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## *Evaluating EcoFilm after exposure to extreme cold, and after exposure to extreme heat/humidity*

**Background:** A request was made to evaluate the effects on mechanical properties for the product “EcoFilm” after exposure to extreme cold and extreme heat/humidity.

**Purpose:** Evaluate the corrosion inhibition performance of submitted film

**Method:** Breaking Factor (ASTM D 882-98)  
 Tensile Strength at Break (ASTM D 882-91)  
 % Elongation at Break (ASTM D 882A)  
 Tensile Strength at Peak (ASTM D 882)  
 Tear Strength (ASTM D 1922)  
 Puncture Resistance (ASTM D 3420)

**Materials:** Instron model #4443 (used for breaking factor, Tensile Strength at Break, % elongation at Break, Tensile strength at Peak)  
 Twing-Albert pendulum tester, product #1960-00, serial #80312 (used for tear strength and Puncture resistance)  
 Laboratory Freezer  
 Laboratory Environmental Chamber  
 EcoFilm (0.75 mil)

**Procedure:** The above tests were performed according to standard procedures for each.

**Results:**

Test	EcoFilm (0.75 mil)	EcoFilm (0.75 mil) after exposure for seven days at – 15 deg F	EcoFilm (0.75 mil) after exposure for seven days at – 15 deg F, and after seven days to 120 deg F/~ 100% R.H.
Breaking Factor (lbs/in)	4.53/5.06	6.97/6.62	5.55/6.25
Tensile Strength at Break (lbs)	4.34/5.3	5.01/5.37	5.35/5.47



% Elongation at Break (%)	317.9/285	289.9/371	336.1/371.1
Tensile Strength at Peak (ASTM D 882) (lbs)	4.34/5.3	5.01/5.37	5.35/5.48
Tear Strength (N)	1491.12/3479.28	2197.44/4656.48	680.16/2511.36
Puncture Resistance (J)	1.14	1.47	0.92

Machine Direction/Cross Direction

**Conclusion:**

- (1) For breaking factor, tensile strength at peak/break, % elongation, tear strength and puncture resistance, EcoFilm after the exposures to extreme cold and extreme heat/humidity, is relatively unaffected.