



## Gold-on-Flux-System for Glass

### 1 General Information

Bright precious metal decorations on a silk matt glass surface can be achieved with the Heraeus Gold-on-Flux-System.

### 2 Firing Range

Product	Firing range
Lead free flux H 50201	600-620°C / 1112-1148°F
Lead free flux H 35054	600-630°C / 1112-1166°F
Lead containing flux H 30007	580-600°C / 1076-1112°F
Precious metal preparation	480-520°C / 896-968°F

### 3 Processing

#### 3.1 Selection of Flux and Precious Metal Paste

The choice of the flux and the precious metal paste is dependent upon the type of decoration method used. Two decoration methods are to be distinguished:

- The precious metal preparation can be printed accurately on the flux underlay

In this case, the lead free flux underlays H 50201 and H 35054 as well as the lead containing flux underlay H 30007 can be used in combination with the precious metal preparations listed in our product overview.

- A very finely drawn flux print is to be overprinted with a precious metal preparation. It cannot be avoided that the precious metal preparation might extend beyond the flux underlay in some places.

If the lead free flux underlays H 50201 and H 35054 are used in combination with the recommended precious metal preparations, the precious metal surface which extends beyond the flux underlay will also be matt and will adhere securely to the silk matt glass.

If, on the other hand, the lead containing flux underlay H 30007 is used instead, in combination with the recommended precious metal preparations, the precious metal which extends beyond the flux underlay can be removed mechanically or in an ultrasonic bath.

#### 3.2 Mixing the Flux Underlay

The flux underlay should be mixed with screen printing medium Nr. 221 or Nr. 238 (for gilding in one fire). The recommended mixing ratio is:

Lead containing flux H 30007: 100 parts by weight flux : 40 - 50 parts by weight medium  
 Lead free flux H 50201 / H 35054: 100 parts by weight flux : 50 parts by weight medium

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.

### 3.3 Printing the Flux Underlay

We recommend a 220-VA-steel screen for printing the flux underlay. If thicker flux underlays are to be printed (eg. 77-48 polyester screen) it is advisable to carry out extensive firing tests before beginning production.

### 3.4 Dry (to touch)

### 3.5 Firing the flux underlay (see Firing Range)

### 3.6 Printing the precious metal preparation

We recommend 100-40 or 130-34 polyester screens.

### 3.7 Firing the precious metal preparation

Firing range approx. 480-520°C / 896-968°F

## 4 Frequent Faults, Their Causes and Ways of Avoiding Them

Fault	Possible Cause	Remedy
Precious metal decoration is cracked.	firing temperature is too high / soak time is too long	check the firing conditions and the firing temperature and / or reduce the soak time
Bad printing properties of the flux. Flux shows structure of the screen.	viscosity is too high	add screen printing medium
Contours of printed flux are not sharp.	viscosity is too low	use less screen printing medium
The fired precious metal film does not stick to the flux underlay.	firing temperature is too low / soak time is too short	check the firing conditions and the firing temperature and / or increase the soak time
Precious metal extending beyond the flux underlay cannot be removed mechanically or in the ultrasonic bath.	precious metal preparation is not suitable	choose one of the products listed in our product overview
	firing temperature is too high	reduce the temperature when firing the precious metal preparation
Dull precious metal surface.	firing result of the fired underlay is matt	increase the temperature when firing the flux underlay
	inappropriate combination of flux underlay and precious metal preparation	choose one of the products listed in our product overview

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## 5 Products

### Precious Metal Preparations

Colour	Product	Precious Metal Content	Glass	Lead Crystal (firing temperature approx. 540°C)	Coated glass	Remarks
yellow	GG 5121	10+12%	●			-
yellow	GGP 2027	8-12%	●		●	very compatible on various glass compositions
yellow	GGP 2027/3	8+10%	●		●	high viscosity
yellow	GGP 1100 D	8,5%	●	●		-
platinum	GP 5113	10,5%	●	●		-
platinum	GP 5150	10,5%	●			
platinum	GPP 4007	8%	●	●	●	very compatible on various glass compositions

### Special Underlay / Flux

Number of Colour	Colour	Firing temperature (approx.)	Optical finish	Contains silver	Lead free	Cadmium free	Resistant	Gilding in one fire	Gilding in two fires	Remarks
H 50201	transparent	580°C	bright		●	●		●	●	Lead free flux
H 30007	transparent	580°C	bright			●			●	Lead containing flux

### Auxiliary Material

Screen Printing Medium	Viscosity <sup>1)</sup>	Solids Content (approx.)	Thinner	Porcelain	Bone China	Vitreous China	Earthenware	Glass	Enamel	Remarks
Nr. 221	120-130 / 4 mm	46%	V 193	●	●	●	●	●	●	Medium
Nr. 238	55-65 / 3 mm	50%	V 63		●	●	●	●	●	Medium

1) Flow time in seconds measured in a DIN cup, temperature: 20°C

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