

## Lustres and Effect Lustres

### for the Decoration of Porcelain, Earthenware, Enamel, Tiles and Glass

Lustres are varnish-like preparations, based on metal and/or precious metal containing organic compounds, with resin solutions as film formers. When fired on porcelain, earthenware, enamel, tiles or glass they produce very thin, intensive colored and lustrous layers, which give them their metallic iridescent finish.

They are classified according to color shade and precious metal content, as well as according to their special effects, as indicated by their classification as:

- crackling or marbling lustrous
- running lustrous
- halo lustrous

### PRODUCT RANGE

CerDecOr Lustre preparations and decoration auxiliaries are listed in the following tables:

- **Lustres for Brush Application**
- **Lustres for Screen-printing**
- **Sanitary Lustres for Screen-printing**
- **Craquelling Lustres and Marbling Lustres**  
Craquelling effect: development of fine white veins and Lustre fields of various sizes with colored shadows.  
Marbling effect: development of colored, net-like veins of varying size
- **Running Lustres**  
Effect: development of droplike streams
- **Halo Lustres**  
Effect: development of insular structure with colorful margins.
- **Decoration Auxiliaries**

The tables give information on the color shade and important characteristic features, and on the body for which these preparations are best suited. Please note the following abbreviations:

<b>GG</b>	=	Bright Gold	<b>PG</b>	=	Burnish PM Preparation
<b>GZ</b>	=	Bright Lemon Gold	<b>MG</b>	=	Matt PM Preparation
<b>GP</b>	=	Bright Platinum/ Palladium	<b>LU</b>	=	Lustre
<b>PZ</b>	=	Porcelain	<b>SG</b>	=	Earthenware
<b>GS</b>	=	Glass	<b>EM</b>	=	Enamel
<b>FL</b>	=	Tiles			

## PRECIOUS METAL CONTENT

Lustres can contain up to 6 % gold as well as silver, platinum and palladium. The **CerDecOr** product range contains both precious metal lustres and lustres without precious metals.

## CONSISTENCY

The variety of application techniques as well as the number of different types of body to be decorated makes it necessary to supply several different consistencies to obtain optimal processing and firing characteristics.

Lustre preparations processed by **spray gun**, and **brush** require low viscosity ( $\leq 200$  mPa·s). Lustre preparations processed by **screen-printing** or other **mechanical application methods** require high viscosity (2.000-20.000 mPa·s).

If desired, suitable thinning oils can be added to adjust viscosity to meet individual requirements.

## QUALITY

In accordance with the quality management system of Ferro's Color and Glass Performance Materials Division, which has been awarded the **DIN EN ISO 9001** certificate, all preparations have to pass stringent quality tests after production.

The following properties are tested:

- Metal Content
- Mechanical Resistance
- Processing Properties
- Firing Result
- Viscosity

Each production lot is carefully checked and compared with our production standard. Only those batches that meet our stringent standards are released for sale.

## APPLICATION

**CerDecOr** Lustre preparations are generally supplied ready for use. If desired, suitable thinning oils can be added to adjust viscosity. For **spray application** or for **screen cleaning**, fast evaporating oils and solvents are required, whereas for the application of **brush preparations**, semi-fat oils are required. Those decoration auxiliaries, which are listed in the final table of this data sheet, are the most suitable, because they have been specially developed to match the composition of **CerDecOr** Lustre preparations.

### Brush Application of Marbling and Craquelling Lustres

The basic Lustre is applied undiluted to the substrate with a brush, then dried. We recommend drying times as follows:

- Room temperature (20 °C): approx. 12 h
- Drying cabinet (70 °C): approx. 0.5 h

Make sure the applied film is dry before applying the **marbling solution DH 1000** or **craquelling solution DH 250 C**. These are applied undiluted with a brush, taking care not to damage the basic Lustre layer.

A prerequisite for optimal achievement of the desired effect is thin wet-layer thickness of Lustre and marbling or craquelling solution. We recommend the following wet-layer thickness:

- basic Lustre: approx. 10-15  $\mu\text{m}$
- marbling /craquelling solution: approx. 10  $\mu\text{m}$

To achieve the best decoration and firing results, we recommend applying marbling or craquelling solution beyond the contours of the basic Lustre. The drying time of the marbling or craquelling solution has no significant influence on the firing results.

For test purposes, pre-marbling and/or pre-craquelling can be done in a pre-heated drying cabinet at 160-180 °C until the effects become visible. The heat-up rate should be kept as short as possible so the solution components do not evaporate before they take effect. The heat-up rate should be at least 400 °C/h to optimize the fired effects.

The brushes used to apply the marbling and craquelling solution must not come into contact with oil and must be cleaned **using water only**.

Craquelling and marbling Lustres in combination with coating solution leave a soot-like coating on the film after firing. This can be removed with a dry rag.

#### **Control of effects**

Use of the **marbling solution DH 1000** results in colored, net-like veins of varying size. Use of the **craquelling solution DH 250 C** results in fine white veins and Lustre fields of various sizes with colored shadows. To achieve strong contrasts, the basic Lustre should be applied unevenly. Heavy application of basic Lustre and marbling/craquelling solution results in generously dimensioned patterns; light application results in smaller patterns.

### **Brush Application of Running Lustres and Control of Effects**

Running Lustres are applied by brush evenly over an area, and placed upright to dry. The desired effect develops during drying. The running quality can be improved by adding thinning oil **DH 342**.

**Effect:** Development of drop-like streams.

### **Brush Application of Halo Lustres and Control of Effects**

Halo Lustres are applied by brush evenly over an area and allowed to air-dry for at least two minutes. Then a halo Lustre in the same or a different color is dabbed on to the decorated surface with a brush (to achieve a variety of color variants). The effect results from partial solution of the dried Lustre layer. The more thoroughly the basic layer has dried the sharper the effect. The effect is practically negligible with a "wet-on-wet" method.

**Effect:** Development of insular structure with colorful margins.

### **Direct Screen-Printing of Marbling and Craquelling Lustres**

We recommend the following screen meshes for screen-printing effect Lustres and **marbling solution DH 1001** or **craquelling solution DH 272**:

*Recommended meshes for screen-printing effect Lustres*

PM Preparation	Screen	
	Polyester [threads/cm]	Steel (VA 160-25) [mesh/inch]
Effect Lustre	140 S	420
Marbling / craquelling solution	30 S	80

#### **Control of effects**

Use of the **marbling solution DH 1001** results in colored, net-like veins of varying size. Use of the **craquelling solution DH 272** results in fine white veins and Lustre fields of various sizes with colored shadows.

## Indirect-Screen Printing of Lustres

For indirect screen-printing CerDecOr Lustre preparations, we recommend the use of **skim coat 80133**.

*Recommended meshes for screen printing Lustre preparations*

Preparation	Screen	
	Polyester [threads/cm]	Steel (VA 160-25) [mesh/inch]
Lustre preparation	140 S	420
cover coat	26 S	80
skim coat (if necessary)	120 S	400

## PROCESSING

The firing conditions depend on the type of body to be decorated. As the organic compounds in the preparation decompose during firing, good ventilation of the kiln (surplus of oxygen in the kiln atmosphere) must be assured during the entire firing process, or at least up to 500 °C. In contrast to normal firing, fast firing in continuous kilns allows a reduction in firing time with a concurrent increase in maximum temperature.

The following table lists firing conditions most commonly used by in the ceramic industry.

*Firing conditions common in the ceramic industry*

Material	Temperature [°C]	Soaking Time [min]	Firing Cycle
Glass	490-650	10	approx. 2 h
Earthenware	700-780	10	approx. 2-3 h
Tiles	750-900	-	approx. 30-45 min
Porcelain Normal Firing Fast Firing	780-840 860-900	10 -	approx. 3-4 h approx. 60-90 min
Enamelware	750-850	2-5	approx. 20-40 min

## STORAGE

CerDecOr Lustre preparations should be stored in a cool, dry place (our recommendation is in the refrigerator, at approx. 7 °C).

Please note that red colored Lustre preparations have a shelf life of 6 months, whereas all other Lustre preparations have a shelf life of 12 months.

## PACKING

CerDecOr Lustre preparations are supplied in the following packing sizes: 500 g, 1 kg and 5 kg. Containers are made of glass, metal, or plastic and bear a seal certifying their authenticity.

## SAFETY DATA SHEETS

Safety data sheets carrying health and safety information are available for each CerDecOr product.

# LUSTRES

## - Brush Application -

Product	Color	PZ	SG	FL	GS	Remarks
LU 526	amethyst				x	PM-containing
LU 188	aurora	x	x	x	x	
LU 404	black	x	x	x		PM-containing
LU 162	black				x	PM-containing
LU 102	blue	x	x	x		PM-containing
LU 118	blue	x	x	x		PM-containing
LU 200	dark blue				x	PM-containing
LU 118 G	blue				x	PM-containing
LU 542	greenish-blue	x	x			PM-containing
LU 192 N	brown	x	x	x	x	
LU 168	carmine	x	x	x		PM-containing; storing time ≤ 6 month
LU 20 G	copper bronze		x		x	PM-containing
LU 20 N	copper bronze	x	x	x		PM- containing
LU 171	green				x	PM- containing
LU 516	bright green		x	x	x	
LU 540	dark green	x	x	x	x	PM- containing
LU 234	gray	x	x	x		PM-containing
LU 580	gray				x	PM-containing
LU 545	silver gray	x	x	x		
LU 163	iris	x	x	x	x	mixed for spraying
LU 578	iris	x	x	x	x	"mother of pearl"; also suited to applications on <b>enamels</b>
LU 34	silver iris	x	x	x	x	also suited to applications on <b>enamels</b>
LU 7	orange	x	x	x	x	
LU 111	amber	x	x	x		iridescent effect after firing on porcelain
LU 100 N	pink	x	x	x		PM-containing
LU 592 A	pink				x	PM-containing
LU 2	ruby	x	x	x	x	PM-containing

## LUSTRES

### - Brush Application -

Product	Color	PZ	SG	FL	GS	Remarks
LU 647	ruby				x	<b>PM containing,</b> very intensive color shade
LU 125 A	violet	x	x	x	x	<b>PM-containing</b>
LU 512 A	yellow				x	<b>PM-containing</b>

## LUSTRES

### - Screen-printing -

Product	Color	PZ	SG	FL	GS	Remarks
LU 1404 D	black		x	x	x	<b>PM-containing</b>
LU 1118 D	blue	x	x	x	x	<b>PM-containing</b>
LU 5411	brown		x	x	x	
LU 1020 G	copper bronze				x	<b>PM-containing,</b> only for direct screen-printing
LU 5500	copper bronze	x	x	x		<b>PM-containing,</b> only for direct screen-printing
LU 1515 D	green	x	x	x	x	<b>PM-containing</b>
LU 1580 D	gray	x	x	x	x	<b>PM-containing</b>
LU 1034 D	iris	x	x	x	x	
LU 5435	iris	x	x	x		especially suited to the printing of large surface decoration areas on tiles
LU 1201	iris	x	x	x	x	intense iris effect
LU 1007 D	orange	x	x	x	x	
LU 1603 D	ruby		x	x	x	<b>PM-containing,</b> only direct screen-printing
LU 1125 D	violet	x	x	x	x	<b>PM-containing</b>

## LUSTRES FOR SANITARY WARE

- Screen-printing -

Product	Color	PZ	SG	FL	GS	Remarks
LU 5306	amber		x	x		
LU 5316	light beige	x	x			intense iris effect
LU 5310	blue	x	x	x		<b>PM-containing</b>
LU 5304	light blue		x	x		<b>PM-containing</b>
LU 5317	light brown	x	x	x		
LU 5303	caramel		x	x		
LU 5315	light gray		x	x		
LU 5313	light green	x	x	x		
LU 5321	bluish-green	x	x	x		<b>PM-containing</b>
LU 5305	bright lilac		x	x		
LU 5308	violet		x	x		<b>PM-containing</b>

## CRAQUELLING AND MARBLING LUSTRES

- Brush Application -

Product	Color	PZ	SG	FL	GS	Remarks
LU 287	black	x	x	x		<b>PM-containing</b>
LU 252	blue	x	x	x		<b>PM-containing</b>
LU 261	blue				x	<b>PM-containing</b>
LU 280	blue				x	<b>PM-containing</b>
LU 274	brown	x	x	x		
LU 282	light brown	x	x	x		
LU 279	green	x	x	x		<b>PM-containing</b>
LU 255	gray	x	x	x		<b>PM-containing</b>
LU 281	smoky gray	x	x	x		
LU 283	orange	x	x	x		
LU 418	purple	x	x	x		
LU 278	yellow				x	

## CRAQUELLING AND MARBLING LUSTRES

- Direct Screen-printing -

Product	Color	PZ	SG	FL	GS	Remarks
LU 5418	brown	x	x			
LU 5419	orange	x	x			
LU 5420	iris	x	x			

## RUNNING LUSTRES

- Brush Application -

Product	Color	PZ	SG	FL	GS	EM	Remarks
LU 307 L	violet	x	x			x	PM-containing
LU 309 L	blue	x	x				PM-containing
LU 333 L	orange	x	x			x	
LU 335 L	gold	x	x				PM-containing
LU 340 L	pink	x	x			x	PM-containing
LU 346 L	green	x	x				PM-containing
LU 362 L	iris	x	x			x	
LU 364 L	brown	x	x			x	

## HALO LUSTRES

- Brush Application -

Product	Color	PZ	SG	FL	GS	EM	Remarks
LU 315	green	x	x		x		
LU 316	orange	x	x		x		
LU 317	blue	x	x		x		PM-containing
LU 318	gold	x	x				PM-containing
LU 319	pink	x	x		x		PM-containing
LU 320	platinum	x	x				PM-containing
LU 321	copper	x	x				PM-containing
LU 322	brown	x	x		x		PM-containing

## DECORATION AUXILIARIES

Product	Product Description	LU	GG	GZ	GP	MG	PG
DH 26	standard thinning oil for brush lustres	x	x	x	x	x	x
DH 100	thinning oil for spray application, very fast drying	x	x	x	x	x	x
DH 342	special thinning oil for improving the running quality of lustres	x					
DH 333	thinning oil for brightening up screen-printing lustres	x					
DH 92	thinning oil paste preparations, slow drying	x	x	x	x	x	x
DH 250 C	craquelling solution for brush applications, red colored	x					
DH 272	craquelling solution for screen-printing, red colored	x					
DH 1000	marbling solution for brush application, green colored	x					
DH 1001	marbling solution for screen-printing, green colored	x					
80 039	fast drying thinning and screen cleaning oil	x	x	x	x	x	x
80 452	screen cleaning oil	x	x	x	x	x	x

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