

Department of Forest Products Technology

PUU-28.4002: WOOD MODIFICATION

Examination date: 14th December 2010

1. Explain briefly the following terms (use a diagram if appropriate): **(5 marks)**
 - i. 'Relative humidity'
 - ii. 'Weathering'
 - iii. 'Hazard Class'
 - iv. 'Oleothermic modification'
 - v. 'Sorption hysteresis'

2. Explain what is mean by wood modification and how, in protecting wood against biological decay, it differs from traditional preservation treatments. **(3 marks)**

3. What is the difference between "active" and "passive" modification types? Give one example of each. **(3 marks)**

4. Explain what is meant by weight percentage gain (WPG) and describe how a "threshold" level of WPG to give protection against fungal attack, might be determined. **(3 marks)**

5. Explain what is meant by anti swelling/shrinkage efficiency (ASE). Show any relevant formulae. **(3 marks)**

6. An impregnation modification was carried out using two polymers A & B. At equivalent WPG values, wood impregnated with polymer A exhibited an ASE of 75% whilst polymer B exhibited an ASE value of only 5%. Explaining your reasons, what conclusions might you draw from this observation? **(3 marks)**

7. What are the main chemical and physical changes occurring in wood following thermal modification? **(4 marks)**

8. Describe the furfurylation process and give two examples of where furfurylated wood may be used. **(6 marks)**

9. Describe in detail what factors you think should be taken into consideration when implementing a chemical modification industrially. **(10 marks)**

10. Write a 1 to 2 page essay on one of the following topics: **(10 marks)**
 - a) The potential of surface modification by compression
 - b) Commercial thermal modification processes
 - c) Future opportunities for wood modification

parquet