

## Technical Data

### PRODUCT DESCRIPTION AND USES

ST-21 is a low viscosity, oligomeric Isobutylt clear liquid based on a selected high purity undiluted isobutyltriethoxysilane. This class of silanes has a very low molecular size which ensures effective impregnation of concrete masonry surfaces through deep(3-8mm) penetration into the pore structure. The impregnated StoneTreatment ST-21 reacts with moisture or interstitial humidity and forms permanently bonded hydrophobic barrier on the pore-walls of the substrate.

The treated substrates are therefore highly hydrophobic and will inhibit ingress of water and water borne aggressive agents such as chlorides, while retaining the original appearance.

The substantial reduction in water absorption of the treated substrates also assists in the thermal insulation characteristics. StoneTreatment ST-21 is recommended for use on vertical and horizontal, porous and dense masonry and mineral substrates above ground, not subject to hydrostatic pressure. Applications include treating the surface of bridge decks, abutments, piers, soffits, beams, columns and walls of buildings, exposed brick structures, marine structures.

### How To Use

New masonry and concrete surfaces shall be allowed to cure for 28 days to neutralize alkalinity and release residual moisture. All surfaces to be coated shall be structurally sound, clean and dry free of laitance, accumulated dirt and grime, efflorescence, lime run, form oils and release agents, grease, mud, excess mortar and mold and mildew, etc. Use high-pressure water if wet cleaning is necessary and allow adequate (3-5 days) drying time to assure uniform penetration of the water repellent. On previously painted surfaces, remove existing paint or coatings.

ST-21 is best and most economically applied using low-pressure commercial airless spray equipment.

#### Recommended Tip Sizes:

Porous Surfaces: .050 to .110  
Dense Surfaces: .037 to .60

StoneTreatment ST-21 protects surfaces from damage caused by water intrusion and seepage, chloride ion intrusion, fruit juice, coke, verity of sauces, spalling, scaling and helps prevent efflorescence and lime run.

#### General Coverage:

**Porous Vertical Surfaces:**  
CMU, Split Face CMU, Blasted CMU, Ribbed CMU,

Slump Block  
0.25 to 0.40

#### Dense Vertical Surfaces:

Fired Clay Brick, Tile, Pre-Cast Panels, Pre-Cast Aggregate, Cast in Place, Slate, Stone, Granite, Marble  
0.18 to 0.24

#### Semi-Porous Surfaces:

Stucco, EFIS Pavers, Sandstone, Adobe  
0.45-0.55

#### Horizontal Surfaces:

0.30-0.55

#### Government SS-W-110C Specification:

0.30-0.65

#### Highway NCHRP Specification:

0.30-0.45

**General Application:** Use commercial airless equipment set at low pressures. Avoid application in windy weather. In hot weather, lightly dampen surfaces with clean fresh water to avoid premature drying which may cause material flash cure. Trigger gun off at the end of each pass to avoid using excessive materials. Stop all applications only at corners, joints, seams or edges. Actual coverage rates will vary depending on the porosity of the surface. Always apply material to test panel prior to general application. *Notes: Some surfaces may require a second coat. Where required, apply second coat while the first is still damp or wet. Apply second coat at a rate equal to one and one half times of the first coat.*

### Applications:

- Dense Masonry
- Cast Concrete
- Vertical Surfaces
- Horizontal Surfaces
- Porous Surfaces

### Features and Benefits:

- For use on a vertical and horizontal masonry, brick, concrete and stucco surfaces
- *High performance* water repellent
- Deep penetrating short chain polymer water repellent
- Protection not effected by weathering or UV light
- Resistant to high alkalinity
- V.O.C. compliant
- Maintenance free
- Breathable and moisture vapor permeable
- Warranty available

MICRO-CRETE may be applied to damp surfaces although dry surface are preferred for optimum penetration of the substrate.

**Dense Vertical Surfaces:** Start application at the top of the wall and work down using overlapping horizontal passes. Apply heavy saturation coat and allow materials to run-down approximately 6 to 8 inches from point of application.

Pre-cast/Tilt Up 120-160 Stone 200-300  
Exp Aggregate 120-160  
Unglazed Clay Brick 120-150

**Horizontal Surfaces:** Apply heavy saturation coat. Remove excess standing or ponding materials from surface within 5-10 minutes of application using a clean roller.

Dense Surf 120-160 Porous Surf 60-80

**Highway NCHRP 244 Specification:** Apply 2 coats wet on wet to surfaces. Remove excess standing or ponding water within 5 minutes of application using a clean roller.

**Government SS-W-110C Specification:** Apply 2 coats wet on wet to surfaces. Remove excess standing or ponding water within 5 minutes of application using a clean roller.

**Porous Vertical Surfaces:** Start application at the top of the wall and work down using overlapping horizontal passes. Apply flood coat and allow material to run-down approximately 6 to 12 inches from point of application.

CMU 50-80 Sandblasted CMU 50-80  
Split face Block 50-80 Scored/Fluted\* 50-80\*  
Lightwght Block 40-60 Slump Block 70-90  
Adobe Block 70-90 Clay Block 50-60  
EFIS 80-120 Stucco 80-120

• **Test Panel**

*Always apply material to a mock wall or test panel, test wall or actual surface area to determine acceptable color, surface porosity, application rates and methods before starting general application. Approve sample surface prior to general application.*

**PRECAUTIONS & LIMITATIONS**

**WARNING! Flammable Concentrate Liquid.** Do not use or store near opens flames or heat. Mix and use materials in a well-ventilated area.

*At time of application, moisture content of all surfaces shall be 15% or less as measured with an electronic moisture meter. Cured masonry shall be allowed four to seven days drying time following a rainfall prior to application. In climates where freezing temperatures have existed prior to application, allow adequate time for surfaces to thaw. In hot weather, lightly dampen surfaces with clean fresh water prior to application to prevent a flash cure of material. Do not apply if ambient air or surface temperatures are below 45 ° or over 90 ° F, if temperatures are expected to drop below freezing with 24 hours or if rain is imminent. Caution: Never apply more than one coat. Consult manufacturer if two coats are required. Over application may result in a whitish residue on some surfaces. Do not apply to previously sealed or painted surfaces.*

**Technical Data**

Technical services, specification assistance or information regarding application requirements of this product is available from Combocrete at (949) 675-2811.

Material Type	Isobutyltriethoxysilane
Active ingredients	100%
Color of Material	Clear liquid
Color After Treatment	Clear
Surface Appear When Dry -	Clear
Refractive index of material as supplied	Approx. 1.400
V.O.C. Compliant	>284 g/L
Purity (Isobutyltriethoxysilane)	98%
Flash Point	210° F
	5:1 NCHRP 244
	0.88
Specific Gravity	8.9 lbs/gal
Weight - Concentrate Approx	Approx 1 Hr @ 70d
Surface Dry Time	eg F with 50% Relative Humidity
	48-72 Hours
Full Chem Cure	45° to 90° F
Application Temperature Range	NONE
Pot Life	

**TEST DATA**

Wind Driven Rain ASTM E-514-86	98.7% Leak Red
Water Penet Fed Spec SS-W-110C	75% Min Req
	96.2% Leak Red
Water Abs Brick Fed SS-W-110C	96% Effective
Scaling Resistance ASTM C-672	60 Cycles No Scaling
Chloride Ion Intr	
NCHRP No. 244 Series IV	95% Reduction
NCHRP No. 244 Series II	83% Reduction
Salt Pounding Test Chloride Ion Reduction	
NCHRP No. 244	Allowed 25% Obtained 13.5%
Water Perm CMU ASTM C140-75	98.6% Effective
Water Vapor Trans ASTM D-1653-71	100% Vapor Perm
Water Perm—Brick ASTM C67-87	98.6% Effective
Accel Weathering ASTM G-53	3500 Hrs - No Chnge
24 Hrs Immersion Test % Water Wght Gain -10:1 Ratio	
ASTM C-67	75% Minimum
	Obt 90% @ ½ " Dpth

**LIMITED WARRANTY INFORMATION**

The information contained herein is offered in good faith and is believed to be accurate. Rainguard provides limited warranties for its' products. For additional information, or to determine warranty options please contact Combocrete International Products Company.

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