

THE THERMO-SHIELD® DIFFERENCE

THERMO-SHIELD® IS AN ELASTOMERIC ACRYLIC EMULSION, WITH INSULATIVE CERAMIC MICROSPHERES. IT IS MADE OF TOTALLY SYNTHETIC STATE-OF-THE -ART MATERIALS, SO IS NOT SUBJECT TO RAPID BREAKDOWN LIKE TRADITIONAL COATINGS. FOLLOWING IS A LIST OF ADVANTAGES OBTAINED WHEN YOU APPLY THERM-SHIELD® COATINGS:

- 1. EXCELLENT ADHESION TO MOST SUBSTRATES, INCLUDING, STEEL, TIN, GALVANIZED STEEL, WOOD, CONCRETE, TILE, FOAM, RUBBER AND OTHERS (CAN BE APPLIED TO ASPHALT AND TART WITH THERMO-SHIELD FEX-TAC AS A BASE COAT)**
- 2. WATERPROOFING; THE ROOFING WILL WITHSTAND PONDING OF WATER**
- 3. LONG LIFE; IT IS NOT DAMAGED BY ULTRA VIOLET LIGHT, DOES NOT GET HARD OR CRACK, DOES NOT GET CHALKY**
- 4. REMAINS FLEXIBLE AT MINUS 50° F AND MAINTAINS ITS STRENGTH AT 400° F; ELMINATES THERMAL-SHOCK DAMAGE**
- 5. CERAMIC MICROSPHERES REFLECT AND DISIPATE MOST SOLAR HEAT. IT HAS AN INSULATIVE EQUIVALENT TO AN R-22 INSULATION AGAINST SOLAR HEAT**
- 6. COST EFFECTIVE; WILL PAY FOR ITSELF IN A SHORT TIME THROUGH ENERGY SAVINGS AND LONG LIFE**
- 7. BECOMES A SEAMLESS, FLEXIBLE, MEMBRANE-LIKE COATING OVER THE ENTIRE AREA WITH NO SEAMS OR ADHESION PROBLEMS**

- 8. IT IS WATER SOLUBLE, EASY TO APPLY AND EASY TO CLEAN UP; NO ELABORATE EQUIPMENT REQUIRED**
- 9. NON-TOXIC IN LIQUID OR CURED STATE**
- 10. MAY BE TINTED TO DESIRED COLOR; EXCELLENT FADE RESISTANCE**
- 11. HAIL RESISTANT**
- 12. FIRE RESISTANT**
- 13. MILDEW RESISTANT**
- 14. WIND ABRASSION RESISTANT**
- 15. SOUND ABSORPTION; THE RESINS AND MICROSPHERES REDUCE NOISE AND ECHO**
- 16. WITHSTANDS AIRBORNE POLLUTANTS**
- 17. VARIABLE PERMEABILITY: WHEN THE COATING IS DRY THE POLYMERS SHRINK TO LET TRAPPED MOISTURE BREATHE OUT, BUT WHEN WET, THE POLYMERS SWELL AND BECOME WATERTIGHT – THIS PREVENTS BLISTERING AND MOISTURE BUILD-UP**
- 18. PROVIDES A HIGH DEGREE OF COMFORT IN THE BUILDING BY REDUCING NOISE AND MAINTAINING THE INSIDE MEAN TEMPERATURE AT A MORE STABLE LEVEL**
- 19. VERY LOW MAINTENANCE**
- 20. THE FINISHED MEMBRANE IS VERY LIGHTWEIGHT; ONLY 30 LBS. PER 100 SQ. FT. (TAR AND GRAVEL WILL WEIGHT ABOUT 600 LBS. PER 100 SQ. FT.)**
- 21. RESISTANT TO NORMAL FOOT TRAFFIC**

THERMO-SHIELD® HAS BEEN WIDELY TESTED IN ACCREDITED LABORATORIES AND IN ACTUAL FIELD-TESTS.

THERMO-SHIELD® ROOF COATING RESULTS ON AMERICA'S ASTM TESTS

TENSILE STRENGTH **ASTM D-412**
Tensile stress at 25% elongation **525 psi**
Tensile strength at break **615 psi elongation 70%**

DETERIORATION BY HEATING IN AIR **ASTM D-865**
(Tensile strength after heating 21 days at 150° C)
Tensile stress at 25% elongation **515 psi**
Tensile strength at break **640 psi elongation 85%**
IMPORTANT: These two tests show THERMO-SHIELD® ROOF COATING ACTUALLY GETS STRONGER AND MORE DURABLE WITH AGING

WATER VAPOR PERMEABILITY **ASTM D-1653**
AND PERMEABILTIY **ASTM E-96**
Both tests show ROOF COATING with 8.8 perm in. rating. This is excellent Permeability: it has 160 times more than one of our main competitors claiming the same properties.

WATER ABSORPTION **ASTM D-570**
After water saturation for 5 weeks “NO CHANGES IN APPEARANCE ON ROOF COATING AFFER RECONDITONING”. IMPORTANT! The above 3 tests show ROOF COATING will stand up to ponding water, yet has the ability to BREATHE OUT trapped water vapor when weather conditions are dry - WATERPROOFING WITHOUT BLISTERING

BRITTLENESS **ASTM D-746**
ROOF COATING passed the 90° bend test at -37° C. FLEXIBLE AT VERY COLD TEMPERATURES

SURFACE OZONE CRACKING **ASTM D-1149**

70-DAY EXPOSURE TO OZONE, Time to failure, "NONE OBSERVED IN DURATION OF TEST"

CHEMICAL RESISTANCE

ASTMD-1380

16-hour spot test to 26 harsh or staining chemicals. ROOF COATING blistered only with some concentrated acids, stained only with gasoline, aircraft hydraulic fluid, and lipstick. ROOF COATING undamaged by animal urine, battery acid, bleach, de-icing chemical, 40% salt solution and others.

STEADY STATE HET FLUX MEASUREMENTS AND THERMAL TRANSMISSION PROPERTIES

ASTM C-177 / ASTM C-1045

ROOF COATING (at 5-MIL thickness) K Value 0.0454 (R 22) NOTE: Some specialists say the ASTM formula for R Values in this test "R = 1/K" is oversimplified, and does not take enough information into consideration.

JAPANESE INDUSTRIAL STANDARDS TESTS

"JIS" (Materials must pass strict limits on these tests before they can be sold on the Japanese market) THERMO-SHIELD® ROOFING, INTERIOR AND EXTERIOR COATINGS have all passed the required tests:

LOW TEMPERATURE STABILITY

JIS A 6906 (1984) 5.5

RESISTANCE TO CRACKING DURING CURING

AND DRYING STAGE

JIS A 6906 (1984) 5.7

ADHESION STRENGTH TEST

JIS A 6909 (1984) 5.8

Normal Condition Test, THERMO-SHIELD® has 3 times the minimum requirement for Adhesion. After Saturation Test, THERMO-SHIELD® had

8 times the minimum requirement for Adhesion.

REPEATED TEMPERATURE CHANGE

JIS A 6909 (1984) 5.9

*****No peeling, cracking, blistering, discoloration or dullness*****

TEST FOR WATERPROOF

JIS A6909 (1984)

5.10

*****Maximum to pass test is 1.0 CM rating, THERMO-SHIELD® WAS 0.1 CM TEN TIMES better than required*****

WASHABILITY

JIS A6909 (1984) 5.11

IMPACT; SHOCK TEST

JIS A6909 (1984)

5.12

*****Did not crack, peel, nor change shape or form under impact*****

AKALINITY TEST

JIS A6909 (1984)

5.13.2

*****Did not crack, blister, peel, gum, change color or dull*****

RESISTANCE TO WEATHER & CLIMATE JIS A 6909 (1984) 5.14

*****Did not crack, peel or discolor to minimum scale color of #3*****

THERMO-SHIELD® maintained a 4-5 scale, EXCELLENT, best of any paint tested by the Japanese National Testing Lab.

FIRE RESISTANCE TEST - CLASS 1

JIS A 1321

*****Did not fuse, crevice, change form or bow when cooled. Flame Retention: No flame to remain over 30 seconds after heating is stopped.**

THERMO-SHIELD® Retention was 0.00***

UNDERWRITERS LABORATORIES (ASTM E-108 "FIRE TESTS OF ROOF COVERINGS)

Under UL File reference "R12343, THERMO-SHIELD® ROOF COATING is available with a CLASS A fire resistant rating. NOTE: This is a special "Class-A formula", not our standard Formula.

Results: Flying Brands Produced - None

Deck Exposure - None

Lateral Flame Spread - None

HAUSER LABORATORIES TESTS - Comparison of heat transfer through THERMO-SHIELD® vs. other common coatings:

- 1. THERMO-SHIELD® INTERIOR PAINT heat transfer 0.871 BTU/hr Sq.-Ft., white paint heat transfer 1.163 BTU/hr Sq.-Ft (Normal white paint allowed 33% more heat to pass through).**
- 2. THERMO-SHIELD® ROOF COATING Solar heat transfer 6.1 BTU/hr Sq.-Ft., Black Asphalt solar heat transfer 38.1 BTU/hr Sq.-Ft. (Asphalt allowed 84% more heat to pass through).**
- 3. THERMO-SHIELD® ROOF COATING .005"-thick (5-mil = .127MM) painted on galvanized steel - solar heat transfer 17.2 BTU/hr Sq.-Ft. Untreated Galvanized Steel -heat transfer 48.0 BTU/hr Sq.-Ft (64% more heat pass through)**

HEMISPHERICAL LIGHT REFLECTANCE

DSET Test 89r12 1001

Test on THERMO-SHIELD® WHITE ROOF COATING, it reflected 82% of the solar light (88% of S-VISUAL LIGHT and 84% of NIR “Near Infra Red”, the portions of light that account for heat - Reflectance of other typical roof systems: Dark pea gravel 12% - Light pea gravel 34% - gravel coated asphalt 23% - black roof 5% - dark gray 15% - white paint 55% - aluminum 40% - aluminum fiber coating 36% - white asphalt shingles 30% - SPM-60 (EPDM) 11%. (THERMO-SHIELD® Reflects 49% more than 2nd best, white paint. SOLAR HEAT THAT DOES NOT GET INTO THE BUILDING, DOES NOT BECOME A PROBLEM.

WATER EXTRACTABLES - SIMULATION OF ENVIRONMENTAL LEACHING

ROOF COATING leachables are composed of common (non-toxic) elements, predominately Calcium salts.

FIELD TESTS OF THERMO-SHIELD® INSULATING VALUE

JAPANESE TESTS ON 8-TON CAPACITY FIBERGLAS FEED STORAGE TANKS

The interior of the THERMO-SHIELD® coated tank stayed about 40° F cooler during the daytime.

ST. LOUIS COMPARISON TESTS ON THREE HOUSES, ONE WAS PAINTED WITH THERMO-SHIELD® EXTERIOR PAINT.

After one year, the THERMO-SHIELD® house showed 41.6% less electrical consumption.

FLORIDA HOME WITH THERMO-SHIELD® ROOFING

Before coating, daily temperatures in the attic averaged 125° F, with outside temperatures of 87° F. After coating the roof, the attic temperature dropped to 95° F. After one year, the customer compared his electric bills and found a 29.4% reduction, \$2.08 savings per day.

LONG TERM HEAT FLUX TESTS OF ROOFING SYSTEMS AT OAKRIDGE NATIONAL LABORATORIES, TENNESSEE

Summer-long tests closely monitored on actual roofs showed Thermo-Shield® Roof Coatings reduced heat flux through the APP Bitumen Roofing System by 75 to 85% during daylight hours each week.

TESTS AT A CERTIFIED JAPANESE LABORATORY ON METAL STORAGE BUILDINGS:

Thermo-Shield® Exterior Coating outperformed 2” of fiberglass in the walls and 3” in the roof in keeping the interior cooler. The Thermo-Shield® building also cooled quicker after the sun went down, reinforcing our belief that bulk insulation stores up heat during the day and keeps the building hotter well into the night.