

# ADEKA ULTRA SEAL

## LENGTH CHANGE DURING EXPANSION

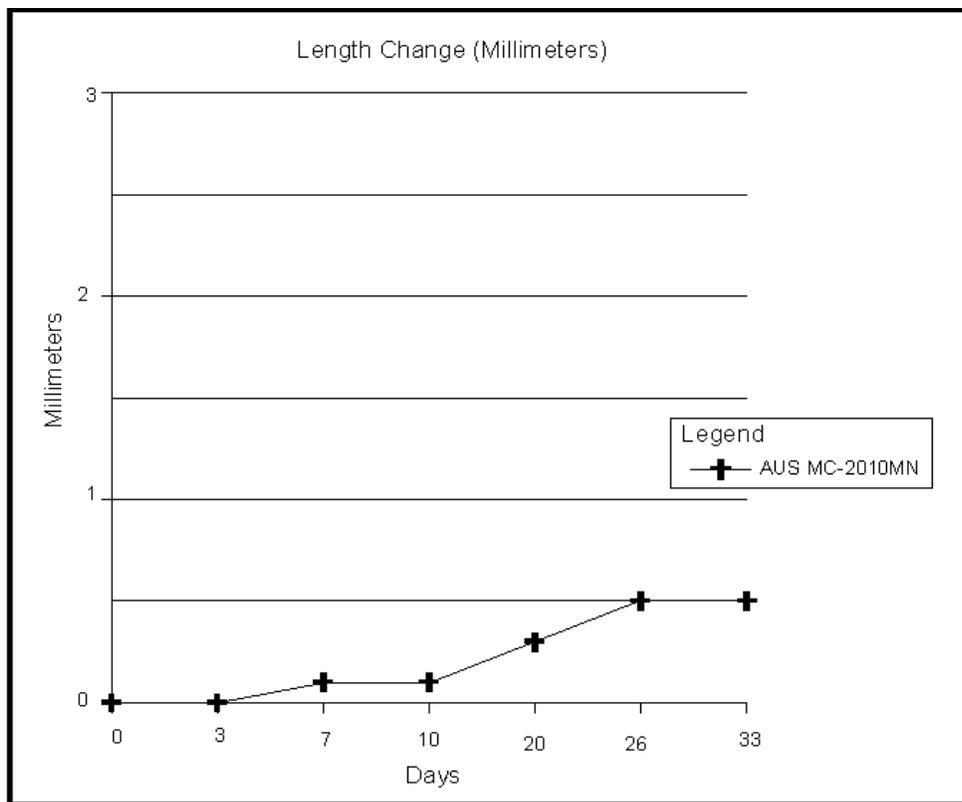
A. Purpose: This test was designed to measure the change of length during 33 days of immersion in water.

B. Material tested: Adeka Ultra Seal MC-2010MN.

C. Physical Characteristics:

Adeka Ultra Seal MC-2010MN is a natural rubber product with a urethane rubber hydrophilic agent polymerized in the rubber. A stainless steel wire mesh is embedded in the MC-2010MN.

D. Test Method: Sample pieces, (length = 50mm; width = 20mm; thickness = 10mm), were soaked in potable water for a period of 33 days. Length measured at 3 days, 7 days, 10 days, 20 days, 26 days, and 33 days.

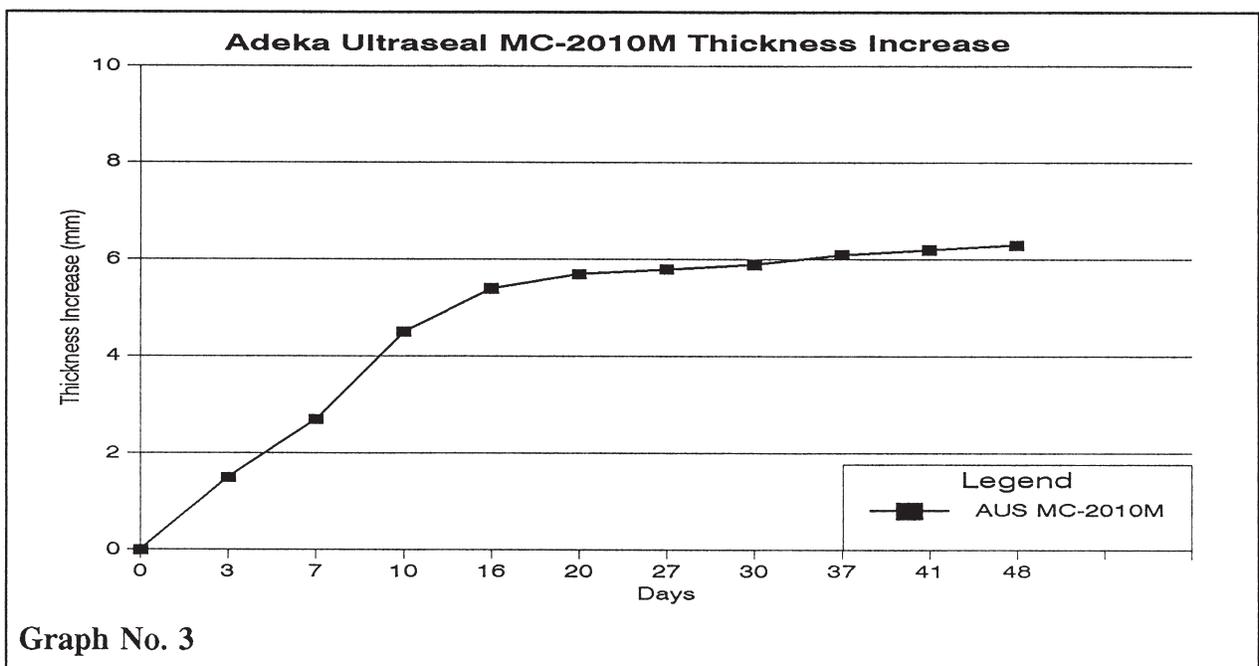
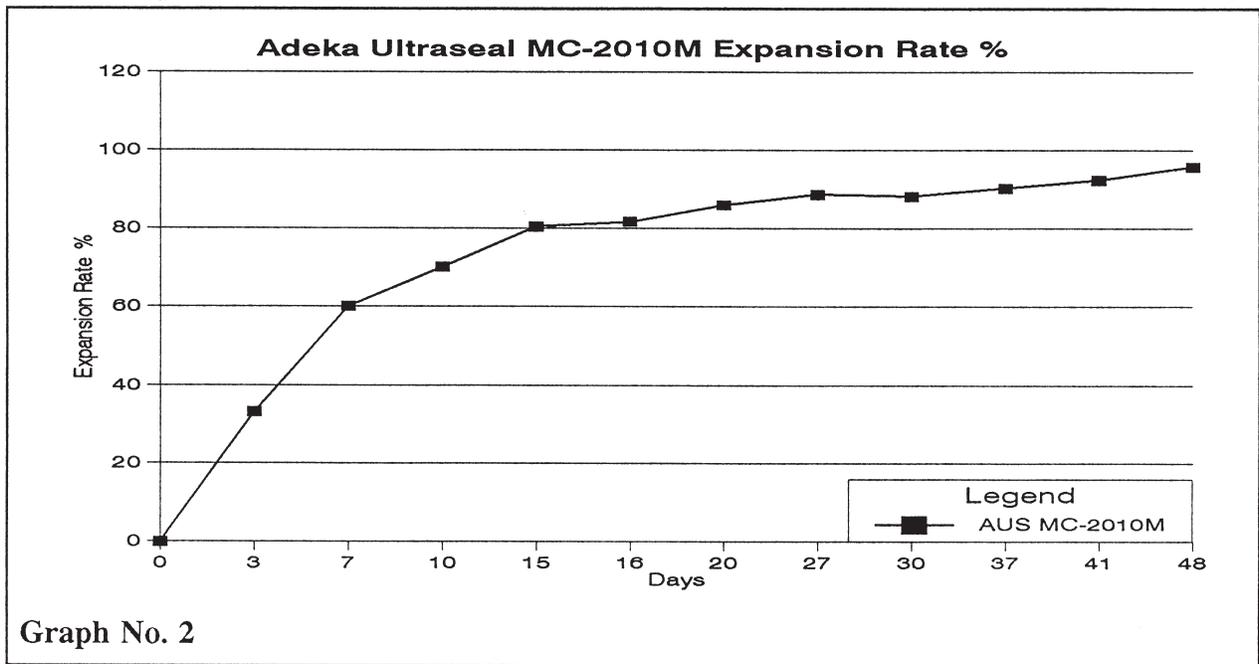


As shown, length expansion is limited to an insignificant amount. The addition of the stainless steel net to the MC-2010MN controls the expansion direction and pressure. Expansion is directed to the vertical plane. This is where waterstopping function is most critical. If unintentional hydration occurs before the waterstop is covered, winding or warping of the product is prevented by the wire net. Expansion is focused in the width direction by the wire mesh.

## EXPANSION RATE % INCREASE AND THICKNESS INCREASE (mm).

**A. Purpose:** To compare expansion rate weight % increase and thickness increase in millimeters.

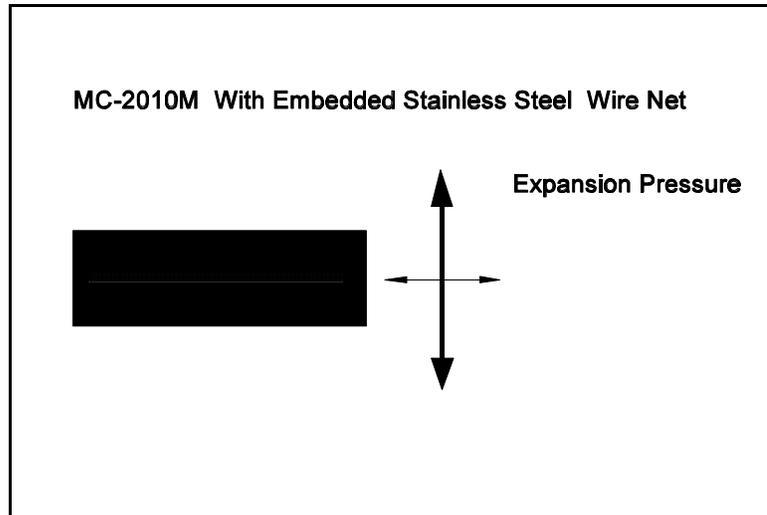
**B. Test Method:** Sample pieces, (length = 50mm; width = 20mm; thickness = 10mm), were soaked in potable water for a period of 65 days. Measurements of thickness and weight were performed at 3, 7, 10, 15, 16, 20, 27, 30, 37, 41, and 48 days. Expansion rate weight % increases were determined by the following formula: Expansion Rate Wt% = (Weight after soaking - Weight before soaking)/weight before soaking. Thickness measurements are in millimeters. Results are shown in Graphs 2 and 3.



**Comments:**

As demonstrated in the graphs, MC-2010M unlike other products has controlled expansion direction, pressure, and limits.

Products that have rapid and large expansion rates have weaknesses. A swelling rate of more than four times by volume will result in a reduction of performance life.



Some products that have a high amount of expansion occurring before concrete is cured can leave a gap or void between the concrete and the waterstop. This will create a path for water penetration. Also higher expansion requires more concrete coverage to prevent concrete "blow-outs".

Premature expansion can occur when the waterstop is exposed to water prior to the final concrete pour. Often waterstops are placed in a preformed keyway. This keyway forms a natural pool for water to collect and will cause premature expansion. Excessive premature expansion will decrease the effectiveness of the waterstop. Check with your local Adeka Ultra Seal Representative or call (800) 999-3959 for detailed information on premature water exposure.