

Figure 8. Flatwise compression strength contrast.

- Fatt MSH, Park KS. Dynamic Models for Low-velocity Impact Damage of Composite Sandwich Panels-Part B: Damage Initiation. *Composite Structures* 2001; 52: 353-364.
- Sun CF, Xue YD, Hu P. Mechanical properties and test method for foam inside layer sandwich structure. *Fiber Reinforced Plastics/Composites* 2005; 2: 3-6.
- Zhuang GZ, Sun ZJ, Wang SK. Experimental study on the basic mechanical characteristics of foam filled

3-D spacer fabric composites. *Acta Materiae Compositae Sinica* 2009; 5: 26: 27-32.

- Zhu CY, Tan DY, Tian W. Structural design and weaving methods of 3D orthogonal integrated cellular woven fabrics. *Journal of Textile Research* 2006; 27, 12: 9-13.
- Zhu CY, Chen JJ, Zhu JP. Development of 3-D integrated and sandwiched fabric composites. *Journal of Textile Research* 2007; 28, 1: 56-59.

- Van Vuure AW, Ivens JA, Verpoest I. Mechanical properties of composite panels based on woven sandwich-fabric preforms. *Composites: Part A* 2000; 31: 671-680.
- Van Vuure AW, Pflug J, Ivens JA. Modelling the inside layer properties of composite panels based on woven sandwich-fabric performs. *Composites Science and Technology* 2000; 60: 1263-1276.
- 17. Kong LJ, Wu H. Study on the positive let-off mechanism. *Sichuan Textile Technology* 2004; 3: 13-16.
- Gao J, Li JM. Investigation of double layer fabric weaving process on rapier loom with single beam. *Journal of Tianjin Polytechnic University* 2008; 27, 1: 39-41.
- Song YS, Youn JR. Modeling of resin infusion in vacuum assisted resin transfer molding. *Polymer Composites* 2008; 29: 390-395.
- Zhao QS, Zhao PF. Study on Vacuum assisted resin infusion molding technique. *Fiber Composites* 2002; 27, 1: 42-46.
- Hosur MV, Abdullah M, Jeelani S. Manufacturing and low-velocity impact characterization of hollow integrated inside layer sandwich composites with hybrid face sheets. *Composite Structures* 2004; 65: 103-115.
- 22. GB/T1453-2005. Sandwich structure or inside layer flat performance test method.

Received 29.01.2013 Reviewed 21.12.2013

18th International Papermaking Conference & Exhibition 'PROGRESS14' INNOVATIONS & COMPETITIVENESS

23-25 September 2014 r., Hotel Andel's, Łódź, Poland

Topics:

- Main factors which create the development of the world's papermaking industry: globalization, protection of the environment, informative technologies, the increasing use of waste-paper
- Actual state of art and tendencies of technologies development for manufacturing the fibrous pulp, paper and board
- Raw materials and auxiliary products for the production of fibrous pulp and paper wood and non-wood raw materials, waste-paper, fillers, pigments, paper sizes and other products
- Machines, devices and equipment
- New technologies and equipment for the manufacturing of packaging from corrugated board
- Quality of paper and paper products
- Energy problems

Exhibition and poster session

Simultaneously with the two-day conference activity a poster session presenting research works will be held, as well as a technical exhibition of the manufacturers and suppliers, who will present machines, equipment, control and measuring devices, informative systems, as well as raw materials and auxiliary agents.

For more information please contact:

Association of Polish Papermakers

Plac Komuny Paryskiej 5a, skr. poczt. 200, 90-007 Łódź, Poland, Tel. (42) 6300117, Fax (42) 6324365, E-mail: info@spp.pl