

ASTAPLY UF-150

ASTAPLY UF-150 is a thermosetting melamine urea formaldehyde liquid resin produced by the condensation of melamine, urea with formaldehyde. In the cured state, melamine urea formaldehyde resin is a cross-linked, insoluble, infusible material.

Application:

ASTAPLY UF-150 is specially formulated for the manufacture of exterior grade plywood. With right glue mix formulation, this resin imparts an excellent pre-pressing characteristic. Upon pressing, the bond formed is strong, insoluble in boiling water or common solvents, more resistant to high temperature than the wood itself and unaffected by fungi and wood destroying insects.

With the right recommended glue mix formulation. The final bond quality will surpass the following international Standards:

<i>European Standard</i>	<i>EN 314, - Cyclic Boiling Resistant (CBR) Grade.</i>
<i>Japanese Agricultural Standard</i>	<i>JAS Type I.</i>

Product Physical Properties: (at time of manufacturing)	
Appearance	Milky white liquid, free from lumps and visible impurities
Viscosity @ 30°C (2/60), cps	130 - 180
pH @ 30°C	8.8 – 9.4
Specific Gravity @ 30°C	1.232 – 1.244
Solid Content, % (105°C at 3 hours, Neat)	55 - 57
Free Formaldehyde, % (After 17 hours)	0.40 – 0.70
BWG @ 100°C, sec (50g resin + 0.5g K6)	55 - 70

Storage:

Under normal environmental conditions, the usable life of the resin is about 2 weeks. To prolong its usable life, store in a cool place away from direct sunlight. After direct expiration of usable life, the resin may still possess its gluing properties. The viscosity may, however, be high, so much so that its pot life may be shortened considerably.

Recommended Glue Mix:

The following formulation has been found to give an optimum bond quality at an acceptable cost level.

ASTAPLY UF-150	180 parts by weight
Industry Wheat Flour *	25 parts by weight
Melamine	5 parts by weight
Ammonium Chloride	2 parts by weight
Ideal glue-mix viscosity @ 30°C	1,700 – 2,200 cPs

* The quality of industry wheat flour can be varied from 20 - 30 parts per 180 parts ASTAPLY UF-150 to arrive at the ideal glue mix viscosity.

Our technical service personnel would be glad to provide any further assistance in the use of our product.

Glue Spread:

The amount of glue spread required depends heavily on factors such as veneer texture, thickness, temperature, moisture content and porosity, ambient temperature and humidity, assembly time and pre-press time. Generally, a higher spread is required when veneers are rough, thick and warm. This is also true when assembly time is excessively long.

Optimum spread values should be determined by practical trials. The following schedule may be used as a guide only.

Core veneer thickness (mm)	Glue Spread (SGL)	
	lbs./1000 sq. ft.	g/sq. ft.
1.8 and below	31 - 37	14 - 17
2.1 - 2.5	35 - 42	16 - 19
3.2 - 3.8	40 - 46	18 - 21
4.2 - 5.0	42 - 48	19 - 22

NOTE: It is strongly recommended that glue spread be checked at regular intervals per production day. This could be achieved by spreading core veneers and determining resin pick-up by weight difference.

Recommended Moisture Content of Veneers:

The moisture content of veneers used should be in the range of 8 - 10%.

It is permissible to maintain a slightly higher moisture content in face and back veneers to reduce tearing while handling. Veneers with moisture content exceeding 12% are generally not recommended.

For optimum results, moisture content distribution within a veneer should be as uniform as possible. Uneven moisture content such as the existence of wet spots might result in excessive localised bleed-through and blisters.

Assembly Time:

Open assembly time is the time period from the spreading of glue onto veneers to the time when the assembly is cold pressed. For optimum results in bond strength, it is recommended that open assembly time should not exceed 30 minutes. This could simply be achieved by setting open assembly time constant, say 25 minutes rather than allowing it to vary by keeping the number of panels assembled constant. The latter would lengthen the assembly time when core veneers are loose.

Closed assembly time is the time between immediate completion of cold pressing and the beginning of hot pressing. For optimal bond results, this time should be kept to a minimum, preferably less than 30 minutes.

Both assembly times above should be determined by practical trials. They are generally affected by factors

such as veneer temperature, moisture content, veneer quality (texture, composed / full sheet / loose), factory temperature and humidity, glue spread and type of extension used.

Pre-Pressing:

This is to effect an even transfer of glue to all adjacent veneers. It also facilitates the subsequent hot pressing operation by keeping the veneers firmly pre-bonded together. When used correctly, ASTAPLY UF-150 exhibits excellent pre-bonding characteristics at a relatively short press time. The actual press time required should be determined by practical trials as this would depend on factors such as plant temperature, veneer moisture content and texture, open assembly time and glue spread. As a guide, a pre-pressing period of 9 - 12 minutes is often satisfactory.

Normally, a specific pre-pressing pressure of 9 - 14 kg/cm² should be sufficient. Actual pre-pressing pressure required is dependent on factors such as panel thickness and veneer species and texture. It is often desirable to pre-press at a slightly lower pressure than that needed for hot pressing.

During pre-pressing, it is often necessary that caul boards be placed within the loads and spread about 12 inches apart. After pre-pressing, the panel should be hot-pressed immediately or dead-stacked for a period of not more than 30 minutes (see **Closed Assembly Time**) before hot pressing. When panels are dead-stacked, it is recommended that the top panels be weighed down by cauls to prevent possible curling of face veneers.

Hot Pressing:

Loading time is the time period elapsing between the placing of the first panel assembly in the press and the application of full pressure to that press load.

To avoid any risk of pre-cure, loading time should be kept as short as possible, preferably not more than 2 minutes. The glue must still be tacky, hence capable of flow prior to application of full pressure.

Pressing pressure: The required specific pressure on the plywood panel depends on factors such as panel thickness and veneer species and texture. The following schedule may be used as a guide only:

Plywood thickness (mm)	Sp. pressure on plywood (kg/cm ²)
3 - 6	9 - 11
9 - 16	10 - 12
18 - 25	12 - 14

Processing temperature and time: The required press time for each type of construction will vary according to such factors as the number of plies that make up the panel, thickness of veneers used, wood acidity and platen temperature. To determine the actual time required, the following schedule may be used as a guide:

A) Basic time

Press temperature in °C	105°C	115°C	125°C
Basic setting time in minutes.	1.5	1.0	0.75

B) Time for Heat Penetration

Distance to the deepest glue line	Press Platen Temperature		
	105°C	115°C	125°C
Under 4 mm	1.0min/mm	0.9 min/mm	0.8 min/mm
4 to 6 mm	1.2min/mm	1.1 min/mm	1.0 min/mm
Over 6 mm	1.4min/mm	1.3 min/mm	1.2 min/mm

C) Example

For a 5-ply panel with 3.4 inner veneers and 0.7 mm back and face veneers, the pressing time required at 115°C can be calculated as follows:

Distance to the inner-most glue line: (0.7+3.4)	=	4.1 mm
Heat transfer time: 4.1 x 1.1 min.	=	4.51 min.
Basic setting time at 115°C	=	1 min.
Total pressing time		5.51 min.

As the rate of heat transfer is dependent on wood species and its moisture content, the correct pressing time should be practically determined under actual plant conditions.

Caution: Do not use high hot press temperature to attain a short pressing period unless moisture content of veneers is carefully controlled. Always remove panels as soon as the press opens.

Cleaning of Equipment:

ASTAPLY UF-150 is slightly alkaline during storage but is reasonably acidic in glue mix hence SHOULD NOT be mixed with phenol formaldehyde resin which is strongly alkaline. Before changing over to phenolic resin, all equipment MUST be thoroughly washed.

ASTAPLY UF-150 glue mix can be washed off using slightly warm water. .

Toxicological Information:

Formaldehyde containing resins have been manufactured and used for years with no adverse effects on health. Repeated contact with them may, however, cause dermatitis in allergic persons especially on the hands and forearms. Dermatitis conditions usually respond well to medication prescribed by a physician.

Fumes released subsequent to hot pressing may cause burning of the eyes and weeping, but, this usually stops after a few minutes in fresh air.

Handling and First Aid Precautions:

It is strongly recommended that adequate general and local ventilation be available in and around the glue kitchen and hot presses to keep formaldehyde concentration within acceptable levels.

Workers who handle ASTAPLY UF-150 and hardener should wear rubber gloves and protective clothing such as aprons.

Any area of skin that has come in contact with ASTAPLY UF-150 should be washed immediately with mild soap and thoroughly rinsed with lots of running water.

If any ASTAPLY UF-150 enter the eyes, they must be thoroughly flushed with lots of water immediately. If ill effects persist, seek medical attention.

If a large amount of ASTAPLY UF-150 is swallowed, induce vomiting and seek medical attention.



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