

Permission to use table from Forest Products Society

Adhesion Theory	Type of interaction	Length scale
Mechanical	interlocking or entanglement	0.01-2000 $\mu\text{m}$
Diffusion	interlocking or entanglement	10 nm-2 mm
Electrostatic	Charge	0.1-1 $\mu\text{m}$
Covalent bonding	Charge	0.1-0.2 nm
Acid-base interaction	Charge	0.1-0.4 nm
Lifshitz-van der Waals	Charge	0.5-1 nm

#### Reference

1. Gardner, D. J., Frazier, C. E., & Christiansen, A. W. (2005, November). Characteristics of the wood adhesion bonding mechanism using hydroxymethyl resorcinol. In *Proceedings, wood adhesives* (pp. 93-97).

Permission Given From Craig McKinney Executive Director at Forest Products Society:

**Thank you for checking Kyle - you are approved to use this table. Good luck.**

**Thank You**

**Craig McKinney**

**Forest Products Society**

**Executive Director**

**[770-209-7294](tel:770-209-7294)**

On Mon, Oct 5, 2015 at 11:16 AM, Kyle Mirabile <[kmob67@vt.edu](mailto:kmob67@vt.edu)> wrote:

Sorry I should have added my name is Kyle Mirabile and I am a student at Virginia Tech. I would like to use this table in my thesis.

On Mon, Oct 5, 2015 at 11:15 AM, Kyle Mirabile <[kmob67@vt.edu](mailto:kmob67@vt.edu)> wrote: Dear

Mr. McKinney,

I would like to see if I could request permission from the Forest Products society to use a table that was used in one of their publications. The table is posted below and so is the citation from which publication it is from.

1. Gardner, D. J., Frazier, C. E., & Christiansen, A. W. (2005, November). Characteristics of the wood adhesion bonding mechanism using hydroxymethyl resorcinol. In *Proceedings, wood adhesives* (pp. 93-97).

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Thank you,

Kyle Mirabile, Graduate Research Assistant

Sustainable Biomaterials

Cheatham Hall, Room 200

Virginia Tech --

Thank you,

Kyle Mirabile, Graduate Research Assistant

Sustainable Biomaterials

Cheatham Hall, Room 200

**Virginia Tech**