Question

How do I determine what specification of plywood should be used on site to meet the requirements of the Technical Manual?

Consideration

What is Plywood?

Plywood is a versatile product which is produced by gluing together thin layers of softwood or hardwood veneers (or a combination of both). It can have great performance in varying conditions, has an excellent strength-to-weight ratio and can be highly resistance to expansion and shrinking. All of these factors make it a versatile product for a variety of applications within a construction project.

Plywood Specification

The performance of the plywood depends the interaction between the wood veneers and the glue used to bond them. BS EN 314-2 and BS EN 636 classify these performance standards.

BS EN 314-2

BS EN 314-2 outlines 3 classes of bond which is dependent on the intended end use of the plywood. Some of the factors which determines the blond class include: type of adhesive used and the quality of the veneer used.

- Bond Class I: suitable for dry interior use only
- Bond Class II: suitable for use in humid areas or exposure to occasional wetting
- Bond Class III: suitable for unprotected exterior use or exposure to frequent wetting

BS EN 636

BS EN 636 considers both the bond quality and the biological durability of the species of wood used to classify the plywood into environmental conditions:

Class I: *Suitable for dry interior use only - Plywood to be used in conditions characterised by a moisture content in the material corresponding to a temperature of 20 °C and a relative humidity of the surrounding air only exceeding 65 % for a few weeks per year*

Class II: *Suitable for use in humid areas or exposure to occasional wetting - Plywood to be used in conditions characterised by a moisture content in the material corresponding to a temperature of 20 °C and relative humidity of the surrounding air only exceeding 85 % for a few weeks per year. This type of plywood is appropriate for protected external applications (e.g. behind cladding or under roof coverings), but is also capable of resisting weather exposure for short periods (e.g. when exposed during the construction). It is also suitable for interior situations where the service moisture condition is raised above humidity of dry conditions.*

Class III: *Suitable for unprotected exterior use or exposure to frequent wetting - Plywood to be used in climatic conditions leading to higher moisture contents than in service class 2. This type of plywood is capable of withstanding exposure to weathering conditions and liquid water, or water vapour in a damp but ventilated location, under consideration of 9.2*.

Both BS EN 314-2 and BS EN 636 are harmonized standards, which means it is not possible to achieve a BS EN 636 class higher than the assessed BS EN 314 class. For example, to achieve BS EN 636 class II, the board must have a minimum bond quality of BS EN 314 Class II.

The Developer must provide evidence that the Plywood meets the requirements of BS EN 636 in the environment the Plywood is to be used. When on site, the boards should be marked with 'EN 636' followed by the conditions of use, -1 for use in dry conditions, -2 for use in humid conditions and -3 for use in exterior conditions. You should also see a letter corresponding to the intended application "S" for structural application or "NS" for general purpose (non-structural application). Finally, the Plywood should also be marked with the commercial name or botanic name of the wood species.

Answer

The correct specification of plywood is an extremely important aspect to managing risk in any construction project. The project designer should use BS EN 314-2 and BS EN 636 to determine the correct specification of plywood for the intended condition; if in doubt advice should be sought from the Warranty Surveyor at the earliest opportunity.

References

- Panel Guide (Annex 2D), 2004, Wood Panel Industries Federation
- BS EN 314-2:1993
- BS EN 636:2012+A1:2015

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