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Langley Research Center



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Adhesive Coating Eliminated in New Honeycomb-Core Fabrication Process

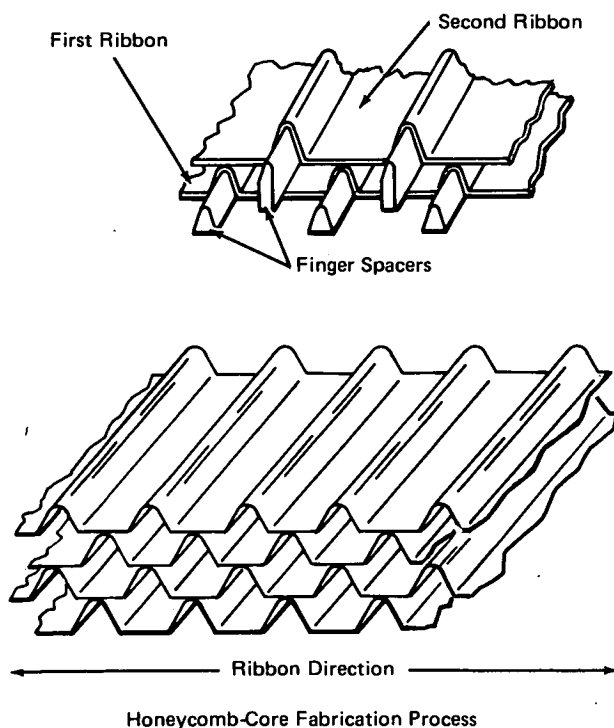
A new technique has been developed for the fabrication of glass-fiber-reinforced, silicone-resin honeycomb core, which eliminates the use of the silicone-based adhesive material as a bonding medium. This adhesive requires a precise time-temperature cure, which, if not conducted properly, can cause up to 50 percent scrapage. With the new procedure, prepreg resin is used as the bonding medium, and each layer is laminated together to form the honeycomb billet.

This process was developed to fabricate honeycomb core for the Viking-Lander ablative heat shield, but it could be used in any application where nonmetallic

honeycomb core is being fabricated. Test specimens were found to exceed strength requirements, and the new technique also resulted in decreased cost and time, while improving reliability.

The honeycomb core is made from silicone, pre-impregnated glass-fabric ribbon. The ribbon is pre-formed under heat and pressure to desired dimensions; then it is placed in layers with finger spacers, placed between the layers in the honeycomb apertures (see illustration).

When sufficient levels of ribbon and fingers have been added to make a core billet of required size, the uncured honeycomb billet is placed in a circulating oven. The billet is covered with a sheet of silicone rubber and is loaded with weights to insure proper bonding. Then the oven is heated for the required time for bonding and curing. The cured core then is post cured in an air-circulating oven.



Note:

Requests for further information may be directed to:
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 Reference: TSP73-10439

Patent status:

NASA has decided not to apply for a patent.

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 under contract to
 Langley Research Center
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