

Section I - Building Components

7. Floor Tile

Specification Data

STANDARD EXCELON® Vinyl Composition Tile

Armstrong World Industries, Inc.
P.O. Box 3001
Lancaster, PA 17604 U.S.A.

Armstrong World Industries Canada Ltd.
6911 Decarie Blvd.
Montreal, Quebec H3W 3E5 Canada

1. PRODUCT NAME

Armstrong Standard Excelon Vinyl Composition Tile
■ MultiColor
■ Imperial Texture

2. PRODUCT DESCRIPTION

Material

A composition of polyvinyl chloride resin, binder, fillers and pigments.

Construction and Colors

Color and pattern detail are dispersed uniformly throughout the thickness of the material. Color pigments are insoluble in water and resistant to cleaning agents and light.

Size

12 in. x 12 in. (305 mm x 305 mm) tile

Gauge (nominal thickness)

All patterns: 1/8" (3.2 mm)
Imperial Texture only: 3/32" (2.4 mm)

Limitations

Standard Excelon should **not** be used in the following areas:

- Hospital operating rooms.
- Heavy industrial and exterior areas.
- Commercial kitchens and commercial food processing areas.
- Where pointed spikes such as golf or track shoes will be used.
- Where the floor will be subjected to unusually concentrated static or dynamic loads.

Suitable for Application Over

- Concrete, terrazzo, and other dry, structurally sound monolithic subfloors, which are suspended, on grade or below grade.
- Suspended wood subfloor construction with approved wood underlayments, and a minimum of 18 in. (45.7 cm) well-ventilated air space below.
- Most metal floors and most existing single-layer resilient floors on approved underlayments.
- Radiant-heated subfloors with a maximum surface temperature of 85° F (29° C).

Unsuitable for Application Over

- Subfloors where excessive moisture or alkali is present.
- Sleeper-constructed wood subfloors, on grade or below grade.
- Lightweight aggregate concrete subfloors having a density of less than 90 lbs. per cu. ft. (1441 kg/m³) or cellular concrete having a plastic (wet) density less than 100 lbs. per cu. ft. (1602 kg/m³) [94 lbs. per cu. ft. (1506 kg/m³) dry weight], or concrete having a compressive strength of less than 3500 psi (24 MPa). Concrete slabs with heavy static and/or dynamic loads should have higher design strengths and densities calculated to accommodate such loads.

Concrete curing agents, sealers, hardeners, or parting agents should be removed.

3. TECHNICAL DATA

Shipping Weight

1/8 in. (3.2 mm) – 63 lbs./carton (29 kg)
3/32 in. (2.4 mm) – 48 lbs./carton (22 kg)

Packaging

Tiles per carton – 45
45 sq. ft.

Gloss (typical value)

60 degrees specular: 20 - 40

Reference Specifications

ASTM F 1066, Class 2 – through pattern
MIL STD 1623D for deck covering (shipboard use).

Static Load Limit

75 lbs./sq. in. (5.27 kg/cm²)

NOTE: Floors should be protected from sharp-point loads and heavy static loads. High-heeled traffic [1000 psi (70.3 kg/cm²) or more] may visibly damage wood, resilient and other floor coverings.

Comparative Subjective Property Ratings

Durability – 1/8 in. Very Good; 3/32 in. - Good
Maintainability – Good
Resilience – Good

Subjective ratings (excellent, very good, good, fair) are in relation to other Armstrong resilient floors. Ratings are not directly related to any one test. They are broadly based on tests and experience of Armstrong Research and Development under varying conditions and circumstances. These ratings should not be used for comparison to ratings used by other manufacturers to rank their own products.

Fire Test Data

ASTM E 648 Critical Radiant Flux – 0.45 watts/cm² or more,
Class I

ASTM E 662 Smoke – 450 or less

CAN/ULC-S102.2 – M88

Flame Spread 25 or less

Smoke Developed 50 or less

Numerical flammability ratings alone may not define the performance of the product under actual fire conditions. These ratings are provided only for use in the selection of products to meet the specified limits.

4. INSTALLATION

Job Conditions

Subfloors/underlayments shall be dry, clean, and smooth. They shall be free from paint, varnish, solvents, wax, oil, existing adhesive residue, or other foreign matter.

For more detailed requirements of concrete, wood and metal subfloors, as well as wood and trowelable underlayments, refer to [Armstrong Guaranteed Installation Systems](#) manual, F-5061. Calcium Chloride Tests for moisture must be conducted. Armstrong offers a guideline of a maximum acceptable moisture emission level of 5.0 lbs. per 1000 sq. ft. per 24 hours. Bond Tests should also be conducted for compatibility with the substrate. When testing for alkalinity, the allowable readings for the installation of Armstrong flooring are 5 to 9 on the pH scale.

Temperature shall be maintained at a minimum of 65° F (18° C) and a maximum of 100° F (38° C) for 48 hours prior to installation, during installation and 48 hours after completion. A minimum temperature of 55° F (13° C) shall be maintained thereafter. Condition all flooring materials and adhesives to room temperature at least 48 hours prior to starting installation. Protect all materials from the direct flow of heat from hot-air registers, radiators, or other heating fixtures and appliances.

Procedure

Standard Excelon should be installed over wood underlayment with S-515, S-700 or S-750 Adhesive. Install over concrete with S-89, S-515, S-700 or S-750 Adhesive. Install over ceramic, marble or terrazzo with S-89, S-515, S-700 or S-750 Adhesive. Install over steel, stainless steel, aluminum and lead with S-89. Install over other metal with S-700 Adhesive. Install over existing resilient floors with S-515, or S-750 Adhesive for [Tile-On™](#). Detailed instructions may be found in the [Armstrong Guaranteed Installation Systems](#) manual, F-5061.

5. MAINTENANCE

Standard Excelon is designed to be maintained by traditional resilient flooring maintenance methods, which include the use of polishes, spray-buffing techniques and appropriate high speed maintenance systems.

Initial Maintenance Immediately After Installation

- Sweep or vacuum thoroughly.
- Damp mop with a dilute neutral detergent solution such as Armstrong S-485 Floor Cleaner – carefully wiping up black marks and excessive soil.
- Apply two coats of high quality commercial floor polish such as Armstrong S-480.
- Do not wash, scrub or strip the floor for at least four to five days after installation.

Preparation for Commercial Use

For specific, ongoing maintenance procedures see [Armstrong Commercial Resilient Flooring Maintenance Recommendations](#) booklet, F-8663.

6. WARRANTIES

Armstrong warrants its regular (first quality) vinyl sheet floors to be free from manufacturing defects for five years from the date of purchase if installed according to the [Armstrong Guaranteed Installation Systems](#) manual, F-5061. See [Armstrong Commercial Floor Warranty](#), F-3349 for terms and exclusions.

7. U.S. AND CANADIAN SPECIFIER SERVICES

Commercial architects, interior designers, facility managers, or end users – call 1 800 292-6308 or fax 1 800 599-9335 for:

- ▲ the nearest Armstrong commercial floor representative
- ▲ technical, installation, and maintenance information
- ▲ literature and product samples

www.commercial-floors.com



DO NOT SAND, DRY SWEEP, DRY SCRAPE, DRILL, SAW, BEAD-BLAST OR MECHANICALLY CHIP OR PULVERIZE EXISTING RESILIENT FLOORING, BACKING, LINING FELT, ASPHALTIC "CUT BACK" ADHESIVES OR OTHER ADHESIVES.

These products may contain either **asbestos fibers** and/or **crystalline silica**. Avoid creating dust. Inhalation of such dust is a cancer and respiratory tract hazard. Smoking by individuals exposed to asbestos fibers greatly increases the risk of serious bodily harm. See current edition of the Resilient Floor Covering Institute (RFCI) publication [Recommended Work Practices for the Removal of Resilient Floor Coverings](#), for instructions on removing all resilient floor covering structures.



MATERIAL SAFETY DATA SHEET



Resilient Sheet Flooring Products and Resilient Tile Flooring Products

Prepared 5/00 – Replaces 1/99

Armstrong World Industries, Inc.
P.O. Box 3001
Lancaster, PA 17604
(717) 396-2328 or (717) 396-2935

I. PRODUCT IDENTIFICATION

Name: Armstrong Resilient Sheet Flooring Products and Armstrong Resilient Tile Flooring Products.
Description: Vinyl Flooring

II. DEPARTMENT OF TRANSPORTATION INFORMATION

Shipping name: Not Classified. Hazard Class: N/A. ID #: N/A
EMERGENCY ONLY CONTACT: CHEM-TEL -1-800-255-3924

III. HMIS (0 = minimal hazard; 4 = severe hazard)

Health = 0 Flammability = 1 Reactivity = 0

IV. PRODUCT CONTENT

This product does not contain chemicals subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR 372. All components are on TSCA inventory. This product does NOT contain asbestos.

V. HAZARDOUS INGREDIENTS

<u>(Chemical Identity; Common Name)</u>	<u>C.A.S. No.</u>	<u>%</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>
None	N/A	N/A	N/A	N/A

DESCRIPTION AND INGREDIENT INFORMATION

These vinyl flooring products are produced for residential and commercial (architectural) marketplace use. They come in a wide variety of aesthetic designs, styles, colors, surface finishes, and sizes.

MISCELLANEOUS INFORMATION

Each of these products is classified as an "article" according to Title 29 of the Code of Federal Regulations, OSHA Part 1910.1200(c). They are formed to a specific shape or design during manufacture, have end use functions dependent upon their shape or design, and do not release any hazardous chemical under normal conditions of use.

VI. PHYSICAL DATA

APPEARANCE: Material dependent. BOILING POINT (degrees F): N/A. VAPOR PRESSURE (mm Hg @ 20 degrees C): N/A. VAPOR DENSITY (Air = 1): N/A. PERCENT VOLATILE BY WEIGHT (30 min. @ 275 degrees F): N/A. EVAPORATION RATE (Butyl Acetate = 1): N/A. SOLUBILITY IN WATER: N/A. SPECIFIC GRAVITY (H₂O = 1): N/A. pH: N/A.

VII. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: N/A. FLAMMABLE RANGE: LEL = N/A; UEL = N/A. EXTINGUISHING MEDIA: Water. SPECIAL FIRE FIGHTING PROCEDURES: Protect fire fighters from toxic products of combustion by wearing self-contained breathing apparatus. UNUSUAL FIRE AND EXPLOSION HAZARDS: None.

VIII. HEALTH HAZARD DATA

PRIMARY ROUTE(S) OF ENTRY: N/A. TARGET ORGANS: N/A. EFFECTS OF OVEREXPOSURE: N/A. SKIN AND EYES: N/A. INHALATION: N/A. CARCINOGENICITY: NTP: No; IARC Monographs: No; OSHA Regulated: No. MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: N/K. FIRST AID PROCEDURES: N/A. SKIN AND EYES: N/A. INHALATION: N/A. INGESTION: N/A.

IX. REACTIVITY DATA

STABILITY: N/A. INCOMPATIBILITY: N/A. HAZARDOUS DECOMPOSITION PRODUCTS: N/A. HAZARDOUS POLYMERIZATION: N/A.

X. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: N/A. WASTE DISPOSAL METHOD: Dispose of in accordance with Federal, State, and Local Waste Disposal Regulations.

XI. SAFE HANDLING AND USE INFORMATION

VENTILATION: N/A. RESPIRATORY PROTECTION: N/A. SKIN AND EYE PROTECTION: N/A.

XII. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: N/A. OTHER PRECAUTIONS: N/A.

XIII. WARNING

FOR PREVIOUSLY INSTALLED FLOOR COVERING

DO NOT SAND, DRY SCRAPE, BEADBLAST, OR MECHANICALLY PULVERIZE EXISTING RESILIENT FLOORING, BACKING OR LINING FELT. THESE PRODUCTS MAY CONTAIN EITHER ASBESTOS FIBERS OR CRYSTALLINE SILICA. POSSIBLE CANCER AND RESPIRATORY TRACT HAZARD BY INHALATION. AVOID CREATING DUST. SMOKING BY INDIVIDUALS WHO HAVE BEEN EXPOSED TO ASBESTOS FIBERS GREATLY INCREASES THE RISK OF SERIOUS BODILY HARM. RFCI'S (Resilient Floor Covering Institute) RECOMMENDED WORK PRACTICES FOR REMOVAL OF RESILIENT FLOOR COVERINGS ARE A DEFINED SET OF INSTRUCTIONS ADDRESSED TO THE TASK OF REMOVING ALL RESILIENT FLOOR COVERING STRUCTURES.

XIV. NOTICE

Various government agencies have regulations governing the removal of in-place asbestos-containing materials. If you contemplate the removal of a resilient floor covering structure that contains (or is assumed to contain) asbestos, you should determine whether such regulations apply.

The information presented herein is supplied as a guide to those who handle or use this product. Safe work practices must be employed when working with any materials. It is important that the end user makes a determination regarding the adequacy of the safety procedures employed during the use of this product.

N/A – not applicable or not available

N/K – none known or not known



*Committed to Innovation
and Technology . . .*

Lifespan 5000 **Vinyl Composition Tile Adhesive**

DRIES TRANSLUCENT • SOLVENT FREE • CAN BE APPLIED OVER OLD CUTBACK*

Lifespan 5000 is a safe, water-based adhesive that dries translucent. Tiles may be laid into the adhesive for an extended period of time after drying. Also, **Lifespan 5000** can be applied over properly prepared cutback adhesive residue, avoiding the costly and time consuming removal and disposal of the old cutback (CANNOT be used if adhesive cleaners or removers have been applied.) This solvent-free product can be used in health conscious environments such as hospitals, schools, nursing homes, hospitality, and food preparation centers. VOC emission levels are below those established by the California SCAQMD Rule 1168.

Advantages:

- Solvent free, contains "zero" grams/Liter VOC's (calculated)
- Dries to almost clear state
- Contains antimicrobials. Does not support bacterial growth in wet or dry state.
- Very quick, strong bond development
- Low odor. No odors to disrupt installation in poorly ventilated areas.
- Highly water resistant when dry. Water clean up when wet.
- Easy to spread with a roller, or a notched trowel.
- Remains tacky for hours, provided it remains free of dust and dirt.

Installation: The floor must be sound, smooth, dry and clean. Remove any old adhesive, dirt, wax, loose paint and all foreign matter that would interfere with a good bond. Seal dusty concrete surfaces with DriSeal. The installation site must be acclimated with HVAC in operation. The floor and room temperature, as well as flooring materials and adhesive, must be maintained at 65°- 95° F, and the humidity below 65% for 48 hours prior to, during, and after the testing and installation. Follow RFCI guidelines for subfloor preparation and testing and floor-covering manufacturer's installation instructions for proper adhesive application rate.

Spread adhesive with recommended trowel, and allow adhesive to dry completely before laying in tiles. Site conditions, floor preparations, moisture and alkalinity requirements should comply with those specified by RFCI and the tile manufacturer. Otherwise, moisture emission from concrete floor should be less than 5 lbs. as measured by calcium chloride test, and pH should be between 7.0 and 9.0.

Open Time: 15-60 minutes, depending upon temperature and humidity; adhesive should be allowed to dry until it loses its milky appearance and does not transfer to finger when touched.

Trowel Sizes: Adhesive can be spread with a notched trowel, or paint roller. Coverage varies with trowel and methods used. Recommended trowel size for porous substrates is a 1/16" x 1/16" x 1/16" U-notched trowel. Spread rate is approximately 160 - 180 sq. ft./gallon. For non-porous substrates use a 1/16" x 1/32" x 1/32" u-notched trowel. Spread rate is 220 - 260 sq. ft / gallon.

Shelf Life: 1 year from manufacturing date, in an unopened container. Protect from freezing.

Uses: Vinyl Composition Tile, all manufacturers.

This product is not photochemically reactive as defined by California Rules 102 and 443. VOC content is below that established by California SCAQMD Rule 1168. 01/29/08jl

Section I - Building Components

8. EPDM Rubber Roof

FleeceBACK® EPDM

Membranes with Factory-Applied Tape™ Seam Technology



Overview

Sure-Seal® and Sure-White® FleeceBACK EPDM membranes are manufactured using a patented hot-melt adhesive technology to bond a fleece backing to the EPDM sheeting. Once the EPDM is reinforced and enhanced with fleece, the total sheet thicknesses available are 100, 115 and 145 mils, creating a very tough, durable and versatile sheet that is ideal for re-roofing or new construction projects. FleeceBACK EPDM sheets are manufactured with 3" or 6" Factory-Applied Tape (FAT) to ensure consistent, quality seams.

Features and Benefits

- » Choice of Sure-Seal (Black) or Sure-White EPDM membranes that are UL Class A rated
- » Superior wind uplift performance and ratings (up to an FM 1-945) due to a mechanical bond between fleece and adhesive
- » Fleece reinforcement adds toughness, durability and enhanced puncture resistance
 - 100-mil membrane delivers 40% greater puncture resistance and 180% greater tear resistance than 60-mil EPDM
 - Greater puncture resistance than Modified Bitumen
- » 67% fewer seams than Modified Bitumen with 10' sheet
- » Factory-Applied Tape provides consistent seam quality and enhances productivity
- » Excellent hail damage resistance
 - Passes FM's severe hail test
 - Passes UL-2218 Class 4 rating
 - Passes National Bureau of Standards – 23 Ice Ball test up to 3"-diameter hail with the membrane cooled to 32°F

Installation

Adhered Roofing System - Insulation is mechanically fastened or adhered with FAST™ Adhesive to the roof deck. When adhering insulation with FAST Adhesive, the adhesive is applied to the substrate and allowed to rise and foam. Once FAST Adhesive develops string/body/gel (typically 2 minutes), place insulation into the adhesive and walk it in. Roll the insulation with a 30"-wide, 150-pound weighted roller to ensure full embedment. Spray-apply or extrude FAST Adhesive to the membrane and allow foam to develop string/body/gel (typically 1½–2 minutes) prior to setting FleeceBACK into the FAST Adhesive. Roll FleeceBACK membrane with a 30"-wide, 150-pound weighted roller to ensure full embedment. Splices are sealed with Carlisle's unique Factory-Applied Tape. End laps are butted and sealed with Pressure-Sensitive Cured Cover Strip or Overlayment Strip.

When the completion of flashings and terminations is not possible by the end of each work day, provisions must be taken to temporarily close the membrane to prevent water infiltration.

Review Carlisle specifications and details for complete installation information.

Splicing

1. Roller-apply HP-250 Primer or Low-VOC EPDM Primer to the splice area of the bottom sheet with a short nap-length paint roller. The primed area will be free of globs and puddles. Allow primer to dry until it does not transfer to a dry finger.
2. Allow the taped edge of the top sheet to fall freely onto the primed sheet below.
3. Pull the poly backing from the FAT beneath the top sheet and allow the top sheet to fall freely onto the exposed primed surface.
4. Press top sheet onto the bottom sheet using firm, even hand pressure across the splice towards the splice edge.
5. Immediately roll the splice with a 2"-wide (50 mm) steel roller or Carlisle's stand-up Seam Roller, using positive pressure. Roll across the splice edge when using a 2" roller, not parallel to it. When using the Seam Roller, roll parallel to direction of the splice.
6. For cold weather splicing below 40°F (4°C), these steps must be followed:
 - » Heat the primed area of the bottom membrane with a hot-air gun as the top sheet with FAT is applied and pressed into place.
 - » Prior to rolling the splice area with a 2"-wide steel hand roller, apply heat to the top side of the membrane with a hot-air gun. The heated surface should be hot to the touch. Be careful not to burn or blister the membrane.

FleeceBACK EPDM

Membranes with Factory-Applied Tape Seam Technology

- Install Pressure-Sensitive Elastoform Flashing® or Pressure-Sensitive T-Joint Covers over all field splice intersections. Lap seal according to the detail.

Precautions

- UV-resistant sunglasses are required for Sure-White membranes.
- White surfaces reflect heat and may become slippery due to frost and ice accumulation. Exercise caution when walking on wet membrane.
- Care must be exercised when working close to a roof edge when the surrounding area is snow covered.
- FleeceBACK membrane rolls must be tarped and elevated to keep dry prior to installation. If the fleece gets wet, use a wet vac system to help remove moisture from the fleece. Do not install membrane if fleece is wet.
- Prolonged jobsite storage at temperatures in excess of 90°F (32°C) may affect product shelf life.
- In warm, sunny weather, shade the tape end of the rolls until ready to use.

LEED® Information		
	Sure-Seal	Sure-White
Pre-consumer Recycled Content	5%	0%
Post-consumer Recycled Content	0%	0%
Manufacturing Location	Carlisle, PA	Carlisle, PA
Solar Reflectance Index (SRI)	0-1	105

Radiative Properties for ENERGY STAR®, Cool Roof Rating Council (CRRC) and LEED

Property	Test Method	Sure-White FleeceBACK
ENERGY STAR – Initial solar reflectance	Solar Spectrum Reflectometer	0.84
ENERGY STAR – Solar reflectance after 3 years	Solar Spectrum Reflectometer (after cleaning)	0.80
CRRC – Initial solar reflectance	ASTM D1549	0.76
CRRC – Solar reflectance after 3 years	ASTM D1549 (uncleaned)	0.64
CRRC – Initial thermal emittance	ASTM C1371	0.90
CRRC – Thermal emittance after 3 years	ASTM C1371 (uncleaned)	0.87
LEED – Thermal emittance	ASTM E408	0.91
Solar Reflectance Index (SRI)	ASTM E1980	105

* The ENERGY STAR program recommends using the Roof Savings Calculator (rsc.ornl.gov) to determine if a white reflective roof will save or cost you money compared to a dark-colored roof depending on geographic climate conditions, building location, and other variables.

Typical Properties and Characteristics

Physical Property	Test Method	SPEC (PASS)	Sure-Seal	Sure-White
Tolerance on Nominal Thickness, %	ASTM D751	±10	±10	±10
Thickness Over Fleece, min 100-mil (2.54 mm) 115-mil (2.92 mm) 145-mil (3.68 mm)	ASTM D4637 Annex	.030 (.762) .045 (1.14) .080 (2.03)	.045 (1.14) .060 (1.52) .090 (2.28)	.045 (1.14) .060 (1.52) .090 (2.28)
Weight, lbf/ft² (kg/m²) 100-mil 115-mil 145-mil	—	—	0.29 (1.4) 0.38 (1.9) 0.59 (2.4)	0.33 (1.6) 0.42 (2.1) 0.63 (3.1)
Breaking Strength, min, lbf (N) 100- & 115-mil 145-mil	ASTM D751 Grab Method	90 (400)	200 (890) 250 (1,112)	200 (890) 210 (934)
Elongation, Ultimate, min, %	ASTM D412	300**	480**	500**
Tearing Strength, min, lbf (N) 100- & 115-mil 145-mil	ASTM D751 B Tongue Tear	10 (45)	45 (200) 60 (266)	45 (200) 45 (200)
Puncture Resistance, Joules 100-mil 115-mil 145-mil	ASTM D5635	—	15 20 25	25 25 32
Puncture Resistance, lbf 100-mil 115-mil 145-mil	FTM 101C Method 2031	—	328 338 355	316 325 307
Puncture Resistance, lbf 100-mil 115-mil 145-mil	ASTM D120	—	18 22 28	17 19 22
Hail Resistance 100-mil 115-mil 145-mil	UL 2218 Over Iso HP Rec. Bd. Gypsum Bd.	Class 4 Rating 2" Steel Ball at 20'	Pass Pass Pass	Pass Pass Pass
Brittleness point, max, °F (°C)	ASTM D2137	-49 (-45)	-67 (-55)	-67 (-55)
Resistance to Heat Aging* Properties after 4 weeks @ 240°F (116°C) for Sure-Seal, 1 week @ 240°F (116°C) for Sure-White	ASTM D573			
Breaking Strength, min, lbf (N) Elongation, Ultimate, min, % Linear Dimensional Change, max, %	ASTM D751 ASTM D412 ASTM D1204	80 (355) 200** ±-1.0	200 (890) 225** -0.7	200 (890) 250** -0.7
Ozone Resistance* Condition after exposure to 100 pphm Ozone in air for 168 hours @ 104°F (40°C). Specimen wrapped around 3-inch (7.5 cm) mandrel	ASTM D1149	No cracks	No cracks	No cracks
Resistance to Water Absorption* After 7 days immersion @ 158°F (70°C). Change in mass, max, %	ASTM D471	+8, -2**	+2.0**	+3.6**
Resistance to Outdoor (Ultraviolet) Weathering* Xenon-Arc, total radiant exposure at 0.70 W/m² irradiance, 80°C black panel temp.	ASTM G155 ASTM D4637 Conditions	No cracks No crazing 7,560 kJ/m² 3,000 hrs	No cracks No crazing 41,580 kJ/m² 16,500 hrs	No cracks No crazing 25,200 kJ/m² 10,000 hrs

*Not a Quality Control Test due to the time required for the test or the complexity of the test. However, all tests are run on a statistical basis to ensure overall long-term performance of the sheeting.

**Specimens to be prepared from coating rubber compound, vulcanized in a similar method to the reinforced product.

Sure-Seal and Sure-White FleeceBACK EPDM membranes meet or exceed the minimum requirements set forth by ASTM D4637 for Type III fabric-backed EPDM single-ply roofing membranes.

Typical properties and characteristics are based on samples tested and are not guaranteed for all samples of this product. This data and information is intended as a guide and does not reflect the specification range for any particular property of this product.

Section I - Building Components

9. Hycrete Datasheet



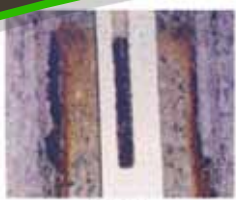
Delivering Concrete Solutions

DATA SHEET

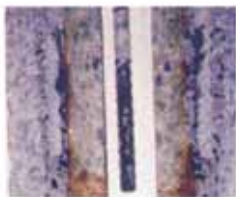
Hycrete X1000

For technical assistance contact your local Hycrete Representative or call (201) 386-8110

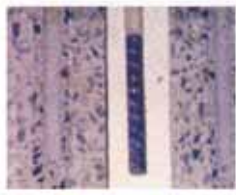
Dual-Action Corrosion Inhibitor in Non-Air Concrete Mixes



Control



Calcium Nitrite



Hycrete X1000

Visual corrosion testing of steel reinforcement in concrete subjected to chloride exposure.

Source: University of Connecticut

* KEY BENEFITS

- Hycrete X1000 improves the durability of concrete
- Industry leading performance level of up to 7 times reduction in water absorption
- Forms protective coating around steel reinforcement
- Enhanced healing of cracks up to 0.4mm
- Increases electrical resistivity of concrete
- Liquid form means more consistent performance and verifiable dosage
- Neutral concrete set time performance, even in high fly ash and GGBS (slag) mixes
- Easy to use, no workability issues

* See page 2 for testing methodologies

PRODUCT DESCRIPTION

Hycrete X1000 is a patented dual action corrosion-inhibiting and waterproofing concrete admixture that delivers industry leading performance. Hycrete X1000 protects concrete and steel in two ways:

- a) Keeps water and corrosive agents out, reducing absorption to an industry low compared to control concrete.
- b) Protects steel by forming a protective passivating layer on the surface of reinforcement steel that dramatically reduces corrosion initiation and propagation.

Hycrete X1000 admixture in concrete provides an effective and robust barrier against water and chloride ingress that does not lose performance over time and never requires reapplication. Concrete treated with X1000 outperforms High Performance Concrete (HPC) mixes that include silica fume, fly ash, slag and calcium nitrite corrosion inhibitors.

PRODUCT FEATURES

- NSF/ANSI 61 - approved for use in potable water tanks
- Compatible with standard admixture metering equipment
- Cradle to Cradle™ certified by MBDC
- Non-toxic, no VOCs

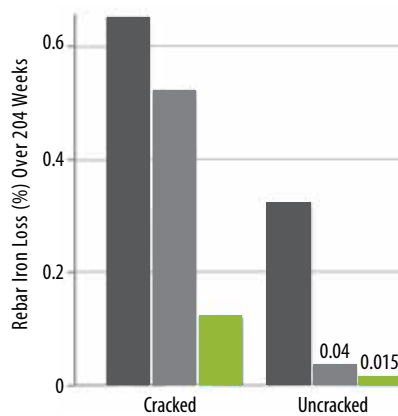


1. Hydrophobic pore blocking
2. Corrosion-inhibiting surface coating

USES AND APPLICATIONS

- Bridges and highway infrastructure
- Dams, reservoirs, and water and wastewater systems
- Ports & marine structures
- Pilings
- Tunnels
- Airport runways
- Rail & metro systems
- Power & telecom infrastructure
- Parking structures

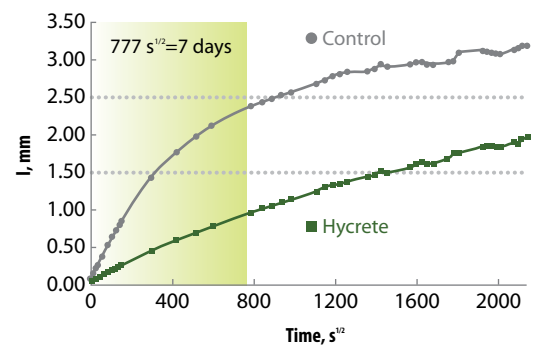
Corrosion Performance — ASTM G109



Legend: Control (black), Calcium Nitrite (grey), Hycrete admixture (green)

Source: University of Massachusetts

Determination of Capillary Absorption ASTM C1585



Source: Virginia Transportation Research Council

PRODUCT PERFORMANCE*

Water absorption	BSI 1881-122	Less than 1% absorption; up to seven times reduction compared to control
Capillary absorption	ASTM C1585	Up to 60% reduction at 7 days
Corrosion protection	ATSM G109, ASTM C1556	Demonstrated protection against reinforcement bar corrosion and chloride penetration over the control (see Hycrete Testing Summary)
Permeability/hydrostatic pressure	DIN 1048 BS EN 12390-8	Passes DIN 1048; up to 70% reduction in permeability
Crack healing	ASTM C597	Hycrete heals faster and more completely compared to untreated concrete
Set time	ASTM C403	Set neutral
Drying shrinkage	ASTM C157	Neutral
Slump	ASTM C143	Neutral
Workability	N/A	Excellent
Effect on concrete color	N/A	None
Compressive strength	ASTM C39	Water/cement ratios may need to be lowered to account for possible, minor strength decreases associated with some materials. Perform trial mixes.
Potable water	NSF/ANSI 61	Approved for use in potable water tanks 50,000 gallons or greater and pipes 84" in diameter and greater
Adhesion	ASTM C1583, ASTM C1072, ASTM D3359	Neutral; no adverse effect on bond with concrete

*All benefits and results are based on actual test results. Results may vary according to concrete mix designs, Hycrete X1000 dosage, or other factors.

GENERAL PROPERTIES AND CHARACTERISTICS

Physical characteristics: Form Liquid Specific gravity 1.05 Chloride content Nil pH: 8.5	Compatibility: ■ Most concrete admixtures ■ Most Portland cements or replacements including fly ash and GGBS (slag) ■ Shotcrete mixes and application ■ Most surface-applied sealants and external membrane protection systems
Recommended dosage: 2.0 U.S. gallons per cubic yard of concrete (10.0 liters per cubic meter)	
Packaging: 1 gallon bottles; 5 gallon pails; 55 gallon drums; 275 gallon totes; bulk tanker delivery	
Storage and handling: Store above 32°F (0°C) and below 120 °F (48 °C). Slight flocculation can occur over time due to pH reductions. Such flocculation does not affect product performance	

NOTES

- For air-entrained concrete mixes see Hycrete X1002 data sheet. Hycrete X1002 is specifically designed for air-entrained mixes.
- User should perform trial mixes prior to placement and make necessary adjustments to the mix design as needed.
- For air-entrained mixes or if considering dosages other than recommended dosage contact Technical Services before use.

SAFETY

Hycrete X1000 is a water-based material and should not be swallowed or come into contact with skin or eyes. Wear suitable protective gloves and goggles. If material comes in contact with the skin, wash immediately with soap and water. In case of contact with eyes, rinse immediately with sufficient water and seek medical support. If swallowed, seek immediate medical attention. For further information please consult the Material Safety Data Sheet.

RELATED DOCUMENTS

- Hycrete Mixing Instructions
- Hycrete Material Safety Data Sheet – Hycrete X1000
- For air-entrained concrete mixes see Hycrete Data Sheet - Hycrete X1002
- Hycrete Testing Summary



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Hycrete warrants that its products are free from manufacturing defects and, when applied in accordance with the current specification and application instructions, will perform as so stated in its product literature. Water-proofing performance of the Hycrete X1000 is warranted for 25 years. Hycrete will provide sufficient material to waterproof areas shown to be defective due to Hycrete admixture material deficiencies.

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