

## Glue Types and Formaldehyde Emissions

- Type 1: Melamine formaldehyde glues are not extensively used for plywood gluing but are used where a high-grade bond is required, and where black phenolic glues cannot be tolerated. They are used to fortify urea-formaldehyde glues to increase the weathering resistance of the bond. The largest application of the melamine formaldehyde resin is in the production of decorative overlays.
- Type 2: Urea formaldehyde glues are extensively used for interior and intermediate grade bonding, which covers the majority of hardwood plywood produced. Formulas differ somewhat and can be adapted to meet specific conditions.
- WBP: Phenol-formaldehyde glues are standard for exterior bonds. With glue properly formulated for exterior use and suitably employed, no exposure conditions or laboratory tests are known which will degrade hot pressed phenolic glue bonds without destroying the adjacent wood layers. Phenolic glues are also used for impregnating veneers and paper overlays for plywood.
- Formaldehyde emission standard criteria

### European standard:

- E0 Average under 0.5mg/L. i.e. under 3mg per 100g
- E1 Average under 1.5mg/L. i.e. under 9mg per 100g
- E2 Average under 5mg/L. i.e. under 30mg per 100g

### Japanese agriculture standard

**Fc0** average 0.5mg/L highest 0.7mg/L

**Fc1** average 1.5mg/L highest 2.1mg/L

**Fc2** average 5.0mg/L highest 7.0mg/L

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