

OG SERIES ONGLAZE METALLIC COLOURS (LEAD CONTAINING & LEAD FREE) FOR TABLEWARE, EARTHENWARE, STONEWARE, PORCELAIN, BONE CHINA & TILE

The Colour Chart shows an approximate impression of the basic colours for a first selection of colours. For exact reproduction of a colour tone it is absolutely necessary to test a sample under original conditions.



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TECHNICAL DATA SHEET AND USAGE

The OG Series are metallic colours for Onglaze or Third Fire application . Two product ranges are available, one lead-containing and one lead-free. The colours can be used on Lead Free substrates and glazes and had been designed for maximum miscibility and optimal metal release.

MAIN PROPERTIES

High color intensity

The highest intensity is obtained by printing the colors without flux addition. Gloss and intensity can be fine-tuned by adding a higher or lower amount of flux.

| | |
|----------------|------------|
| Leaded Group | PE-1114-C |
| Unleaded Group | ULE-1441-C |

Excellent particle size powder distribution

The particle size of the colors will vary depending on the composition, in this series the Typical Diameter particle D90=60 microns.

Very good resistance

Mechanical durability is widely resistant showing good resistance, however, it is necessary for users to determine metal release and durability, according to their own production conditions.

Low thermal expansion coefficient

The Coefficients of thermal expansion are suitable for different materials:

| | |
|----------------|--|
| Leaded Group | $75-85 \times 10^{-7} \cdot 1/K$ (20 to 400°C) |
| Unleaded Group | $70-80 \times 10^{-7} \cdot 1/K$ (20 to 400°C) |

MISCIBILITY AND COMPATIBILITY

All colours are designed for maximum intermixing.

APPLICATION

DIRECT SCREEN PRINTING AND DECALS

For screen printing directly or for decal transfers a 48T polyester mesh is recommended.

On substrate such as hard and soft paste porcelain with a lower co-efficient of thermal expansion the recommended permitted layer thickness should not exceed 20 microns in order to avoid cracking or flaking of the enamels and must be observed where several layers are built up or applied or one thick layer, customers must assess suitability including re-fired pieces, thicker layers are possible on vitreous bodies, Bone China, etc.

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As a guide, recommended mixing ratios and mediums below:

| Reference | Description | Parts medium per 10 parts of colour | Water Media | Oil-based Media |
|-----------|---------------------------|-------------------------------------|-------------|-----------------|
| L427 | WATER MISCIBLE MEDIUM | 3,5 | ✓ | |
| W172 | WATERBASED PRINT MEDIUM | 3,5 | ✓ | |
| M286D | SEMI-THIXO S/PRINT MEDIUM | 6 | | ✓ |
| M286T | THIXOTROPIC S/P MEDIUM | 8 | | ✓ |
| M51D | SCREEN TRANSFER MEDIUM | 5 | | ✓ |
| M6 | DIRECT PRINT MEDIUM | 3,5 | | ✓ |

HANDPAINTING-MACHINE BANDING AND LINING & SPRAYING OR AEROGRAPHING

The colors can be supplied as dry powder for painting directly onto glazed ware and also in the following mediums:

| Reference | Description | Parts medium per 10 parts of colour | Water Media | Oil-based Media |
|-----------|------------------------------|-------------------------------------|-------------|-----------------|
| W108 | WATERBASED HAND PAINT MEDIUM | 6 | ✓ | |
| M162N | GELLED BANDING MEDIUM | 5 | | ✓ |
| M9 | HAND PAINTING MEDIUM | 3,5 | | ✓ |

FIRING RECOMMENDATIONS

For cycles of 4 hours or more the following temperatures are recommended:

| | Leaded Group | Unleaded Group |
|----------------------|-------------------|-----------------|
| Hard Paste Porcelain | 800 - 850 degrees | 840-880 degrees |
| Soft Paste Porcelain | 790 - 840 degrees | 840-870 degrees |
| Vitreous Tableware | 780 - 820 degrees | 840-870 degrees |
| Bone China | 780 - 820 degrees | 820-850 degrees |
| Earthenware/Tiles | 760 - 850 degrees | 850-900 degrees |

Fast firing and shorter cycles are possible:

850-880 degrees/60-90 min 860-900 degrees/60-90 min

Firing affects metal release and durability so it is best determined depending on cycle profile.

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ACID AND ALKALI RESISTANCE











The chemical resistance of the fired color layers is influenced by the color deposit, the firing conditions and the glaze. The colors could show a very slight visible attack with 4%acetic acid solution (22+-2°C, 24h) as well as with 5% sodium carbonate solution (60+-2°C, 32h). We recommend carrying out tests under industrial conditions.

METAL RELEASE CHARACTERISTICS (Leaded Group)

Every effort is made to manufactured these colors with the lowest metal release possible, there are in the order of typically less than 0.3% Lead and 0.03% Cadmium respectively under normal application conditions and optimal firing and experience show results well below current permissible limits for tableware.

Metal release conditions can be influenced by deposit weight, glaze composition, firing conditions (firing cycle and kiln atmosphere), etc. and, in general, the higher the cycle temperatures, the better metal release and greater durability will be obtained. Under some conditions, note that the lining of kilns previously used to fire Low-Sol or Lead products is known to release volatile metals detectable in the test.

REFERENCES

| | Colour | Reference | | Colour Composition |
|------------------------|---|-----------|-----------------|--------------------|
| Leaded Group: |  | OG-1666-M | Metallic Gold | Si-Al-K-Fe-Ti |
| |  | OG-1667-T | Metallic Pearl | Si-Al-K-Ti |
| |  | OG-1668-M | Metallic Red | Si-Al-K-Fe |
| |  | OG-1916-R | Metallic Bronze | Si-Al-K-Fe-Ti |
| |  | OG-1917-T | Metallic Silver | Si-Al-K-Ti-Co-Cr |
| Unleaded Group: |  | OG-7001-T | Metallic Silver | Si-Al-K-Ti-Co-Cr |
| |  | OG-7002-M | Metallic Red | Si-Al-K-Fe |
| |  | OG-7003-R | Metallic Bronze | Si-Al-K-Fe-Ti |
| |  | OG-7004-H | Metallic Gold | Si-Al-K-Fe-Ti |
| |  | OG-7005-T | Metallic Pearl | Si-Al-K-Ti |

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