



The Liner Company

SOLUTIONS

ENVIRONMENTAL PROTECTION, INC.

9939 US-131 South NE
Mancelona, Michigan
49659

800-OK-LINER
Phone | 231-587-9108
Fax | 231-587-8020

www.geomembrane.com

PVC Thermal Welding Temperature Window

A thermal weld study was conducted on various gauges of PVC for the purpose of identifying a temperature window in which PVC could be welded.

The material test strips used were 20 mil PVC, 30 mil PVC, and 40 mil PVC; manufactured by Occidental Chemical Corporation.

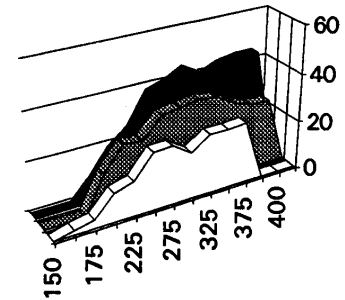
A thermal welder was used utilizing a split wedge. The welded area consisted of two 1/2" welds with a 1/2" air channel in between. The welder is adjustable from 0 to 10 feet per minute for the travel speed, and 0 to 500 degrees Celsius for the wedge temperature. The constant speed used for these tests was 7 feet per minute, and the wedge temperature was started at 100° Celsius and increased at 25° intervals until the material fused together, and continued incrementally up to 425°, or until a point at which the weld becomes unacceptable.

A sample strip of sufficient length, (approximately 100 feet) was prepared of each of the three materials. Once the weld occurred at the lower Temperature, a 16" sample could be fabricated at each 25° interval from the lowest to the highest weldable temperature. The ambient room

temperature for fabrication of these test strips was 21° Celsius, and the humidity was 64%.

Five specimens of each temperature range sample were removed for peel testing per NSF-54. The average of the five specimens from each sample were recorded on a graph. Each material type is shown on the accompanying graph.

The graph illustrates the thermal welding window for all three thicknesses of PVC would be 250° Celsius to 375° Celsius. Although the window for some thicknesses may be larger than the three combined, the ultimate goal was to establish the range of temperatures for thermal welding PVC.



□ 20 MIL PVC ▨ 30 MIL PVC ■ 40 MIL PVC

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