
Overview

This standard covers the skills and knowledge required to be able to identify the effect of new or traditional products on the ultra-structure, gross features, properties and characteristics of wood and wood-based materials. This may include using hand lens, microscope or electron microscope to carry out detailed examination of wood at different stages during research and identifying the implications of any changes. To do this you will need to be able to recognise the normal appearance of different cell types and gross features of wood and identify any changes or abnormalities.

This standard is most suitable to those working in wood science and technology.

Performance criteria

You must be able to:

1. comply with health and safety requirements and procedures at all times
2. examine ultra-structures and gross features of wood at relevant stages during your research
3. carry out examinations and species identification using hand lens, microscope or electron microscope as appropriate
4. refer to relevant research from other sources where relevant
5. identify effect of products on ultra-structure, gross features, characteristics and properties of wood
6. compare your results with results from other sources to validate or compare products, methodologies or theories
7. balance findings to enable comparison with alternative products
8. demonstrate how the ultra-structure, gross features, characteristics and properties of wood are affected when presenting your research

Knowledge and understanding

You need to know and understand:

1. legal duties for health and safety in the workplace and legislation covering your job role
2. species of timber in commercial use, their appearance, individual characteristics, properties and typical end uses
3. differences between softwood and hardwood and the impact this has on wood products used
4. sawmilling and machining
5. kiln drying of wood
6. wood preservation techniques
7. wood modification techniques
8. wood based panels and other laminated products including glulam, cross laminated timber and laminated veneer lumber
9. typical adhesives used with wood
10. how laminated and reconstituted wood products achieve superior properties compared to the raw wood material
11. cell types found in hardwood and softwood including tracheid's, rays, parenchyma, fibres and vessels and how to recognise them
12. full understanding of the ultrastructure of wood and its influence on all stages of wood technology including sawing, kiln drying, preservative treatment, performance in service
13. significance in terms of properties and performance of gross features including heartwood, sapwood, density, grain, permeability
14. how water in wood (free water and bound water) affect moisture related movement and how relative humidity governs this process
15. extractives and their differences between hardwoods and softwoods
16. extractives related to injury in the tree or unusual timbers where extractives influence wood processing, drying or applications
17. what is meant by durability, the differing levels of durability, how they are categorised and the woods listed within each category
18. ways to improve woods ability to resist weathering, decay or infestation and mechanical durability or performance
19. the way that wood is dried, and the control of temperature and humidity which are necessary to avoid degrade during drying
20. effect that moisture content has and the reasons for drying wood
21. recommended moisture content for wood for its intended use

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22. effect of wood properties and characteristics on tools and machinery
 23. regulations and codes of practice that you need to comply with when working with wood
 24. appropriate equipment used to examine wood
 25. sources of existing research

PROWT7

Research effects of new or traditional products on wood or wood-based materials



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Suite Wood Technology

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