Wood materials – modern treatment and adapting to the climate of the future

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- **Warmer**

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- Warmer
- Wetter

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Risk of decay influenced by:

- **Wood moisture content**
- **Wood temperature**
- **Presence of wood decaying organisms**
- **Chemical composition of wood**

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Risk of decay influenced by:

- Wood moisture content
- Wood temperature
- Presence of wood decaying organisms

} Climate related

- Chemical composition of wood

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Risk of decay influenced by:

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- Chemical composition of wood

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Natural durability, EN 350-1

Natural durability to attack by wood destroying fungi

Durability class	*Description*
1	Very durable
2	Durable
3	Moderately durable
4	Slightly durable
5	Not durable

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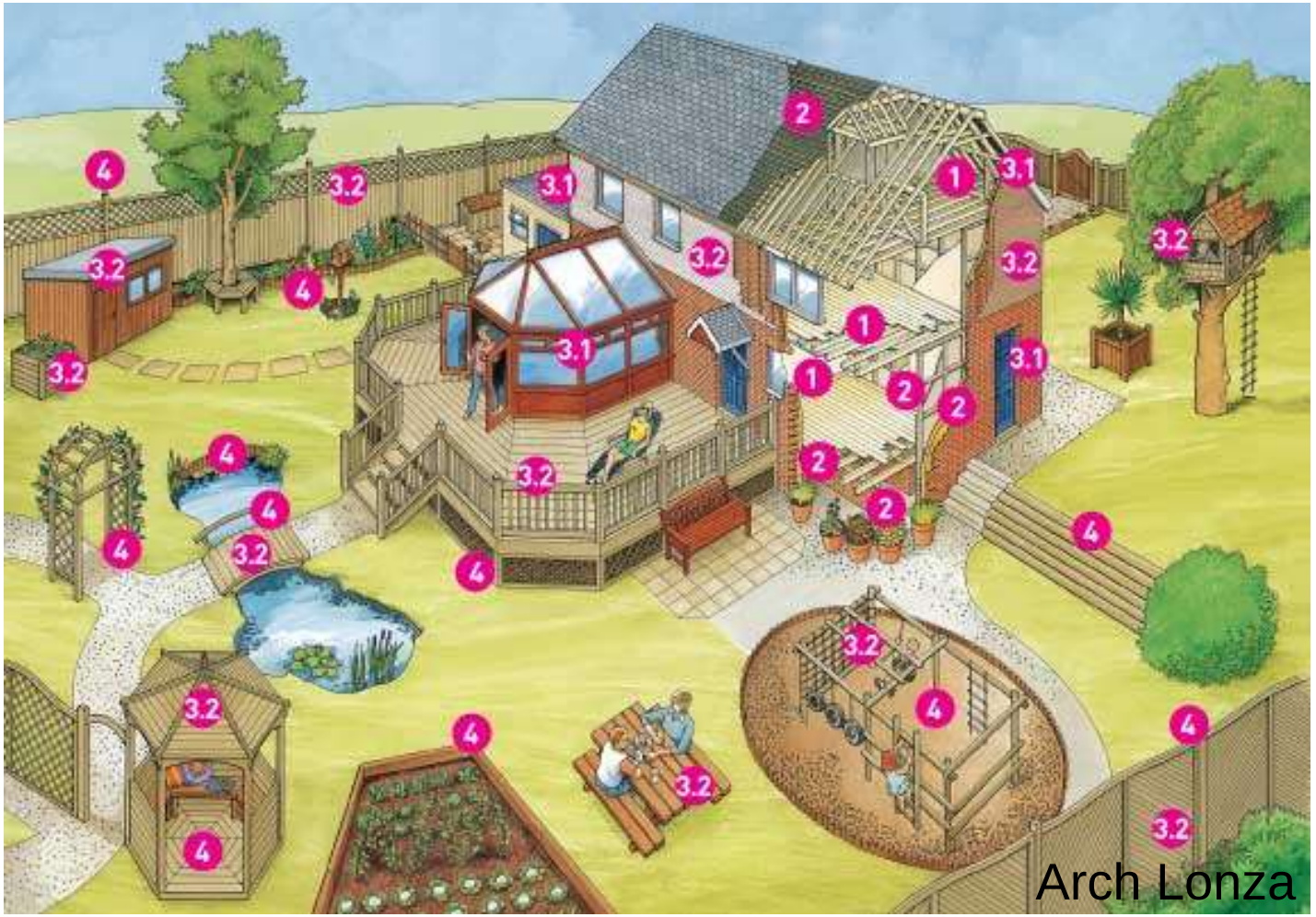
Use classes



Arch Lonza

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Different durability requirements in different use classes

Durability of wood and wood based products. Natural durability of solid wood. Guide to the durability requirements for wood to be used in hazard classes (use classes)

(EN 460, 1994)

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EN 460 (1994)

Hazard class	*Durability class* 1	2	3	4	5
1	o	o	o	o	o
2	o	o	o	(o)	(o)
3	o	o	(o)	(o) – (x)	(o) – (x)
4	o	(o)	(x)	x	x
5	o	(x)	(x)	x	x

o	Natural durability sufficient
(o)	Natural durability is normally sufficient, but for certain end uses treatment may be advisable
(o) – (x)	Natural durability may be sufficient, but depending on the wood species, its permeability, and end use, preservative treatment may be necessary
(x)	Preservative treatment is normally advisable, but for certain end uses natural durability may be sufficient
x	Preservative treatment necessary

Note: Sapwood of all wood species should be regarded as durability class 5.

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Wood preservation (sawn wood)

- Copper based preservatives
- Royal process (Copper based + hot oil)
- Organic preservatives

- Scots pine
- DC: 1
- Production in Norway: Ca 400 000 m^3
- Quality of the products controlled by the Nordic Wood Preservation Council

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Chemical modified wood: Furfurylation

- Kebony ®
- Production in Norway
- Scots pine, Southern Yellow Pine, Radiata pine, Ash
- DC: 1-2
- Ca. 50 % improved dimensional stability

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Chemical modified wood: Acetylation

- Accoya®
- Produced in Holland
- Radiata pine
- DC 1
- Up to 70% improved dimensional stability

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Thermally modified wood

- Natural durablity class
  - Softwoods: DC 2 – 5
  - Hardwoods: DC 1 – 5
  - Not for use in ground contact (UC 4)
- Ca. 50% improved dimensional stability
- Many producers in Europe, one in Norway: Marnar Bruk

Service life of wood structures

- Wood durability is <u>one</u> of many factors
- Proper <u>design and workmanship</u> should not be neglected

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