

RESEARCH BRIEF

Untreated vs surface-protected wood in Nordic climates

A concise comparison of service-life expectations for untreated and maintained wood in the Nordic climate zone. The brief explains why detailing often outweighs durability class, and how EN 335 use-class logic interacts with local climate load.

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Key takeaways

- Reference service lives from EN 350 durability classes are not climate-specific; the Wood Intelligence model converts them using ERA5-derived load terms.
- In the Nordic zone, a ventilated cavity and sloped end-grain can add more modelled life than moving from durability class 4 to class 2.
- Surface-protected systems only realise their gain if maintenance is actually carried out; the brief includes a maintenance-credit sensitivity table.

The Nordic climate load

The Nordic climate is often described as mild for wood because low temperatures suppress fungal metabolism. The model still applies penalties for driving rain on exposed facades, freeze-thaw fatigue and high seasonal humidity in late summer. South-facing cladding receives more UV and wetting-drying cycles than north-facing cladding, so orientation matters as much as latitude.

From durability class to site life

EN 350 assigns a durability class from 1 (very durable) to 5 (not durable) based on laboratory or field tests against decay organisms. EN 335 then maps these classes to use classes. Neither standard produces a single number of years that can be copied into a specification without considering climate, detail and maintenance.

Maintenance-credit sensitivity

The model treats a maintained penetrating protective system as a multiplier on the base life, capped by the detail quality. If the maintenance schedule is abandoned after year five, the multiplier decays back toward the untreated case. This is why the specification generator asks for maintenance interval explicitly rather than assuming a default.

Sources

- EN 350:2016 Wood durability — Guide to durability of wood and wood-based products
- EN 335:2013 Durability of wood and wood-based products — Use classes
- ERA5 reanalysis climate drivers (Copernicus Climate Data Store)
- WI-VAL v1.1.0 Nordic field cases

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