



**Creative Composites Ltd.**  
302 S Traer Street  
Clarksville, IA 50619  
(641) 522-3034

## RigiPanel Product Overview

**Definition:** RigiPanel is a natural fiber composite material designed to function as a structural acoustic panel. It can be used either as a standalone panel or as part of a layered panel system.

**Function:** RigiPanel has been tailored both as a structural and sound deadening material. Noise control is accomplished through variation of the material properties of the panel. Structurally, the geometry of the panel was derived to yield increased compression strength over traditional acoustic materials while maintaining desired acoustic characteristics.

### Performance Features

- Tunable noise control
- Structurally rigid
- Highly formable
- Utilizes renewable resources



RigiPanel Sample

**Current Applications:** RigiPanel provides an excellent foundation for a panel system that can be valuable in a variety of applications. Preliminary work has looked at acoustic doors, office partitions and tractor cabs. Currently, development efforts have been geared toward utilizing RigiPanel within architectural acoustic door cores. Architectural acoustic doors must meet a variety of standards, including specific STC and burn ratings. The processes used in the manufacture of these doors demand significant compression strength in order to avoid hand assembly and finishing.

**Current Panel System Development:** Currently, the architectural door core that has been developed is designed to meet three specific criteria. Firstly, the finished door using a RigiPanel core needed to achieve an STC 45 rating. Secondly, the finished door needed to pass 20 minute positive pressure burn test. Finally, the core needed to exhibit enough compression strength to allow for automated assembly and finishing. A multi-layered core using two panels was found to meet all of these requirements. This layered core was then combined with a faced frame for easy integration into a conventional door assembly.



Layered cores awaiting further door assembly



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Three versions of this layered core, dubbed RigiCore, have been processed and complete doors produced. These trial runs provided the means to test RigiCore's performance in the door applications. Numerous aspects of the finished door were scrutinized to determine if RigiCore met the criteria including manufacturability and finish quality.

- *Doors made with the RigiCore system have been found to significantly reduce manufacturing costs over traditional acoustic doors*

Finally, the completed doors were acoustically tested and rated according ASTM E90 for an STC classification. This testing quantified the acoustic performance of different core designs.

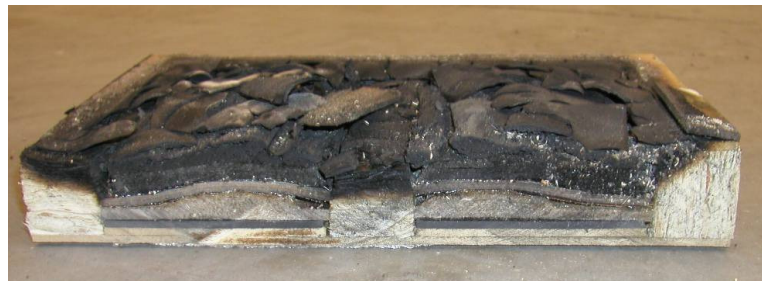
- *Doors made with the RigiCore system can achieve STC ratings up to 45.*

<b>RigiCore Acoustic Performance</b>																	
	Transmission Loss (dB) per 1/3 Octave Band (Hz)																
	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	<b>STC</b>
RigiCore Door v.1	25	27	26	29	36	40	42	44	46	47	50	51	52	54	54	55	<b>43</b>
RigiCore Door v.2	27	27	26	29	36	40	42	44	46	47	50	51	52	54	54	56	<b>44</b>
RigiCore Door v.3	25	27	31	35	40	42	44	45	47	47	49	50	49	48	46	46	<b>45</b>

*Results taken from Certified ASTM E90 testing*

In addition, RigiCore doors were fire tested in accordance with UL10C. Fire testing showed the fire retardant layer was sufficient to stop combustion of material past the center of the core.

- *RigiCore has successfully met the UL10C test for a 20 minute burn rating*
- *RigiCore shows significant potential for higher ratings*



Fire test sample