# CTI Bonded Direct/Anti Fracture Test Results

| I. BONDED DIRECT / ANTI-FRACTURE TESTS | COMPOSEAL GOLD Test Results | | CERAMIC TILE INSTITUTE Minimum Standard |
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| **BOND SHEAR STRENGTH: ASTM C-482 (mod)** measures lateral psi at which installation loses bond under wet and dry conditions. | **using latex mod. Thin set mortar** | **Using dry set mortar** | |
| **Dry**: 3 days cover cured plus 4 days air cured: | 71 psi | 121 psi | 50 psi |
| 3 days cover cured plus 28 days air cured: | 78 psi | 111 psi | 50 psi |
| **Wet**: 3 days cover cured, 4 days air cured, PLUS total immersion in water for 7 days: | 64 psi | 92 psi | 50 psi |
| for 21 days: | 63 psi | 121 psi | 50 psi |
| for 93 days: | 56 psi | 95 psi | 50 psi |

NOTE: Latex modified mortar of ten requires more than 7 days air cure for maximum strength.

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| **TENSILE STRENGTH: CTI/SE 5763** Measures psi pull strength at which installation loses bond under dry and wet conditions. | **Using latex mod. mortar** | |
| **Dry**: 3 days cover cured plus 25 days air cured: | 75 psi | 50 psi |
| **Wet**: 3 days cover cured plus 4 days air cured PLUS 7 days immersed in water: | 69 psi | 50 psi |
| 21 days immersed in water: | 63 psi | 50 psi |
| 93 days immersed in water: | 54 psi | 50 psi |
| **TOTAL SYSTEM PERFORMANCE: ASTM C627 (mod) Robinson Floor Tester/Split Slab .002 to .008"** Tests for integrity of total installation no tile cracking/chipping or grout deterioration after successive cycles of increased load/stress over split substrate. Hydrostatic testing with 2" head of water performed at end of cycles. Number of completed cycles before failures: | 11 cycles (Gold adhesive bond)<br>9 cycles (Mortar bond) | 3 cycles<br>3 cycles |
| **ROBINSON FLOOR TESTER: ASTM C627** (without split slab) Quarry tiles used. | 14 cycles: Extra Heavy Commercial Rating | |

| II. WATERPROOF TEST | | |
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| **HYDROSTATIC: FHA 4900.1 Sect. 615-5** Measures integrity of membrane after being subjected to 2 ft. head of water for 48 hours. | no water penetration | no water penetration |
| **INDENTATION RESISTANCE: FHA** | no water penetration | no water penetration |

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| **4900.1**<br>Tests membrane's chemical resistance to highly alkaline solutions such as soapy water. | | |
| **PUNCTURE RESISTANCE: FHA 4900.1**<br>200 gram dart with small ball bearing point dropped from 3 ft. Simulates dropping of sharp edged tools onto membrane. | no water penetration | no water penetration |
| **FOLDING RESISTANCE: FHA 4900.1**<br>Tests membrane for cracking in cold weather: 24° F for 24 hours, then membrane folded back on itself twice and then tested for cracks. | no water penetration | no water penetration |
| **FUNGUS and MICRO-ORGANISM RESISTANCE:**<br>**FHA 4900.1 plus Sec. C, or ANSI A136.1, K-6.4**<br>Fungus and/or bacterial growth must actively be inhibited by membrane within 24 day period. | no growth and no water penetration | no growth and no water penetration |
| **DIMENSIONAL STABILITY: ASTM D-1204**, -12° to 212° F<br>Membrane is tested for lineal change after being heated, and also after being cooled.<br>length:<br>width: | -20° F 212°F<br>-.17% -.35%<br>-.29% -.30% | <br>.5%<br>.5% |
| **SEAM STRENGTH: ASTM D-751**<br>COMPOSEAL flexible vinyl cement, 24 hour cure | 47.7 psi/in. width | 8 psi/in. width |
| **BREAKING STRENGTH: ASTM D-751**<br>Linear pressure at which membrane tears: | parallel : 1517 psi<br>parallel : 1603 psi | 170 psi<br>170 psi |
| **ELONGATION: ASTM D-751**<br>Amount membrane stretches before breaking: | parallel : 364%<br>perpend.: 462% | 20%<br>20% |
| **HYDROSTATIC PRESSURE: ASTM D-751, A-1**<br>Measures effect of sudden burst of high water pressure on membrane, such as water pipe burst. Results give psi at which membrane ruptures. | 116 psi | 100 psi |
| **BREAKING STRENGTH: ASTM D-751**<br>Linear pressure at which membrane tears: | parallel : 1517 psi | 170 psi |

**III. OPTIONAL TESTS** (Not required by CTI for Listing)

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| **FLAMMABILITY: ASTM D568-77**<br>Measures rate and extent of burning of bare membrane. Self extinguished. | Burned .6 sec. after flame removed |
| **OZONE RESISTANCE: ASTM D1149** | No crack, crazing or water penetration observed. |
| **GAS PERMEABILITY (Methane) : ASTM D1434**<br>Measures amount of methane gas that permeates membrane. | GTR: 231.ml, Coeff: 3.6 Barrier |
| **VOLATILITY TEST: ASTM D1203-89, Method A**<br>Measures weight loss and distortions after accelerated aging of membrane. | .33% weight loss, no distortion |