



**INFORMATION**

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# WPA Field Trial of Preservative Treated British Softwoods Year 7 Observations

All images courtesy of BRE

## Background

The WPA field trial was established in 2015 to create a robust and independent test of the performance of preservative treated fence posts. The aims of the project are:

- To gain valuable input in to the future development of BS 8417: Preservation of Wood Code of Practice and the WPA Code of Practice: Industrial Wood Preservation
- To support the WPA Benchmark quality approval scheme for treated wood
- To build lasting confidence in preservative treated British softwood species in this application as a capable, reliable and quality product



## The Test Criteria

In 2015, under contract from WPA, the **Building Research Establishment (BRE)** and our industry sponsor group collaborated to manufacture, treat and install 1360 fence posts and 300 EN252 stakes across two field test sites. One at **BRE Garston, England** – a London clay loam and one at **Birnie Wood, Scotland** – sandy loam overlying gravel deposits.

## The Posts

There are **80 untreated posts** and **600 posts treated in accordance with WPA Benchmark** criteria at each test site – made up of equal numbers of matched 75 x 75mm **Spruce, Larch, Douglas fir** and **Pine** samples. Matched samples are also included of **un-incised and incised spruce**, with kiln dried and 30-40% moisture content (at time of treatment) variants.

## The Stakes

In addition, at each site were installed **pine sapwood EN252 stakes** (25 x 50 x 500mm) untreated and treated with a wood preservative as an internal reference control, along with EN252 stakes of untreated **Sitka spruce, Douglas fir, larch** and **pine heartwood**. These stakes provide vital information on:

- The characterisation of the biological hazard at the field sites
- Natural durability data on contemporary commercial materials in an accelerated ground contact field test

## Year 7 Inspection Results Summary

The partial assessment of the ground contact field trial after 7 years is showing differences between the two field test sites.



The last remaining untreated spruce EN252 stake at Garston.



Spruce (KD) incised treated ground line area. The incised posts inspected, showed no signs of deterioration.

## Garston, England

- All the EN252 stakes (except for the treated references) are showing signs of deterioration and decay below ground with 34 stakes failing in service (rating 4) at this inspection.
- Most of the untreated posts are showing signs of deterioration below ground with 10 posts failing in service (rating 4) at this inspection.
- Treated un-incised Douglas fir (<28%) and larch (<28%) fence posts were inspected. These showed no sign or slight signs of deterioration.
- Treated incised Spruce posts (30-40% moisture content at time of treatment and KD variants) were inspected and showed no sign of deterioration.

**Birnie Wood, Scotland**

- All the EN252 stakes are showing signs of deterioration and decay below ground with 24 stakes failing in service (rating 4, nearly all untreated) at this inspection.
- All the untreated posts are showing signs of deterioration below ground with over half (43) posts failing in service (rating 4) at this inspection.
- Treated un-incised Douglas fir (<28%) and larch (<28%) fence posts were inspected. These showed no sign or slight signs of deterioration.
- Treated incised Spruce posts (30-40% moisture content at time of treatment and KD variants) were inspected and showed no sign of deterioration.



Below ground section of failed untreated pine fence post.



Spruce (KD) incised and treated. The incised posts inspected showed no signs of deterioration.

**Conclusions**

The performance assessment of the **untreated timber** in the field trial after 7 years in ground contact has shown:

- Significant failure of untreated EN252 stakes and untreated fence posts at both the BRE Garston and the Birnie Wood sites.
- Evidence is starting to emerge that the Birnie Wood site is a more aggressive environment in terms of decay challenge.

The inspections of **preservative treated fence posts** show mostly:

- No significant signs of change or deterioration in the inspected posts at either site.
- In the case of incised spruce, there were no signs of deterioration at either site.

All posts and stakes were reinstalled into the same holes that they were taken from and the field trial continues until the next inspection.

The nature of this type of performance testing is long term as the test specimen is a post aiming to meet a minimum of a 15-year desired service life. The fact that no significant or only minor signs of deterioration are observed after seven years of exposure of Sitka spruce (KD), larch and Douglas fir fence posts provides confidence that the preservative treated pine posts will be performing better.

7 years is a significant period in terms of drawing conclusions from the inspection data. The fact that treated posts are still performing well after 7 years' service in two very different sets of ground conditions clearly contradicts the anecdotal 'conclusions' being drawn by some in the fencing sector – that following the widespread switch from CCA to Copper Organic preservatives 12-14 years ago, early failures of posts after 3-4 years were due to the inferior performance of the new preservatives. Clearly, there must have been other factors involved.

**Next Steps**

The next significant inspection will be in 3 years' time, in **March 2025** after **10 years** in ground contact.

With thanks to all those backing this WPA Project



**WPA Field Trial - Major Sponsors**

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WPA

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England – BRE

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