

Natural Durability Classification of Timber

In this country the term natural durability generally refers to the resistance of a timber to fungal decay in service and it is used in this sense in this note. The natural durability of the timber is of importance in situations where the timber is liable to become damp,* for example, where it is used outdoors or in certain indoor situations where there is a risk of moisture penetration or condensation. It is unnecessary to consider natural durability in choosing a timber for purposes where it can always be kept dry, because under these conditions, wood-destroying fungi are not active.

The durability of most timbers varies a great deal and even pieces cut from the same tree will often show wide differences, so it is only possible to speak of durability in approximate terms. For this reason, timbers have been classified into five broad grades based on the performance of their heartwood in ground contact.

The five grades are as follows:

Grade of durability	Approximate life in contact with the ground (years)
Very durable	More than 25
Durable	15-25
Moderately durable	10-15
Non-durable	5-10
Perishable	Less than 5

All available information has been used in classifying the timbers, including laboratory tests and field tests made both in this country and abroad and also records of performance in actual use. The classification is primarily a relative one but, from the results of field tests being carried out by the Princes Risborough Laboratory since 1932 it has been possible to give in the table some quantitative meaning to each grade.

Thus timbers of the very durable class may be expected to have an average life of over 25 years when used in contact with the ground in this country. The average life stated for each grade relates to material of 50mm x 50mm section. Larger sizes will, of course, last longer, and in general the increase will be in direct proportion to the thickness (least dimension) and not the cross sectional area. This applies irrespective of whether the timber is hardwood or softwood, perishable or durable. For example, a 100mm x 100mm stake will last only twice as long as a 50mm x 50mm one and so on. **Timber used externally, but not in contact with the ground, will generally have a much longer life than indicated by its classification.**

The durability grade given refers to heartwood because the sapwood of almost all timbers is either perishable or non-durable. It is essential to remember this when dealing with timbers which may sometimes contain a high proportion of sapwood, which will give them a shorter life than their classification suggests. Even a piece of timber from a durable species such as oak will not last long in contact with the ground if it is all of sapwood.

When choosing a timber for a structure which is to be exposed to conditions conducive to decay, it is of the utmost importance to decide, before the timber is acquired, how the required durability is going to be obtained. Usually there is a choice between using a naturally durable wood and a less durable one treated with a preservative. If a less durable wood is chosen it is desirable to select one which can be easily treated. This is particularly important where a very long life is required. Where a timber has to be selected for other properties or where the choice is limited by price or availability, the question of durability is often neglected and there is then a risk that the timber chosen may not be durable enough in its natural state nor permeable enough to permit adequate preservative treatment.

* Above about 20 per cent moisture content

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