

# FORMATION OF WRINKLES IN INSTALLED SWIMMING POOL LINERS

Wrinkles will develop if an installed vinyl liner is slightly oversized. However, the purpose of this bulletin is to discuss wrinkling that may occur in a properly sized liner.

## LABORATORY TESTING

A laboratory testing program to study the effect of pH and cyanuric acid stabilizer levels on vinyl swimming pool liner materials was conducted by Union Carbide Corporation and FMC Corporation in 1969. The results of their experiments have been verified by other labs.

## The most significant conclusions of the above study

1. Low pH is the major cause of dimensional instability resulting in wrinkling. Test samples immersed in 6.0 pH solutions showed weight gains much higher than samples immersed in 8.0 pH solutions. Dimensions of the samples also increased in proportion to weight gains.
2. Acidic chlorinating chemicals such as trichloroisocyanurates tend to lower pH unless using counteracted by neutralizing agents. Therefore, monitoring of pH is more critical than acidic sanitizers.
3. Cyanuric acid stabilizer levels of 50 ppm were shown to reduce the magnitudes of weight and dimensional increases at both 6.0 and 8.0 pH. Therefore, cyanuric acid stabilizer appears to have the ability to provide some insurance against the detrimental affect of the unanticipated pH fluctuation.

Incidents of wrinkling that have been reported to us, have almost always occurred in situations where cyanuric acid usage was deemed to be unnecessary, such as indoor/brominated pools. Therefore, it is recommended that all vinyl lined pools be routinely stabilized with cyanuric acid, including indoor pools.