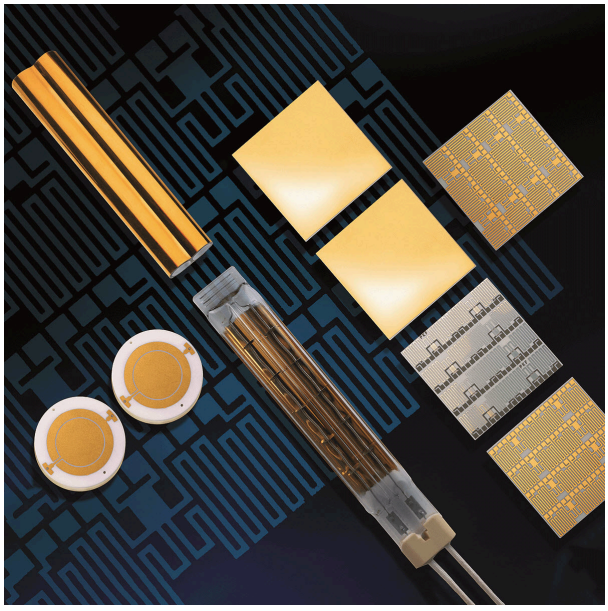
1 General information

GG 991BD-H T is a sprayable metallo organic gold solutions typically used on metal alloy substrates like 625 Inconel, titanium alloy or stainless steel. It is typically used in combination with a “barrier solution” acting as a primer. Such solution like RL A4841-H/2 BLUE H is sprayed first and the gold layer is applied on top. The barrier solution assures a good firing of the gold on top and improves its adhesion onto the metal substrate. The gold film created with GG 991BD-H T is highly reflective for infrared radiation and resistant to high temperatures.

2 Standard firing range

Substrate	Firing range [°C]
625 Inconel	450-620
stainless steel	450-620
aluminum alloy	450-620

The firing result depends on the firing temperature, the soak time and the total cycle of the firing as well as on the type of substrate. For an optimal firing result we recommend pre-tests under the users own individual conditions.



Directly to the product:

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3 Properties of the product

The major characteristics of a Heraeus precious metal preparation are determined by its production recipe. From each lot produced, we take a sample and check defined characteristics.

Form:
Liquid gold for spraying

Viscosity:
0,5 - 50mPas (20°C, D=50s-1)

Solid content:
5,5% ± 0,2%

Au Coverage:
Approximately 400cm²/g (fired film thickness at about 0,1µm)

3.1 Processing

We deliver GG 991BD-H T ready to use.

3.2 Storage

Liquid golds are subject to an ageing process. Therefore, we recommend using the material within 9 months. The material should be stored at room temperature (20°C). Cool storage – but no freezing – has a positive impact on the shelf life.

3.3 Consumption

The material consumption depends on the thickness of the applied precious metal layer. Under our conditions, the consumption is approx. 0,15 to 0,30g/100 cm².

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4 Application of the material

4.1 Preparation for the decoration

Work in a well-ventilated room. Good printing conditions occur at a room temperature of 20 to 25°C.

4.2 Preparation of the substrate to be decorated

Make sure that the surface of the object to be decorated is clean and dry. Dust, fingerprints and water condensation can affect the decoration while firing. Take care that the objects to be decorated are not taken from a cold store into a warm shop. A fine condensation film may occur, which is not visible to the naked eye. This results in firing disturbance (pinholes) in the fired precious metal decoration. Allow enough time so that they can adjust to the decoration room temperature.

4.3 Recommendations for the usage

- Do not shake the material before usage. The material might have built minor settlement, especially after a longer period of storage, which should not be shaken up. Had the material been stored in a fridge, please give it a bit time to adjust to the room temperature before starting to use it.
- First spray of the barrier solution for example RL A4841-H/2 BLUE H acting as primer and adhesion promoter. The right deposit of the barrier solution is important for the success of the system. The layer should neither be too thin nor too thick. You will need to find the optimal application thickness by own tests under your individual conditions.
- We recommend to fire the barrier solution at 610°C, with a 20 minutes heat up and 10 minutes soak time.
- Spray of the liquid metallo organic gold GG 991BD-H T. Take care that you apply the material in a homogenious layer.We recommend to fire the liquid gold at 610°C, 45 minutes heat up an 10 minutes soak time.

4.4 Firing

- During the first heating phase the organic components of the preparation burn off. This process is completed at approx. 400°C. The gold film is formed. A constant, slow temperature increase, enough oxygen and sufficient ventilation are decisive for the quality of the fired precious metal decoration.
- The firing profile considerably influences the mechanical and chemical properties of the fired decoration.
- The rate of cooling has no major influence on the quality of the gold decoration, unlike the firing temperature and soak time. However, the firing process should not be stopped too abruptly after the soak time. If the rate of cooling is too fast, there may be a danger of damaging the article (cracks and broken glass). Typical defects, root causes and countermeasures to prevent them

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5 Complicance to regulation

The properties of the product are determined following standardizes laboratory test procedures. For optimal results the material should be fired in a profiled furnace supplied with dried, hydrocarbon and other contimaninant free air.

5.1 REACH (SVHC)

The material is REACH (SVHC) compliant according to the latest ** Annex XIV to Regulation (EC) of the European Parliament and of the council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (“REACH”) by European Chemicals Agency and its subsequent amendments; the material does not contain any substance listed in Annex XIV.

5.2 RoHS

The material is RoHS compliant according to the latest ** Directives (European Union) of Restriction of Hazardous Substances (“RoHS”) and its subsequent amendments (including the exceptions related to Pb)

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The statements concerning our products correspond to our current knowledge and experience. It is the obligation of the purchaser to examine the usefulness of the products in its intended use in each individual case. In order to prevent production losses the user has to test the preparations in connection with every other material being involved in the production process and has to be satisfied that the intended result can be consistently produced.