

Product information

TLF Series

Unleaded decorative glass enamels for tumblers.

Variety of colour shades

Intermixable colour palette^[1]

Various application methods

Dishwasher resistant

TLF Series colours

Part Number	Description
TLF000	White
TLF250	Citrus yellow
TLF300	Iron red
TLF455	Green
TLF401	Turquoise
TLF402	Chrome green
TLF500	Blue
TLF600	Black
TLF707	Autumn brown
TLF730	Rust brown
TLF750	Chocolate Brown
TLF900	Etch
TLF902	Transparent

The TLF Series consists of an intermixable^[1] colour palette that can be blended to make an infinite variety of customized colour shades.

Extended colour range*

Part Number	Description
TLF201	Yellow
TLF301	Flaming red
TLF302	Dutch orange
TLF306	Ruby red

**The extended colour range is cadmium containing.*

End user trials are always recommended for the introduction of new colour mixtures especially when using colours from the extended colour range.

The colours of the TLF Series can be supplied as:

- Powder
- I.R. drying, water friendly or oil based, screen print paste
- Thermoplastic screen print paste
- I.R. drying, water-miscible spray paste

[1] - Colours from other ranges should not be mixed with the TLF Series.

Application

Medium Type	Oil Based IR Medium	Water Friendly IR Medium	Thermoplastic	Spraying
Recommended medium	63 - 485	654 - 63	64 - 64	65 - 439
Recommended thinner	RM.362	RM.454	64 - 64	Water
Powder/medium ratio	3,5 : 1	3,5 : 1	4,2 : 1	3 : 1
Viscosity	15 - 20 Pa.s	15 - 20 Pa.s	1,0 - 1,8 Pa.s	15 - 25 sec
Printing temperature	15 - 25°C	15 - 25°C	60 - 80°C	15 - 25°C
Humidity	30 - 60%	30 - 60%	30 - 60%	n/a
Screen	61 - 90	61 - 90	61 - 90	n/a
Wet film thickness	20 - 25 µm	20 - 25 µm	20 - 25 µm	1-2 g/tumbler
Drying conditions	100 - 150°C	100 - 150°C	n/a	100 - 150°C

It is recommended that before decoration the glass should be at ambient temperature and completely clean and dry.

Firing

Type of Substrate	Firing Range °C	Firing Range °F
Holloware	580 - 630	1076 - 1166

Firing data based on laboratory kiln conditions

Chemical durability^[2]

Acid resistance

Assessment according to ASTM C735-93,
10 % HCl, 20 minutes at room temperature.
Grade: 2 to 3

Dishwasher resistance

Assessment according to Johnson Matthey test KC-50.010,
'Winterhalter' Detergent solution @1.5 g/L tested at 61°C.
Result: > 400 cycles

[2] - Results based on selected TLF Series enamels tested and assessed under our laboratory conditions, for performance data of products not listed in this document please consult the individual technical data sheet, available on request.

Storage and handling

It is recommended that the glass enamels are stored in tightly sealed containers away from direct sunlight at an even temperature in the range of 5-35°C (41-95°F).

Under these conditions the enamel can be stored for reasonable periods, although storage for longer than 12 months is not recommended.

Water based medium should never be stored at temperatures < 0°C.

Health and safety

Good industrial hygiene and work practices should be adhered to when handling the products mentioned in this document. For detailed health and safety requirements, please consult the appropriate Material Safety Data Sheets.