



Sealants
Waterproofing
Performance Grouts
Concrete Repair
Performance Flooring
Concrete Admixtures
Exterior Wall Systems
Expansion Joint Solutions

SIKA WALL COATING – PROTECTIVE COATINGS

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PARKING & RESTORATION SPECIALIST

SIKA

BUILDING TRUST



WALL COATINGS

WHY NOT PAINT?

Durability Property	Coatings	Paints
Wind driven rain	> 98 mph	< 60 mph
Accelerated weathering	14 years	5 years
Flexibility	Good	Poor
Carbonation protection	Yes	No
Mild chemical attack	Yes	Poor
Mask substrate flaws	Yes	No
Elongation + recovery	Yes	Poor
Wet adhesion promoter	Yes	No
Permeability	Yes	??

Coatings

Primary function is protection

Formulated for exterior substrates

Higher quality polymers

Generally higher film build materials*

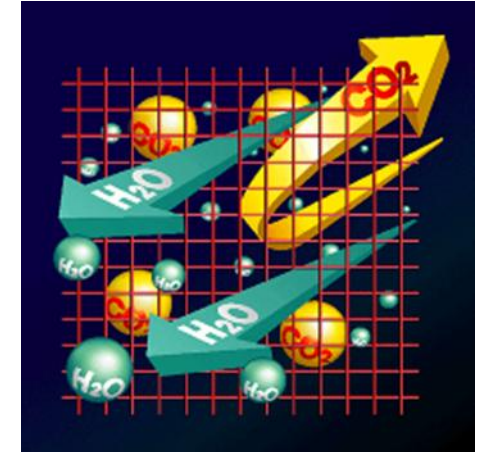
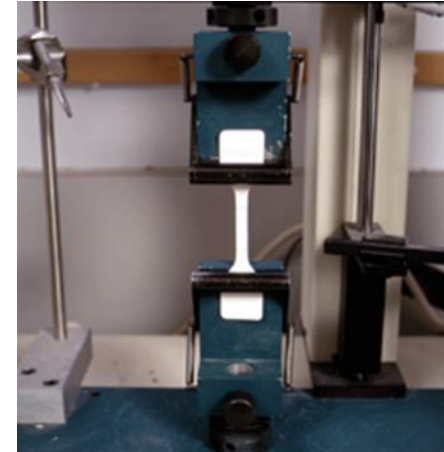
Paints

- Primary function is aesthetic
- Interior and exterior, multi-surface use
- Often formulated with resin blends
- Generally thinner film build materials

WALL COATINGS

KEY PERFORMANCE PROPERTIES

- Movement
 - Elongation vs. Flexibility
- Permeability
- Anti-Carbonation- Alt. Cover
- Solids Content
- UV Resistance- Fading Resistance
- Dirt Pick Up
- Waterproofing- WDR
- Fungus/ Mildew Resist
- Color/ Texture
- Light Reflectance



Test Data

PROPERTY	RESULTS	TEST METHOD
Salt spray (fog) resistance, 300 hrs	Passed	ASTM B 117
Carbon-dioxide diffusion R (equivalent air-layer thickness), ft (m) Sc (equivalent concrete thickness), in (cm)	1,318 (402) 39 (100)	PR EN 1062-6
Flexibility, 1" mandrel	No cracking	ASTM D 522
Dirt pick-up, % after 6 months exposure	92.02; passed	ASTM D 3719
Sand abrasion resistance, at 3,000 L	Passed	ASTM D 968 Method A
Impact resistance, at 30 in-lbs	Passed	ASTM D 2794
Fungus resistance	No growth Meets requirement	ASTM D 3273
Mildew resistance Aspergillus oryzae, 7 days Aspergillus niger, 21 days	No growth No growth	Fed Spec. TT-P-29 (Fed. Std. 141, Method 6152 and 6271.1)
Surface burning characteristics Flame spread Smoke Fuel contribution	1 4 7	ASTM E 84
Flash point, °F (°C)	> 200 (93)	ASTM D 56 Tag Closed Tester

Read the data sheet!

8-10 mils of a high build coating is equal to 8 inches of concrete

WALL COATINGS

ELONGATION VS. FLEXIBILITY

Importance: Accommodate thermal movement within substrate



Key concepts

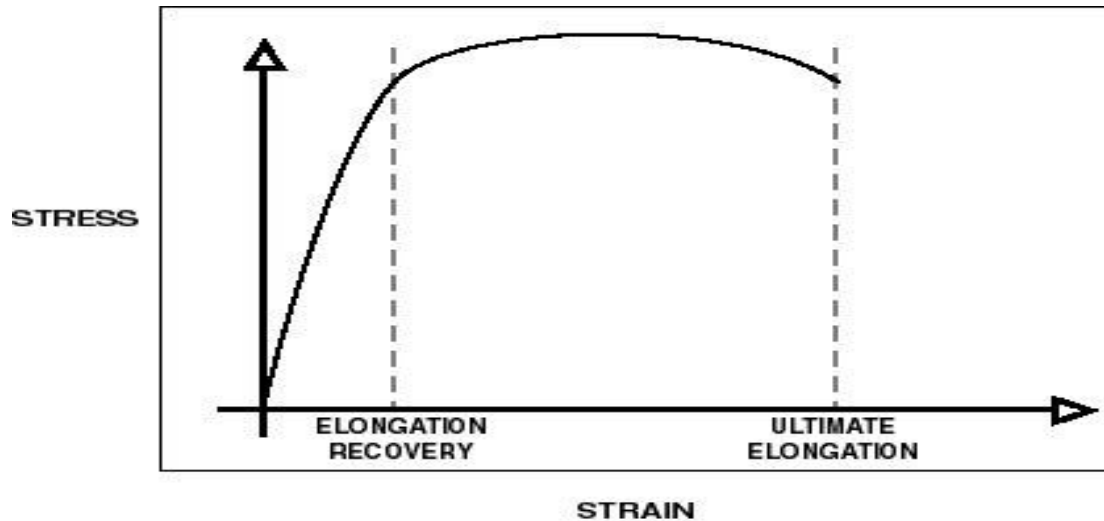
- Crack bridging:
 - The ability of a coating to bridge **existing cracks** in a substrate
- Contributing factors:
 - Ambient temperature
 - Coating thickness
 - Ultimate elongation %
 - Elongation recovery

BEWARE of coatings that report elongation without recovery %

WALL COATINGS

ELONGATION RECOVERY

- The **elongation recovery (%) governs crack bridging** because the ability of sustaining cycles of crack movements over time is linked with the elastic performance of materials.
- Ability to stretch and recover= long term performance.



- Elongation of less than 300% will not withstand thermal cracking to bridge cracks



WALL COATINGS

FLEXIBLE (NON-ELASTOMERIC) COATINGS

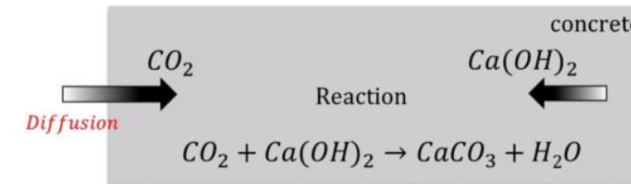
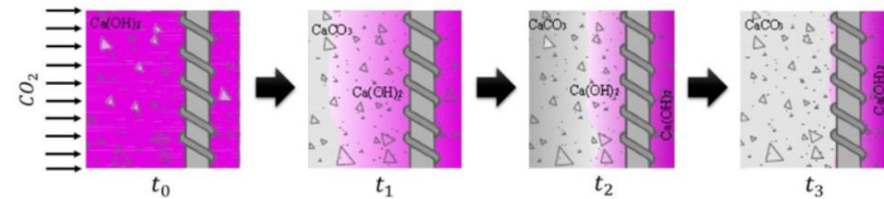
- » **ASTM D-522 (mandrel bend)** tests coating film flexibility because the ability of sustaining cycle movements over time is linked with the flexible performance of coatings.
- » Flexibility of these coatings shows that they can bend and stretch without cracking on monolithic substrates like concrete and masonry.



ANTI-CARBONATION-WALL COATINGS

Key concepts

- Carbonation of concrete (corrosion):
 - Reaction between acidic gasses in atmosphere and the products of cement hydration in concrete
- Contributing factors:
 - High levels of CO_2
 - Moisture
 - Presence of calcium hydroxide



Label:

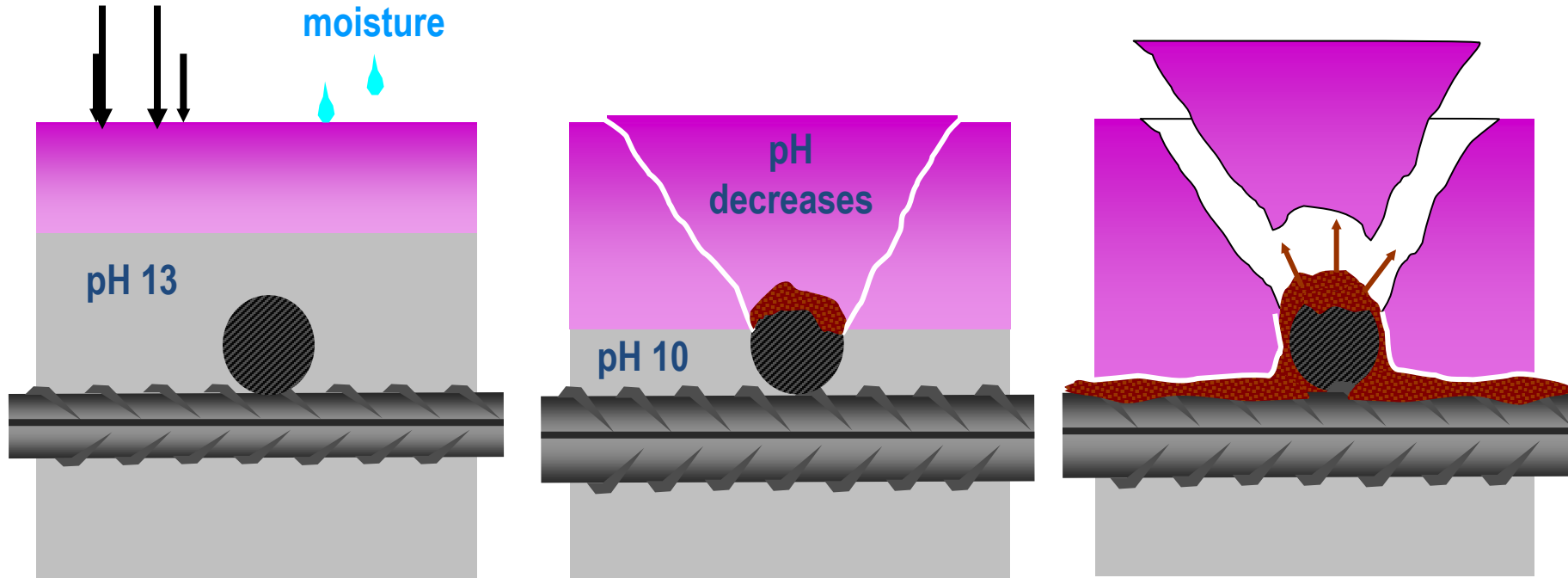
■ Non-carbonated zone ■ Partially carbonated zone ■ Carbonated zone

Diffusion of dilute carbon dioxide in concrete

ANTI-CARBONATION WALL COATINGS

How carbonation happens

Atmospheric Carbon dioxide



ANTI-CARBONATION EQUIVALENT CONCRETE “COVER”

8-10 mils of a high build coating is equal to 8 inches of concrete

Certificate of Test Page 1 of 3

Title: MasterProtect HB 200LR
Determination of Carbon Dioxide Gas Diffusion

Certificate of Test Number: 23605

Customer's Name & Address:
BASF (USA)
889 Valley Park Drive
Shakopee
Minnesota, 55379
United States

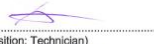
Our Ref: N950/TR0042
VTC Job No: 3TL1 - 1.011.18
Your Ref: PO 4923197733, dated: 01 June 2015
Date: 12 August 2015
Date samples received: 04 June 2015
Samples received from: BASF (USA)
Sample Nos: 149747 B

If unsigned by the tester this is because the tester is site based and therefore unable to sign this Certificate of Test. However, all work has been checked, validated and approved prior to inclusion.

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Written by: 
J Palermo (position: Technician)

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 **TECHNOLOGY CENTRE**



Concrete with inadequate cover can be protected with coatings

TYPES OF COATINGS

Exterior coatings for concrete, masonry, stucco and EIFS



Thin Mil

- » Primary function*: aesthetics
- » Film build: 4-5 DFT
- » Common called “paints”
- » Primary use: recoats
- » Limitations: waterproofing, crack bridging



High Build

- » Primary function: protection
- » Film build: 12-20 DFT
- » Commonly called “coatings”
- » Primary use: weatherproofing
- » Limitations: crack bridging



Elastomeric

- » Primary function: waterproofing
- » Film build: 12-20 DFT
- » Commonly called “elastomeric”
- » Primary use: above grade waterproofing
- » Limitations: bond, soiling

WHAT ARE THE COATING OPTIONS?

■ HB Elastomeric Coatings

- Best for substrates that may crack (thermally dynamic wall-EIFS, STUCCO)

Elongation + Recovery



■ HB Flexible Coatings

- Best adhesion to substrate, highest carbonation protection- (monolithic walls-CONCRETE, BRICK,MASONRY)

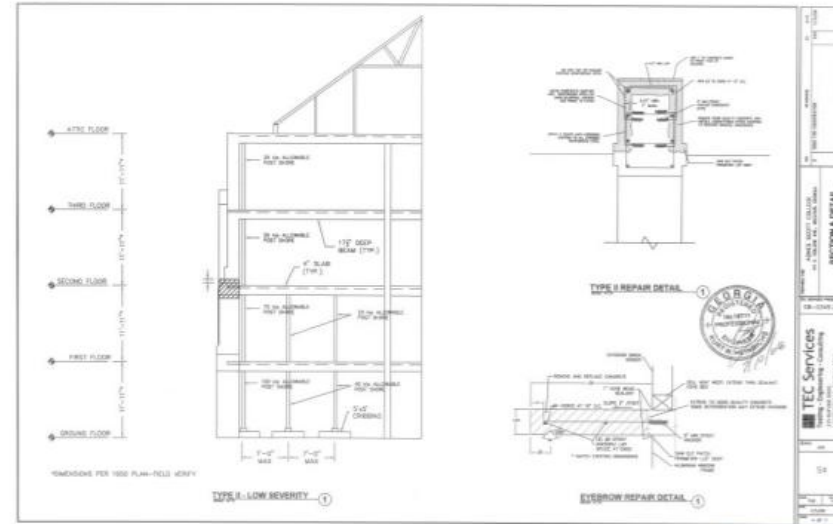


Elastomeric Coatings have lower adhesion properties so they can stretch and recover

CONCRETE REPAIR FUNDAMENTALS

- Determine the problem
- Evaluate the cause
- Engineer the appropriate solution
- Complete the preparation
- Complete long-term repair
- **APPLY PROTECTIVE COATING**
 - Extends life of the repair by actively protecting it
 - Actively mitigate corrosion at the steel
 - Prevent future ingress of aggressive chemicals
 - Enhances aesthetics

Save The Best For Last



The figure and photos above show a typical repair detail and different phases of the repair process.

Agnes Scott College- Decatur, GA

FILLERS AND PRIMERS

SURFACE PREPARATION



Sika Thorocoat 748 - Patching Compound: Fills cracks



Sika Thorocoat 749 Block Filler: Prime and fill porous block



Sika Thorocoat 100 Primer: Consolidates weak dusty substrates



Sika Thorocoat 150 Primer: Seals surfaces to improve adhesion and coating workability. Tintable to help hiding power of coatings.

PRODUCT SEGMENT

WATERPROOF WALL COATINGS

High Build-Flexible Coatings

- » Sika Thorocoat 100 TW
- » Sika Thorocoat 200
- » Sika Thorocoat 200 LR
- » Sika Thorocoat 300 Artic
- » Sika Thorocoat 400



HB-Elastomeric Coatings

- » SikaThorolastic 750
- » SikaThorolastic 850



Thin Mil Coatings

- » Sika Thorocoat 250
- » Sika Thorocoat 350 Aquasol



THIN MIL COATINGS

WALL COATING PORTFOLIO

Sika Thorocoat 250

- Smooth, water-based 100% acrylic
- Highly permeable (19 perms)
- Ideal for recoats
- Cost effective solution

Sika Thorocoat 350 Aquasol

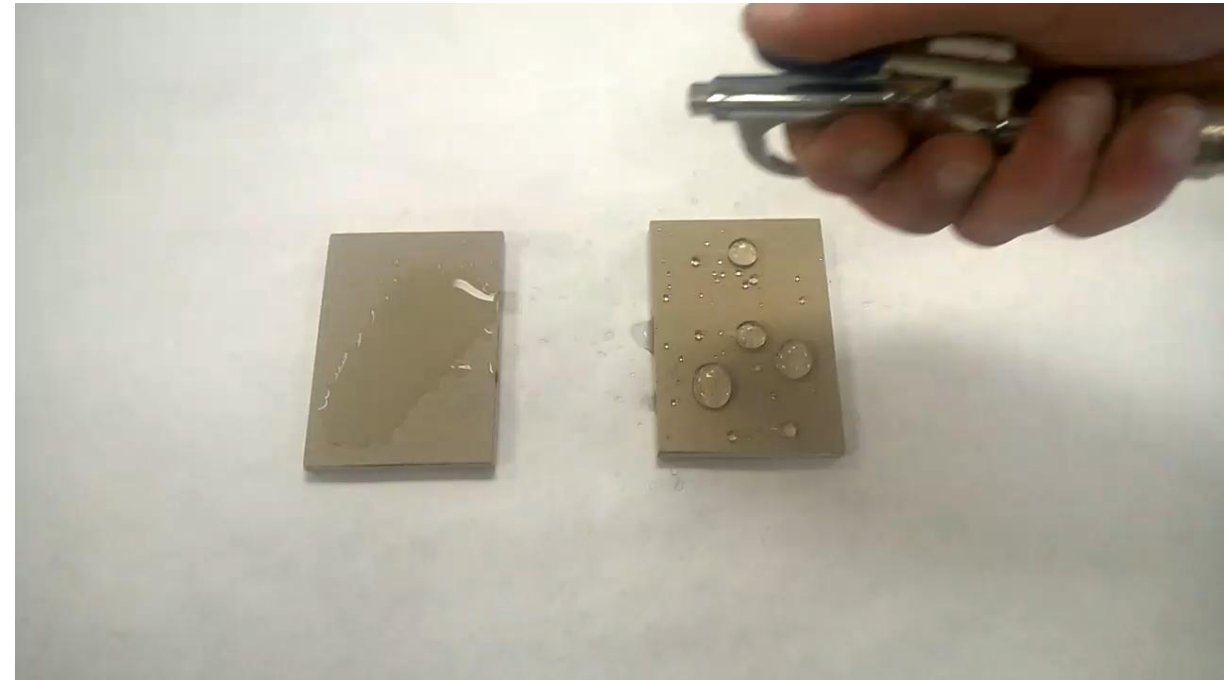
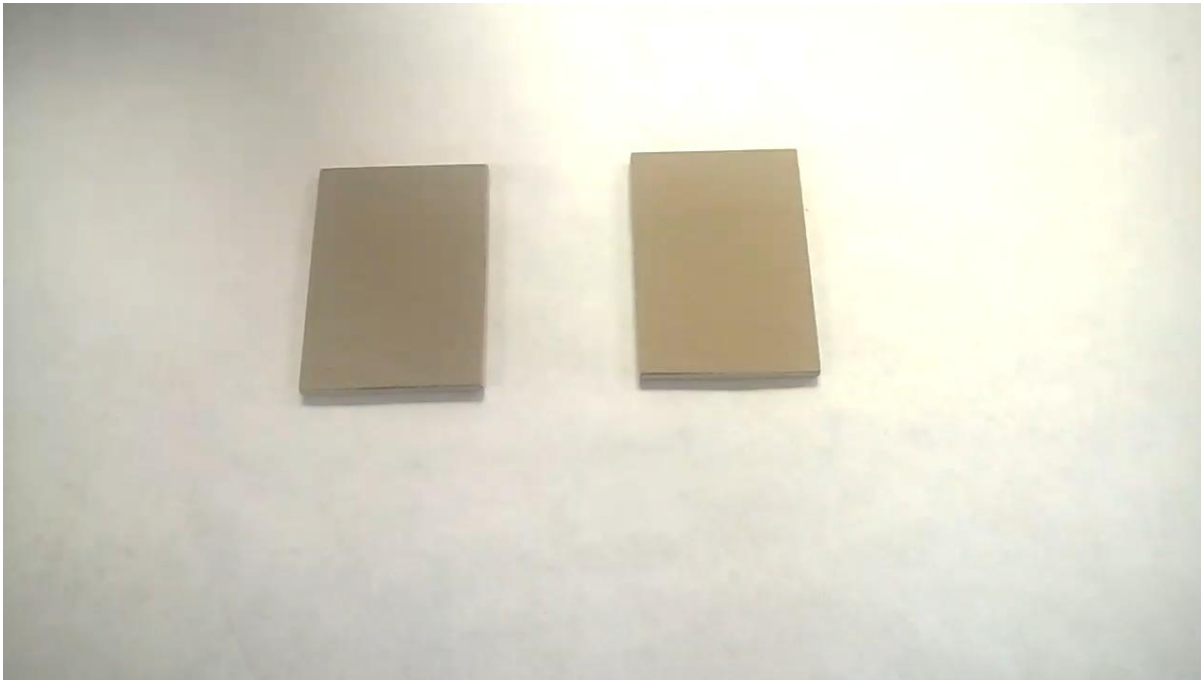
- Highly hydrophobic, 100% acrylic
- Water repellent, soil resistant
- Smooth, matte finish
- Added value solution



Common uses + benefits

- Substrates
 - Concrete
 - Masonry
 - Stucco
 - Existing coatings
- Application method
 - Brush
 - Roll
 - Spray
- Broad color range, available in 4 tint bases

SIKA-THOROCOAT 350 AQUASOL-(HYDROPHOBIC WALL COATING)



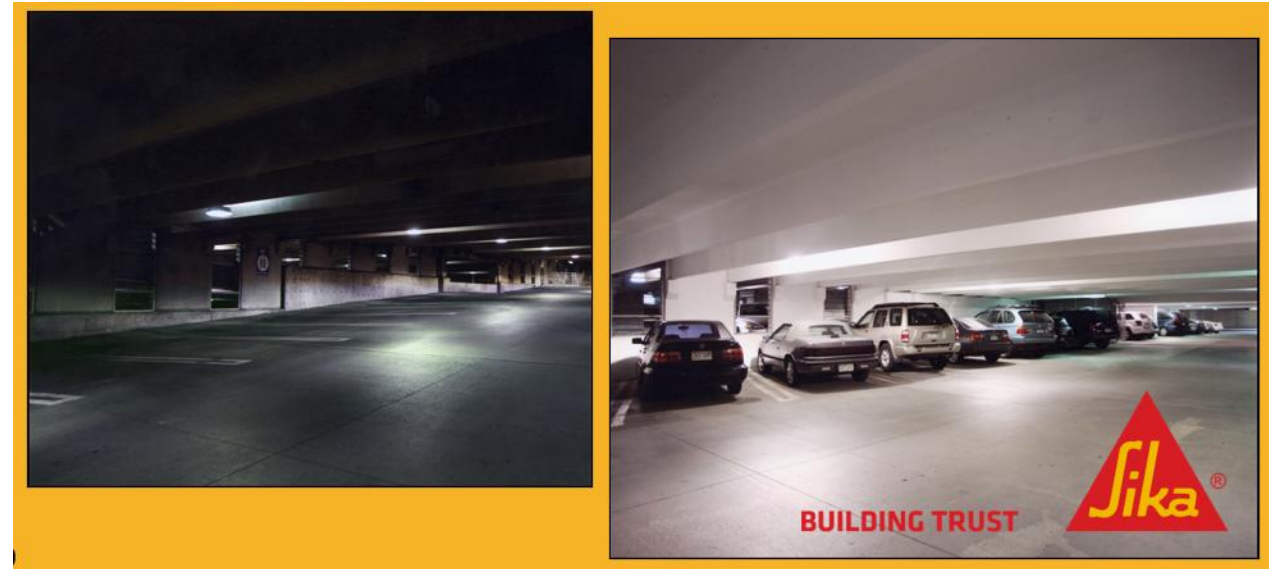
HIGH BUILD COATINGS WALL COATING PORTFOLIO

Sika Thorocoat 200 & 200 LR

- Smooth, water-based, 100% acrylic
- High Perm
- Highly reflective coating (200 LR)
- Reduces energy costs
- Enhanced security

Sika Thorocoat 300 Artic

- Smooth, water-based, SBA
- Cool weather applications
- Green concrete
- Highly permeable (28 perms)



Common uses + benefits

- Substrates
 - Concrete/Masonry/Stucco*
- Application method
 - Brush/Roll/Spray
- Primerless application
- Anti-carbonation protection (18 in.)
- Resistance to wind driven rain

HIGH BUILD COATINGS

WALL COATING PORTFOLIO

Sika Thorocoat 400

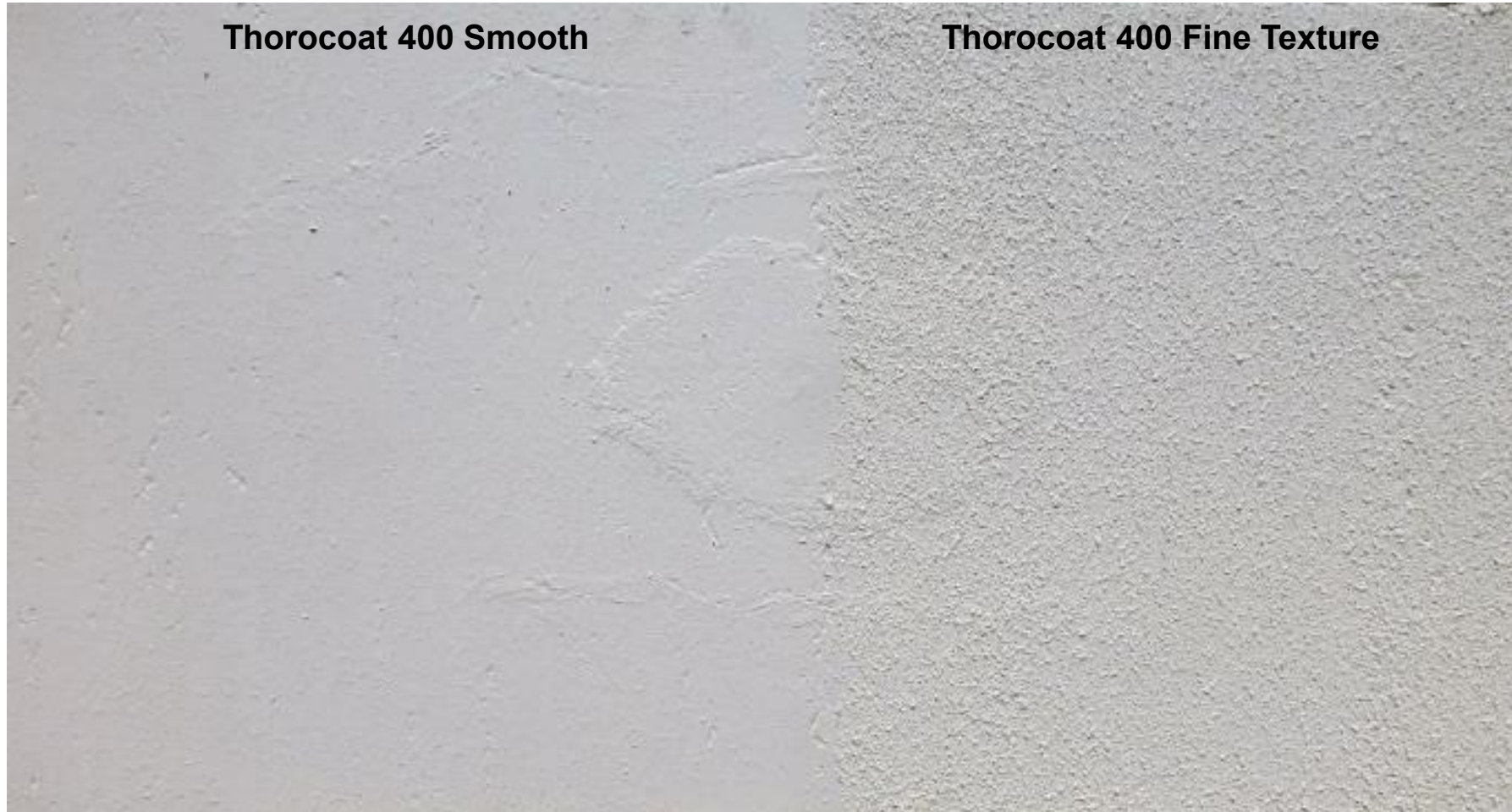
- Water-based, 100% acrylic
- Smooth, fine and coarse *texture*
- Broad range of colors
- Waterproofing protection
- Salt spray resistance



Common uses + benefits

- Substrates
 - Concrete
 - Masonry
 - Stucco
- Application method
 - Brush
 - Roll
 - Spray
- Resistance to wind driven rain
- Anti-carbonation protection
- Excellent adhesion and durability

WALL COATINGS OPTIONS



- **Masking Texture with textured coatings (after two coats)**

ELASTOMERIC COATINGS

WALL COATING PORTFOLIO

Elastomeric Coatings have lower adhesion properties so they can stretch and recover

Sika Thorolastic 750

- Water-based, 100% acrylic
- Smooth, fine and coarse texture
- Broad range of colors
- Waterproofing protection
- Resistance to algae growth



Common uses + benefits

- Substrates
 - Concrete
 - Masonry*
 - Stucco*
- Application method
 - Brush
 - Roll
 - Spray
- High elongation 344%, 98% recovery
- Permeable
- Resistance to wind driven

ELASTOMERIC COATINGS

WALL COATING PORTFOLIO

Elastomeric Coatings have lower adhesion properties so they can stretch and recover

Sika Thorolastic 850

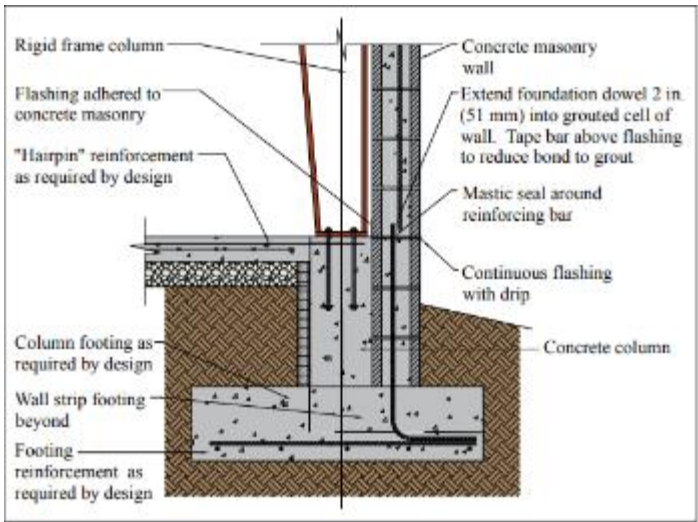
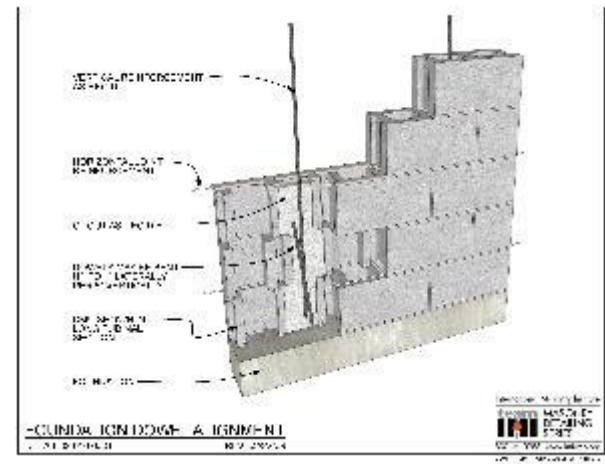
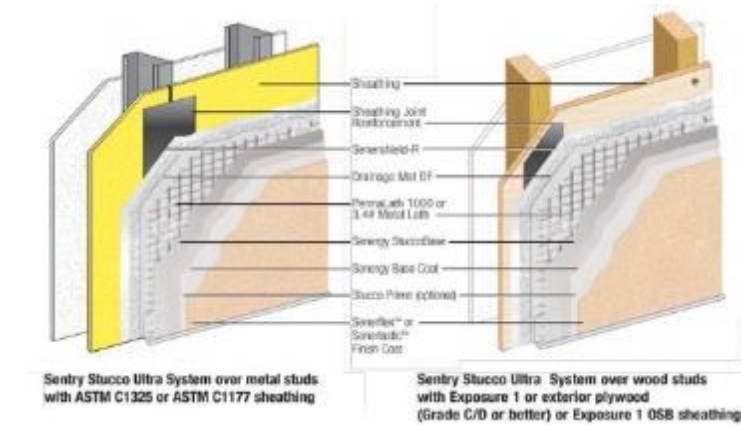
- Smooth, silicone modified acrylic
- Broad range of colors
- Waterproofing protection
- Superior crack bridging
- Recoatable



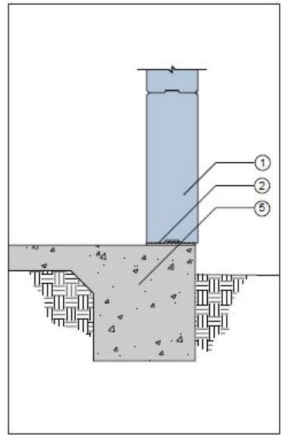
Common uses + benefits

- Substrates
 - Concrete*
 - Masonry*
 - Stucco
- Application method
 - Brush
 - Roll
 - Spray
- Anti-carbonation
- High elongation 784%
- Permeable
- Resistance to wind driven

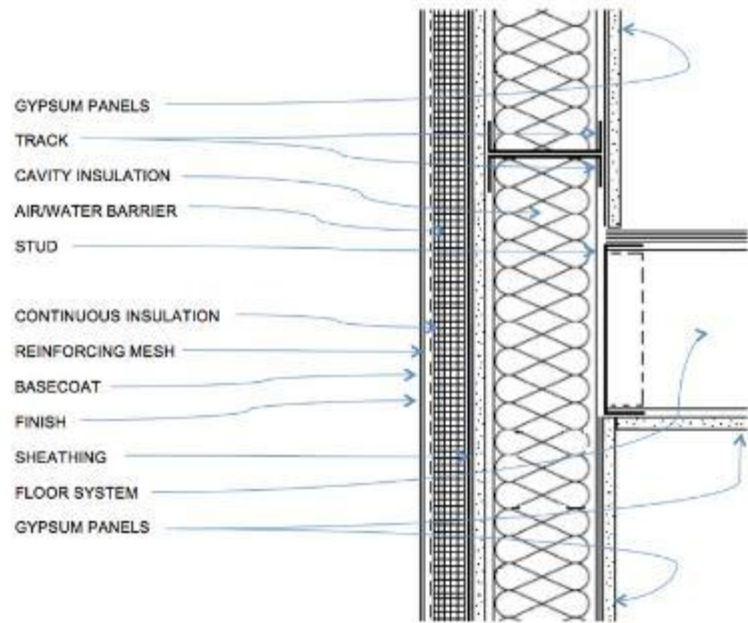
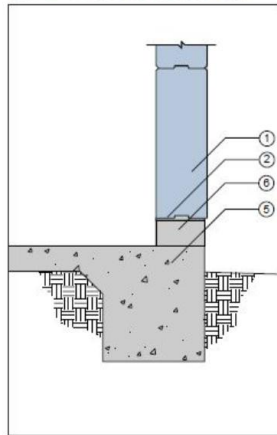
CHOOSE COATING TYPE BASED ON WALL TYPE



Monolithic Slab

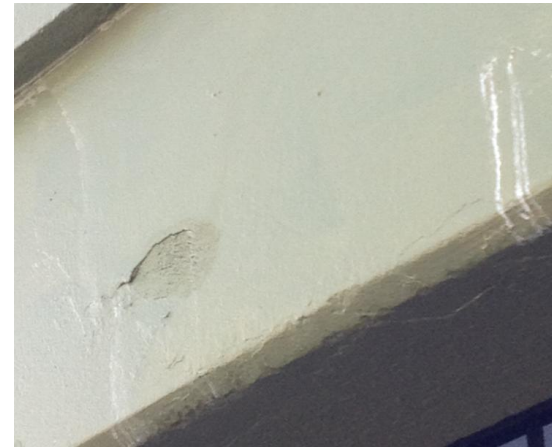


Monolithic Slab with Concrete Curb



Thermally Dynamic Framed Walls VS. Monolithic Walls

WHY NO ELASTOMERICS ON SOFFITS/ UNDERSIDE????



WALL COATING INSTALLATION



DRY SUBSTRATE

SURFACE PREPARATION METHODS

- Power Washing Masonry Will Inject Water. Allow For Adequate Dry Time
- Surface moisture content of **12% or below**



RECOAT GUIDELINES

SURFACE PREPARATION METHODS

ASTM D3359

- » High build coating has been applied and allowed to cure a minimum of 5 days at 50 +degrees
- » Razor utility knife to cut a 2" X through the coating
- » Once you have assured the tape has good adhesion, pull it down and off the wall.
- » Once the tape has been removed you should inspect the area of the X cut. You should only see small chips of the product (less than 1/8"), at the intersection of the X.

Adhesion Testing



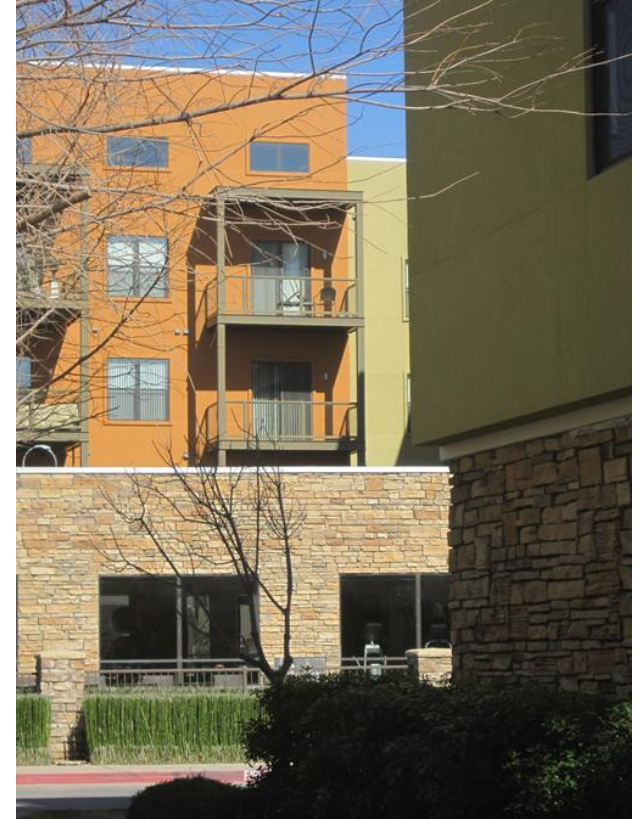


PREPARATION

MATERIAL INSTALLATION

Prepare coating before application:

- Mixing coating on the jobsite
- Ensure proper drill and mixing paddles
- “Box Mix” material
- Keep material in protected, covered area
- Have proper tools ready to go



BOXING MATERIAL COLOR UNIFORMITY

- » Use an extra five-gallon bucket
- » Continuous box mixing provides color consistency on a job
- » Box mix minimum of 3 trips
- » Distributors use accutinter and plants use the same software
- » **JORSKI tip: Measure off a touch pail and label for specific drop and area on the building.**



EQUIPMENT REVIEW

- » Loose hairs always end up in the wet coating
- » Pre-condition your covers for better use and coverage rates



CUT IN AND EDGING

APPLICATION METHODS

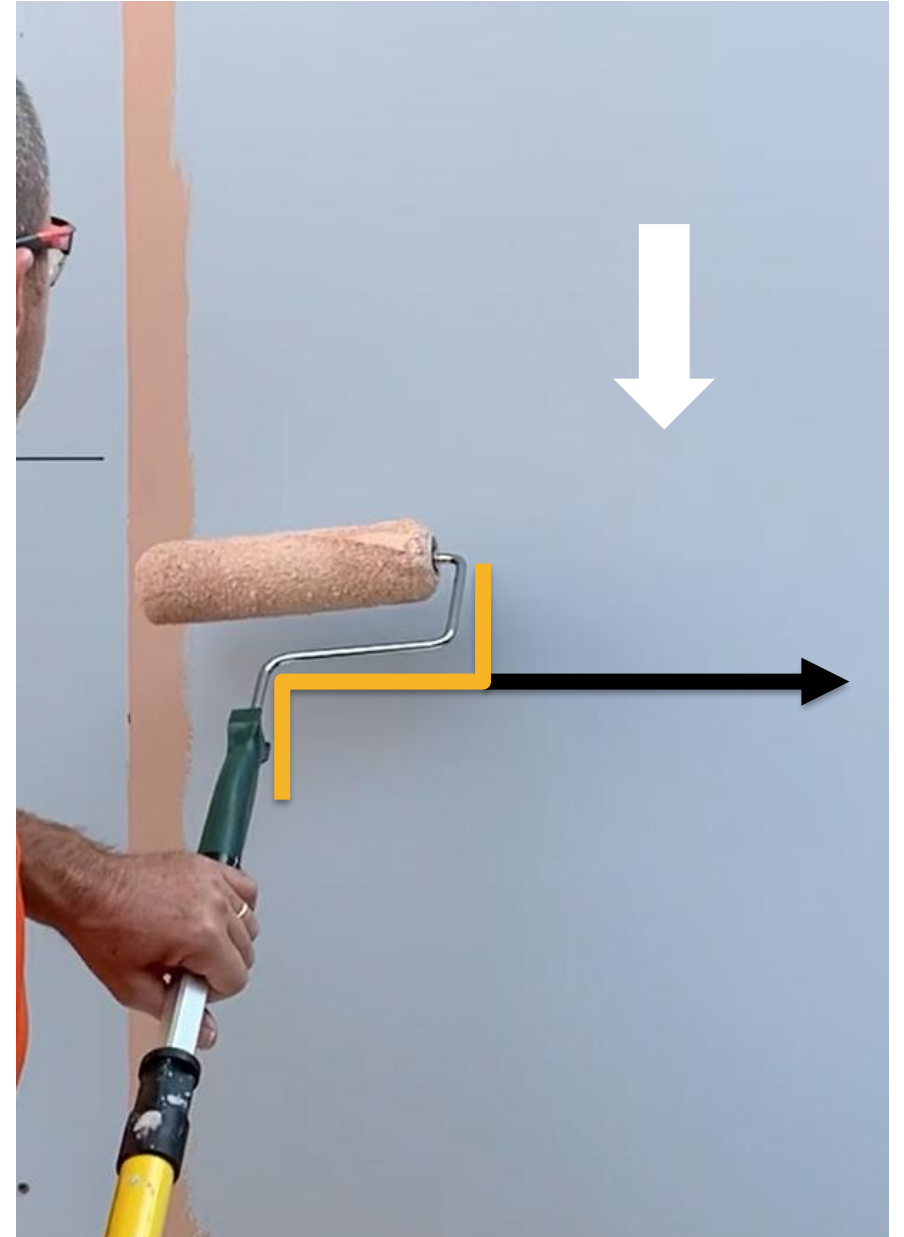


- » Cut in – details
- » Load up 2” of the brush to avoid drippage
- » Work down with a slight twist of the wrist
- » Light stipple to integrate in with your roller and back roll
- » **JORSKI tip: light stipple cut in and touch ups to blend in with your roller texture.**

ROLLER APPLICATION

KEY PERFORMANCE PROPERTIES

- Keep and maintain a wet edge
- Point the frame in the direction you are rolling
- Proper cut ins will provide better color uniformity on the wall
- Texture and angular sheen is color, finishing is key to maintaining flat even looks on vertical walls
- Finish roll application from top to bottom of the wall

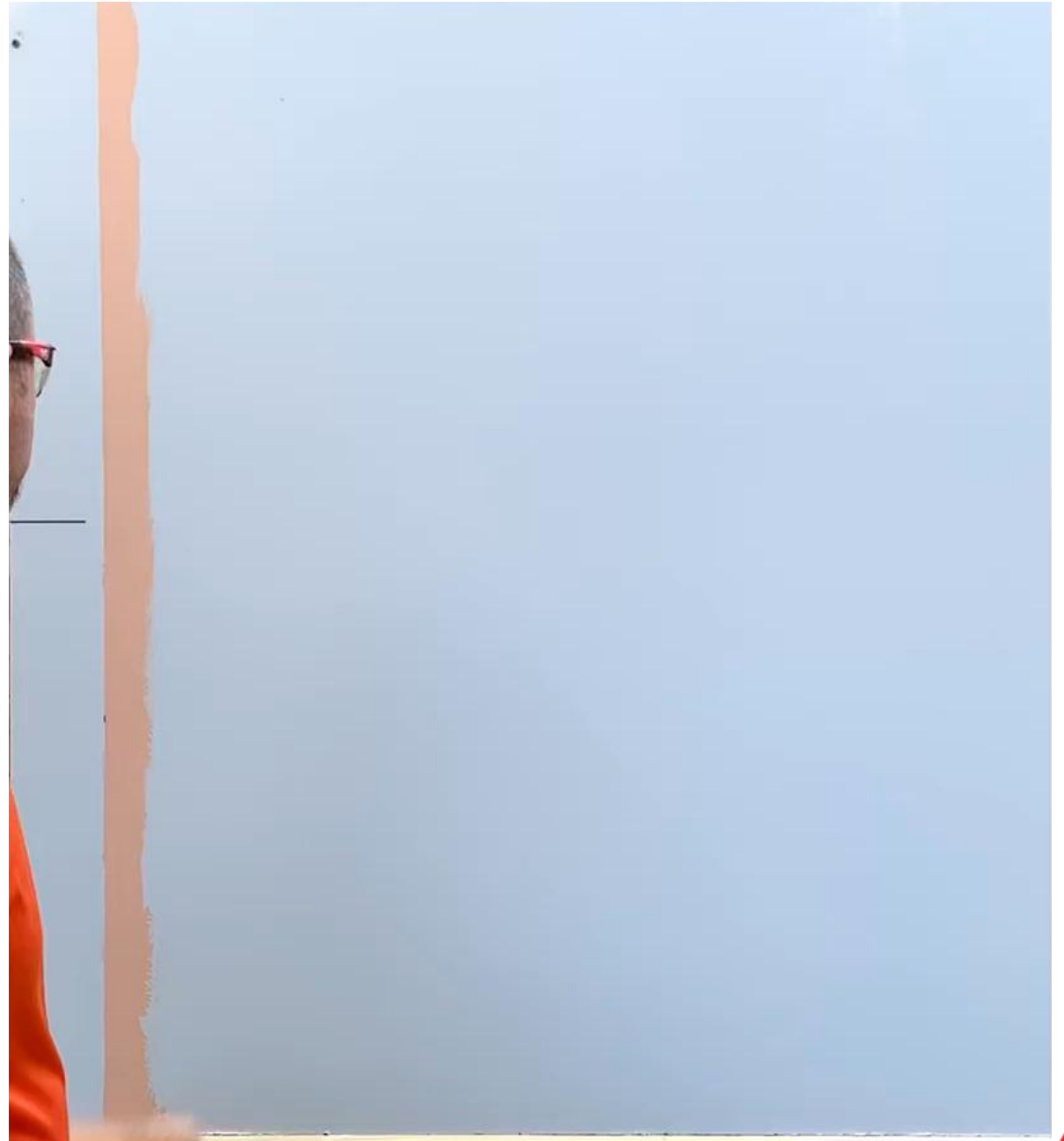


ROLLER APPLICATION

KEY PERFORMANCE PROPERTIES



JORSKI tip – Only put pressure when rolling the material up the wall. Finish stroke down, do not put excess pressure.



METHODS

MATERIAL INSTALLATION



Wet Edge / Stopping Points

Solution

- Pick natural stopping points on the building (i.e., control or expansion joints, feature lines, exterior or interior corners, etc.)

MATERIAL INSTALLATION-KNOW YOUR RECOAT TIMES:

- **Primers:** Sika Thorocoat 100 Primer; Sika Thorocoat 150 Primer
 - 2-4 hours cure before coating
- **Patching compounds and block fillers:** Sika Thorocoat FL 748; Sika Thorocoat FL 749
 - 12 hours cure before coating
- **Thin Mil Coatings:** Sika Thorocoat C 250; Sika Thorocoat C 350 Aquasol
 - 2-4 hours cure before coating
- **High Build Coatings:** Sika Thorocoat 100 TW; Sika Thorocoat 200; Sika Thorocoat 300SB Artic; Sika Thorocoat 400
 - 6 hours cure before coating
- **Elastomerics:** Sika Thorolastic 750; Sika Thorolastic 850; Sikagard 570
 - 12 hours cure before coating

OCTOBER 2023 ICRI CONCRETE REPAIR BULLETIN

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2

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There Is No Panacea When It Comes to Wall Coatings

by Keith C. Howard

Elastomeric coatings sound like the solution for all situations because there is a perception that they are the only waterproof option for above grade concrete and masonry applications. Elastomerics have become prevalent in many specifications, but do we understand what an elastomeric wall coating is, what it's supposed to do, and when we should use them? Wall coatings vary greatly in their ingredients, chemistry, and performance. Understanding when an elastomeric coating is appropriate for a specific project is key to the successful performance and protection of the wall section.

An elastomeric coating is a high-build coating that is manufactured with special resins that can stretch (elongate). The function of elastomeric coatings is to bridge small hairline cracks in substrates that are subject to thermally dynamic movement or have existing cracks.

Thermal dynamic cracks are common in stucco on wood, metal framing, or Exterior Insulation Finish Systems (EIFS). These substrates are not monolithic and act as a "shell" installed over a wall's framing or structural elements. The hairline cracks experienced by these substrates are typically 1/16" or less and will vary with ambient temperature. As the outside temperature falls, the cracks in the stucco will widen; as the outside temperature rises, these same cracks will narrow or even close. (Fig. 1)



Fig. 1: Crack in exterior stucco

Quite often, the word elastomeric is used as a generic term. Two key physical properties should be reported to evaluate actual elastomeric coatings: elongation and recovery. Elongation of 300% is considered the minimum for good performance. Regarding recovery, many products do not even list their recovery value on the data sheet. A tested recovery value (%) is essential for long-term performance. Without it, your coating is like a rubber band that stretches and stays stretched out.

It is also important to understand how much movement (crack bridging) can be expected out of a typical elastomeric coating system. A typical two-coat elastomeric coat-

ing with 300% elongation applied at a 16-mil total dry film thickness (DFT) is going to be able to move about 1/32". At 600% elongation, the movement allowance would be approximately 1/16". All existing cracks should be treated/detailed according to the manufacturer's recommendations before the application of any coating. When evaluating crack bridging properties, don't forget the other essential physical property of recovery percent. Elongation is useless without recovery (ASTM D412, D2370) (Fig. 2).



Fig. 2: Elongation testing

What if elongation is not necessary? What coating type is best for monolithic substrates like concrete and masonry? Drying shrinkage, settlement, mortar, or structural cracks often found in single wythe CMU, poured-in-place concrete, tilt-up concrete, or precast concrete walls (Fig. 3) are typically not thermally dynamic cracks and should be treated differently than stucco/EIFS cracks.

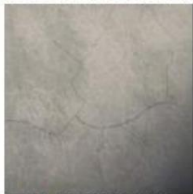


Fig. 3: Typical cracks in concrete

The cracks found on these monolithic substrates are typically far less frequent and may not change much with temperature when compared to stucco on framing. Cracks in concrete walls could be indicative of larger structural issues or lack of proper expansion joints and should be properly repaired or filled with a paintable sealant before the coating application.

Recommending elastomeric coatings on these types of substrates is not the best recommendation for either the owner or the structure. The selection of the coating based on the substrate type and wall construction is critical to long-term performance.

One of the primary functions of high-performance exterior wall coatings is to protect the structure from the damaging effects of water or moisture ingress.



Thank You

WE
ARE
SIKA

