(BS) EN 314-2: 1993 (confirmed in 2013)

Plywood – Bond quality – Requirements

This part of the standard specifies the requirements for bonding classes of veneer plywood according to their end uses. It lists three classes of bond quality.

Bond Class 1: Dry conditions – interior applications with no risk of wetting.

This is equivalent to a moisture content in the plywood corresponding to a temperature of 20°C and a relative humidity of the surrounding air only exceeding 65% for a few weeks of the year. As a guide, the average moisture content of most softwoods will not exceed 12%.

Bond Class 2: Humid conditions – protected exterior conditions e.g. behind cladding or under roof coverings.

This is equivalent to a moisture content in the plywood corresponding to a temperature of 20°C and a relative humidity of the surrounding air only exceeding 85% for a few weeks per year. As a guide, the average moisture content of most softwoods will not exceed 20%.

Bond Class 3: Exterior conditions – unprotected exterior conditions over sustained periods.

This is equivalent to climatic conditions leading to a higher moisture content than would be suitable for bond class 2 environments.

- These three bonding classes relate to the Hazard Classes given in EN 335 : 2006 – Durability of wood and wood-based products – Definition of hazard classes of biological attack Part 3: Application to wood-based panels. These, in turn match the Service Classes given in EN 1995, Eurocode 5: Design of timber structures.

- The revised term 'Use Class' is being used instead of 'Hazard Class' when standards are updated. For example, Part 1, revised in 2006, refers to 'Use Classes', while Part 3, published in 1995, still uses the term 'Hazard Class'.

EN 636 Plywood Specification Conditions			
	Dry	**Humid**	**Exterior**
EN 314-2 Bonding classes	1	2	3
EN 335-3 Durability (hazard/use classes)	1	2	3
Eurocode 5 Service classes	1	2	3

Relationship between the respective bond classes and the pre-treatment conditions the samples must undergo before being subjected to shear testing (EN 314-2 Section 4 Table 1)	
Bond Class & equivalent APA bond designation	**Pre-treatment**
Bond Class 2 (protected exterior conditions)APA bond designation – Exposure 1	5.1.1 Immersion for 24 hours in water at 20°C (±3°)5.1.2 Immersion for 6 hours in boiling water, followed by cooling in water at 20°C (±3°) for at least 1 hour
Bond Class 3 (unprotected exterior conditions)APA bond designation – Exterior	5.1.1 Immersion for 24 hours in water at 20°C (±3°)5.1.2 Immersion for 4 hours in boiling water, then drying in a ventilated drying oven for16-20 hours at 60°c (±3°), then immersion in boiling water for 4 hours followed by cooling at 20°C (±3°) for at least 1 hour. 5.1.3 Immersion for 72 hours (±1) in boiling water , followed by cooling in water at 20°C (±3°) for at least 1 hour

APA Plywood Panels			
APA Bond Designation1	**EN 314-2 Bond Classification**	**EN 636 Plywood Type**	**Euro code 5 Service Classes**
Exterior	Bond Class 3	EN 636-2[3]	3
Exposure 1[2]	Bond Class 2	EN 636-2	2

1 APA bond designations refer to the glue line only.

2 Exposure 1 panels have the same exterior adhesive as Exterior panels but due to other compositional factors, Exposure 1 panels should only be used where construction delays may be expected before the panels are protected.

3 Exterior plywood can only be classified as type EN 636-3 if it is capable of withstanding repeated wetting and redrying or long term exposure to weather or other conditions of similar severity and it is composed of veneers made from a durable species or veneers which have had their biological durability enhanced to that of a durable level. If the veneers are not durable or do not have an enhanced level of durability , but do contain a 100% water proof glue line, the plywood type classification is EN 636-2 (humid conditions).