

LOW EMISSION UREA FORMALDEHYDE ILF-50

1. STANDARD:

A. Bonding Strength

UK BS - 1455 types MR and INT

USA C -35-36 Types II and III

GERMAN DIN 1-74 PS 51-71 INT GRD

JAPANESE JPIC types II and III

B. Formaldehyde Emission

HPMA (Hardwood Plywood Manufacturers Association)

- 2 hours desiccators test

2. SPECIFICATIONS:

Appearance	:	Milky white viscous liquid
Viscosity	, 30°C :	40 – 150 cPs
Specific gravity	, 30°C :	1.195 – 1.200 g/cm ³
pH	, 30°C :	7.0 – 8.0
Gelation time	, 30°C :	150 – 200 minutes
Free formaldehyde	:	0.1 % – 0.2 %
Solid content	:	(51.0 ± 0.5) %
Storage life	, 30°C :	1 month

3. FILLER:

Filler can be wheat flour or other suitable industrial flour approximately 15 – 20 weight percent of the resin.

4. RECOMMENDED FORMULATION:

A. ILF -50	:	100	Pbw
B. Filler	:	15 – 20	Pbw
C. Hardener ILH-20	:	0.3 – 0.5	Pbw

5. MIXING PROCEDURE:

First charge (A), and (B), then (C), stir to obtain a thorough glue mix. This will require about 10-20 min.

6. POT LIFE OF RECOMMENDED GLUE MIX:

Temperature	:	20°C	25°C	30°C	35°C
Pot life (hours)	:	12	8	6	4

7. HOT PRESS TIME:

Temperature	:	105°C	110°C	115°C	120°C
Basic time (hours)	:	1.20	1.00	0.90	0.80

In order to have enough time for heat transfer, it is necessary to add additional time to the basic setting time, depending on the distance from press plate to the farthest glue line (FGL).

The additional time according to temperature is as follows (min. /mm)

Distance to the		Temperature of press plate			
farthest glue line	:	105°C	110°C	115°C	120°C
Below 5 mm	:	1.2	1.1	1.0	0.8

Ex. For 3 ply panel of 2.0 mm core. 0.8 mm face/back. The required press time at 110°C is as follows:

Heat transfer time	= 0.8	x	1.1	= 0.9 min
Basic setting time				= 1.0 min +
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Total pressing time				= 1.9 min

Therefore the pressing time for “low Formaldehyde Emission Plywood” is approximately 1.3 – 1.4 times that usually required by ordinary “MR Plywood”.

8. PREPARATION OF VENEER:

- a. Veneers of reddish color is recommended to be chosen as face /back, for Formaldehyde Emission of panel with reddish face/back is relatively lower than that of yellow/white face/back.
- b. Moisture content must be controlled at max 10 % for face/back veneers and 8 – 10 % for cores.

9. GLUE SPREAD:

The glue Spread amount depend on thickness and smoothness of the cores. The glue spread should be around 28 – 32 g/SF (Double glue line) for thin cores, and 32 – 35 g/SF for thick cores, and it is recommended to be as low as possible since lower glue spread gives a lower formaldehyde emission also.

10. ASSEMBLY TIME:

The assembly time must be as short as possible. Although this glue mix for low emission plywood is relatively more stable than those for ordinary UF glue.

11. PRE-PRESSURE:

A better pressure is around 9 – 10 kg/cm² but the pressing time is a bit longer than ordinary UF glue, i.e. 20 minutes, and is influenced by the ambient temperature and moisture content of the wood materials.

12. PRESSURE IN HOT PRESSING

Hot press pressure is about 9 – 10 kg/cm²

13. HOT PRESS TEMPERATURE:

Hot temperature and time is very important factors for LFE plywood. Therefore it is reasonable to be higher temperature and add pressing time.

14. CLEANING AND HANDLING:

ILF-50 can easily be washed off with hot water, and since the free formaldehyde is so low, handling is much safer and easier.