

test will be shorter than the time required to complete a non-suppressed test. Therefore, the time to start taking data manually may be different for suppressed and non-suppressed resins.

11.5 Data Acceptance Criteria:

11.5.1 A test set is designed as twelve individual test runs using the same resin, initiator, and gel time, six of the test runs use the resin non-vapor suppressed and the other six use it vapor suppressed.

11.5.2 If a test run falls outside any of the time, temperature, weight or humidity variation requirements, it must be discarded and run again.

11.5.3 The laminate roll out time for each individual test run must vary less than ± 10

percent of the average time required for the complete set of six suppressed and six non-suppressed runs.

11.5.4 Test temperature for each test run must be maintained within $\pm 2^\circ\text{F}$ and the average must be between 70° and 80°F . Refer to 11.1.3.

11.5.5 The difference in the amount of resin for each run must be within ± 10 percent of the average weight for the complete set of six suppressed and six non-suppressed runs.

11.5.6 The relative humidity from each test run must be within ± 15 percent of the average humidity for the complete set of six suppressed and six non-suppressed tests. Refer to 11.1.4

11.5.7 The glass content for each test set must be within ± 10 percent of the average resin-to-glass ratio for the complete set of six suppressed and six non-suppressed runs. Refer to 12.2).

11.5.8 The filler content for each test of a test set must be within ± 5 percent of the average filler content for the complete set of six suppressed and six non-suppressed runs. Refer to 12.2.

11.6 Resin Application Pour Pattern:

11.6.1 To facilitate the distribution of resin across the chopped strand mat, and to provide consistency from test to test, a uniform pour pattern should be used. A typical pour pattern is shown below:

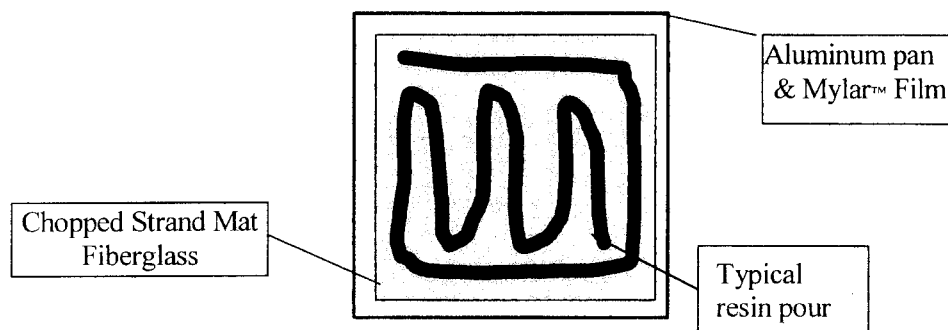


Figure 11.6 Resin Distribution Diagram

11.6.2 The resin is to be evenly distributed across the entire surface of the chopped strand mat using the resin application roller to achieve a wet look across the surface of the laminate. Pushing excess resin off the reinforcement and onto the Mylar sheet should be avoided. No resin is to be pushed more than $\frac{1}{2}$ inch beyond the edge of the glass mat. If excess resin is pushed further from the glass mat, it will void the test run. As part of this process, typical visible air voids are to be eliminated by the rollout process. If the pour pattern is different from the above, it must be recorded and attached to test data sheet 17.1.

12. Data Analysis and Calculations

12.1 Data Analysis:

This test method requires a simple mass balance calculation, no special data analysis is necessary.

12.2 Calculations:

12.2.1 The target glass content (percent) for unfilled resin systems is determined from the specific production parameters being evaluated. In absence of any specific production requirements the target may be set at the tester's discretion.

12.2.2 Glass content determination (expressed as a per cent):

$$\% \text{ Glass} = \frac{\text{Glass wt(g)}}{\text{Glass wt(g)} + \text{Resin weight (g)}}$$

12.2.3 Weight of resin required:
Resin weight required = $(\text{Glass wt (g)} / \% \text{ glass}) - \text{Glass wt (g)}$

12.2.4 Filled resin formulation determination for filled resin systems (e.g. >30 percent filler by weight for a particulate filler, or >1 percent by weight for a lightweight filler, such as hollow microspheres):

$$\% \text{ Resin content} = \frac{\text{resin}}{\text{resin} + \text{glass} + \text{filler}}$$

$$\begin{aligned} \text{weight(g)} / (\text{resin weight(g)} + \text{glass} \\ \text{weight(g)} + \text{filler weight(g)}) \\ \% \text{ Glass content} = \frac{\text{glass} \\ \text{weight(g)}}{\text{resin weight(g)} + \text{glass} \\ \text{weight(g)} + \text{filler weight(g)}} \\ \text{Filler content} = \frac{\text{filler} \\ \text{weight(g)}}{\text{resin weight(g)} + \text{glass} \\ \text{weight(g)} + \text{filler weight(g)}} \end{aligned}$$

12.2.5 Initiator weight determination:

$$\text{Initiator weight (g)} = \text{Resin weight(g)} \times \text{Initiator \%}$$

12.2.6 Emission weight loss determination:

$$\text{Emissions weight loss (g)} = \text{Initial resin weight (g)} - \text{Final resin weight (g)}$$

12.2.7 % Emission weight loss:

$$\% \text{ Emission Weight Loss} = \frac{\text{Emission weight loss (g)}}{\text{Initial resin weight (g)}} \times 100$$

12.2.8 Average % Emission Weight Loss (assuming six test runs):

$$\text{Average \% Emission Weight Loss} = \frac{\sum_{i=1}^{N=6} (\% \text{ Emission Weight Loss}_i)}{6}$$