



PRESSURE TREATED  
POWER & UTILITY POLES

## Timber v Concrete

Both timber and concrete have been used for the manufacture of transmission and utility poles. But there are significant differences between the two materials in terms of **manufacture, transportation, installation, in-service properties** and **performance, sustainability** and **cost**.

### Manufacture

#### Concrete

- There are several types of concrete poles, but all are reinforced with metal wires, making them more complex to manufacture and with much longer production lead times.
- Because of greater production times, stock holding is required which incurs extra costs.

#### Timber

- Timber poles are much simpler and quicker to produce and covered by BS or EU or National Standards. These Standards cover length, diameter, preservative treatment, service life, chemical retention, strength and testing.
- Short lead times mean no need for large and costly stocks.

### Transportation

#### Concrete

- Concrete poles are heavier, incurring greater handling and transport costs.
- Concrete poles are more prone to damage during transportation, especially on unmade rural roads.

#### Timber

- Timber poles are much lighter than concrete - easier and cheaper to transport.
- Timber poles are rugged - dents and surface nicks do not harm the timber or require repairs.

### Installation

#### Concrete

- Installers must avoid cutting the wire structure of the pole or it will seriously weaken the product.
- Drilling of holes for attachments is difficult and time consuming.
- Drill and hardware attachments are clumsy and expensive.

#### Timber

- Timber poles can be easily machined to accommodate different requirements.
- Fixing of attachments is much simpler and less expensive.

- Timber poles do not require special climbing equipment - line workers can quickly attach gaffs and climb without delay.

### Properties & Performance

#### Concrete

- A major cause of failure is corrosion of reinforcing metals.
- Corrosion results in a volume increase of the metal - up to 10 times its original volume. This expansion results in mechanical disruption of the encasing concrete.
- Corrosion damage may be far advanced before being noticed - surface stains, spalling.
- The cantilever loading capability of concrete poles is very low - they will not bend.
- Temperature changes (day/night) and moisture changes (rainfall) can lead to cracking and spalling of the concrete.
- Concrete poles have an inability to withstand shock loadings.
- Metal within the concrete fabric acts as a conductor - extra insulators may be required, giving increased costs.
- Concrete poles have a relatively low service life - 15 years on average.

#### Timber

- Timber does not suffer corrosion problems.
- Flaws in timber poles follow a predictable pattern - knowledgeable inspectors can evaluate flaws easily.
- Timber has an inherent capability to withstand considerable shock loadings.
- Cantilever loading is excellent - timber poles can be bent as much as 2 metres before breaking.
- Timber poles have inherent surge insulation capability - an extra measure of protection.
- With effective preservative treatments timber poles can have a long and low maintenance service life of 30 years or more.
- Supplementary treatments are available to vulnerable ground line areas of wooden poles to provide an indefinite service life.



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## Sustainability

### Concrete

- Concrete is a manufactured product - a hole is left in the earth with its manufacture and high CO<sub>2</sub> emissions are produced. Worldwide, cement production is estimated to produce approximately 5% of all CO<sub>2</sub> emissions from human sources.
- The energy required to manufacture concrete poles is far greater than converting timber into wooden poles. For each cubic metre of concrete replaced with timber, we save 1 tonne of CO<sub>2</sub> being produced.
- International research has shown that on average 1 tonne of concrete requires 5 times the amount of energy to produce than 1 tonne of sawn timber. Similarly, the production of glass is 6 times, steel 25 times and aluminium 126 times greater than timber.
- Concrete is hard to recycle giving a high environmental impact.

### Timber

- Timber is a natural product - timber poles harmonise with the environment and look better.
- Timber poles can be easily recycled giving a low environmental impact.
- Producing and utilising timber benefits our planet.

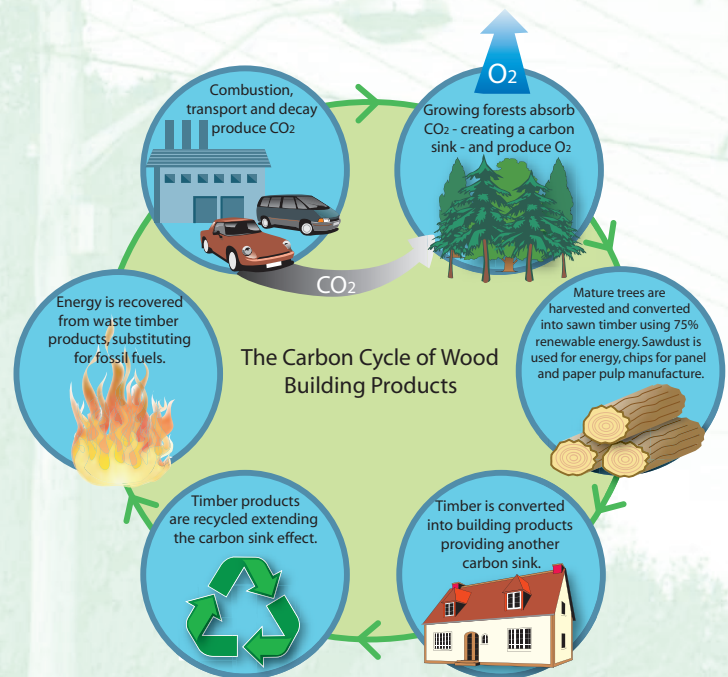
## Cost

### Concrete

- The cost of concrete poles far outweighs that of timber - in production, installation, maintenance and replacement.

### Timber

- Timber is a low cost natural product - soil, sun and rain, together with careful and responsible management and use, are all that is necessary to grow trees and replenish our forests.



The Choice is Simple!



Performance you can trust!



Arch  
Timber  
Protection

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