

INTRODUCTION

UVEKOL® FR-C is a mono-component acrylic resin designed for glass lamination especially developed to confer safety impact resistance to fire resistant ceramic glass.

The laminates made of UVEKOL® FR-C are cured under UV light for 20 minutes.

refractive Index - 25°C	-	1.4818
colour	Apha	< 100
dynamic viscosity, cone & plate - 25°C	mPa.s	140
density – 23°C	g / cm³	1.38
Shore A hardness after 15" - 21°C	-	35
shrinkage during polymerization	%	10

APPLICATION PROCEDURE

The glass lamination process using UVEKOL® FR-C is simple and does not require heating or pressure.

The glass panes to be laminated are cleaned and joined together with a double-sided adhesive tape, leaving a small opening for filling.

UVEKOL® FR-C is pumped into the cavity between the panes, then it is cured in an UV oven for 20 minutes (standard time for most laminating applications using UVEKOL® resins).

Detailed information about the application procedure can be found in the UVEKOL® USER GUIDE – INSTRUCTIONS FOR THE PRODUCTION OF LAMINATED GLAZING UNITS.

Formula to be used to calculate the required quantity (volume) of UVEKOL® FR-C to be injected is:

LENGTH (cm) * WIDTH (cm) * THICKNESS OF TAPE (cm) x 1.10 = VOLUME (ml)

LENGTH (cm) = total length of the pane – 2 x tape width (standard tape = 6 mm)

WIDTH (cm) = total width of the pane – 2 x tape width (standard tape = 6 mm)

The factor of 1.10 compensates for the shrinkage of the resin during cure.

Whenever quantity in weight has to be considered, take into consideration the density of UVEKOL® FR-C is 1.38, remarkably higher than that of the standard grades. When using above formula for the required quantity in weight, the volume (ml) has to be multiplied by 1.38 (density).

UVEKOL® FR-C should not be used with UVEKOL® MB concentrated colour pastes.

HEAT AND FIRE RESISTANCE OF UVEKOL® FR-C BASED GLASS LAMINATES

UVEKOL® FR-C was developed to confer safety impact resistance to fire resistant ceramic glass.

UVEKOL® FR-C laminates have successfully been tested in fire tests according to EN1363.

IMPACT PROPERTIES OF UVEKOL® FR-C BASED GLASS LAMINATES

Thanks to the use of appropriate acrylate oligomer, UVEKOL® FR-C interlayers have good impact resistance.

As a consequence, UVEKOL® FR-C in a 5 / 1 / 5* composition passes the pendulum test according to the standard CPSC** 16CFR1201 highest category II, or ANSI Z-97.1, class A - category II (CPSC) and class A (ANSI) are the highest drop height, both 48 inches = 121.9 cm.

The most commonly used tests for safety performance are pendulum tests.

In this approach, a soft body impactor (bag, tires) is swung from a standardized drop height against a vertically positioned test panel. The test simulates a person slipping and falling against a safety glass: a balustrade, banister or facade.

* 5 / 1 / 5 = 5 mm glass, 1 mm interlayer, 5 mm glass

** CPSC = Consumer Product Safety Commission

ANSI = American National Standards Institute

AGEING OF UVEKOL® FR-C BASED GLASS LAMINATES

UVEKOL® FR-C laminates resist heat, UV light and humidity.

They have been tested under natural and accelerated conditions.

Some of the most relevant data are summarized below:

RESISTANCE	TEST	STANDARD	PERFORMANCE
HEAT	resistance to temperature changes – Klima test cycles between -35°C and +80°C	DIN 52344	100 cycles no defects (delaminations, others)
HEAT + MOISTURE	durability test = high temperature (hot boiling test)	EN 12543-4	no defects
UV	Q-panel ageing – continuous UV irradiation	ASTM G53	4 / 1 / 4 laminate w glass 960h - ΔE = 1.3 (°) 1,500h - ΔE = 1.6 2,100h - ΔE = 1.7

(*) ΔE is a measure for a difference in colour = colour after ageing minus colour before ageing (in L^* , a^* , b^*)

PACKAGING

UVEKOL® FR-C is available in polyethylene drums containing 180 l, and Schütz containers with 1000 l.
Containers when empty are taken back by Schütz (Schütz ticket system).
As density is different (= 1.38) from that of the standard grades, the weight of the resin is different too:
180 l correspond to 248 kg net weight,
1000 l correspond to 1,380 kg net weight.

QUALITY CERTIFICATION

UVEKOL® FR-C manufacturing is certified ISO 9001 and ISO 14001.

TRANSPORT REGULATION

Information on transport regulations can be found in the Safety Data Sheet, section 14: transport information.

STORAGE AND HANDLING

UVEKOL® FR-C should be stored in a dry place, away from sources of heat, at a temperature of 15°C to 30°C for best performance.
UVEKOL® FR-C resins have a shelf life of 6 months from the date of manufacture that can be derived from the batch number.

STATUTORY LABELING

For Statutory Labeling information, please refer to Safety Data Sheet.