Advanced Protection for Concrete & Masonry using
UNIQUE CRYSTALLIZATION

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SPECIAL THANKS TO:
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Mujib Rahman, Brunel University London

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WATER & MOISTURE RELATED ISSUES IN CONCRETE SUBSTRATES

POROSITY OF CONCRETE
- Allows Moisture To Travel Freely Inside Concrete
- Increases Absorption Of Contaminating Materials

MOISTURE CAUSES CONCRETE DETERIORATION & FAILURE

- Increases The Absorption Of Chlorides From De-Icing Materials Leading to ASR
- Dissolves & Activates Free Alkali Materials That Attack The Concrete Matrix
- Accelerates The Corrosion Of Steel
- Breaks The Concrete Matrix Due To Freezing & Thawing
- Reduces Adhesion Of Coating Materials
- Accelerates Calcium Oxychloride Growth In Concrete

WATER & MOISTURE RELATED ISSUES IN CONCRETE SUBSTRATES

SHADOWING

REACHING 85% SATURATION

WATER & MOISTURE RELATED ISSUES IN CONCRETE SUBSTRATES

CONCRETE SCALING

SHRINKAGE CRACKS OR CRAZING

STANDARD "VS" CRYSTAL TECHNOLOGY WHEN MOISTURE IS PRESENT

SILANE & SILOXANE TREATMENTS
- Moisture intolerant at application time.
- Achievable dosage drastically reduced in the prescience of small internal moisture content
- Contains VOC'c
- Needs RE-APPLIED
- Little resistance to chloride penetration after application on damp substrate.

CRYSTALLISATION TREATMENT
- Moisture tolerant at application time.
- Accepts and works with moisture in the concrete substrate.
- Uses substrate moisture to form protective crystals
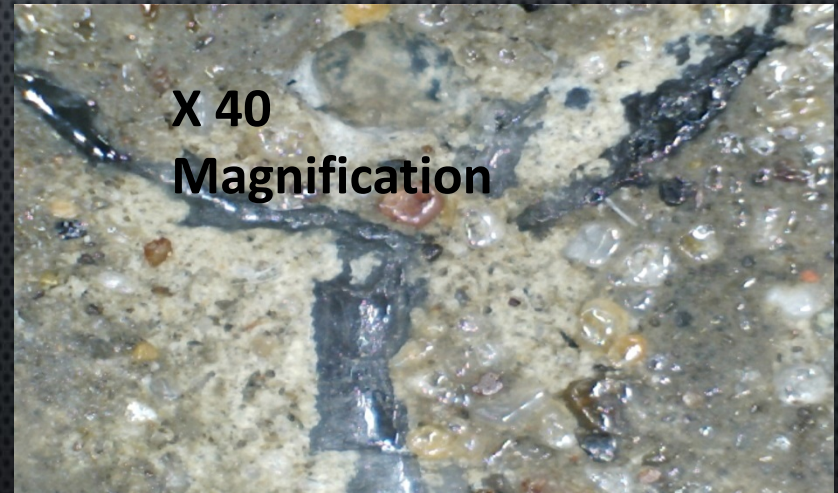- Resistant to chloride penetration not disadvantaged by concrete moisture.

PROVEN TECHNOLOGY

- Unique material
- Hydrophilic

And Hygroscopic Properties

THIS TECHNOLOGY IS NOT A CONCRETE DENSIFIER

Dual hydrophobic crystallisation have crack filling characteristics

X 40 Magnification

Early Thermal Cracking (ETC): Water transmitting cracks filled

HYDROPHILIC

PENETRATES UP TO .25"

SEEKS MOISTURE (OTHER)

COMBINES WITH WATER TO BARRIER

BLOCKS MOISTURE TRANSMISSION

HYGROSCOPIC

PENETRATES UP TO .25"

ATTACHES TO HYDROPHILIC CRYSTAL

GROWS TOWARDS MOISTURE AND VAPOR (DIFFUSION)

100% Green Technology

The Proof: 48 hr Acute Toxicity Testing

Environmentally Safe Crystallisation Treatment Selected for Environment Site of Special Scientific Interest (Medway, UK)

# GROWTH CRYSTALS- MEETS OR EXCEEDS….

- ASTM c666 (Freeze/Thaw)
- ASTM E303-93 (TRL)
- ASTM c1583 (Bond)
- ASTM f609 (Friction)
- AASHTO 260-97 (Chloride Ion)

- ASTM C1202 (Chloride Ion Pen.)
- ASTM C944 (Abrasion)
- ASTM D6489 (Water Absorption)
- ASTM E96 (Vapor Trans)
- ASTM 672-98 (Resistance to Scale)

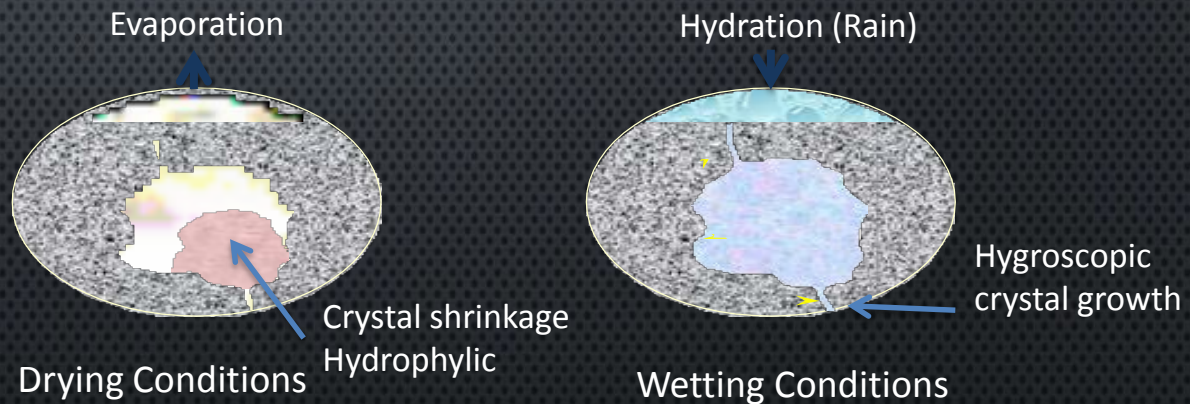ALL TESTING & ENGINEERED REPORTS AVAILABLE UPON REQUEST AND ONLINE

SECONDARY BENEFITS OF GROWTH CRYSTALS

- REDUCES POP OUTS

- SEALS CRACKS UP TO 1/16"

- KEEPS PAVEMENT CLEANER AND FRESHER

- WORKS TO ELIMINATES STAINING

- NO EFFECT ON SECONDARY COATINGS/TOPPINGS

- REDUCES INTERNAL AND EXTERNAL ICE BUILD-UP

How dual hydrophobic crystallisation works
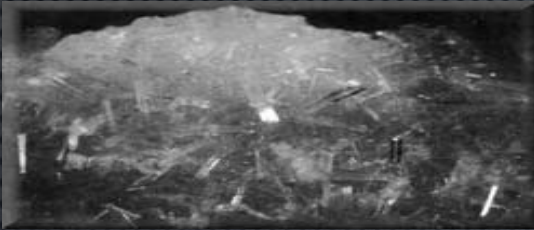
Spray applied, water-based dual crystallizing solution combines with water to penetrate concrete pores with permanent, tightly adhering, water repelling (hydrophobic) crystals

Evaporation

Crystal shrinkage Hydrophylic

Drying Conditions

Hydration (Rain)

Hygroscopic crystal growth

Wetting Conditions

BENEFICIAL USES OF GROWTH CRYSTALS

ELIMINATES MOLD

BEFORE

REDUCES MOISTURE

AFTER

- 6 months Application -

DUAL GROWTH CRYSTAL SYSTEM DRIES CONCRETE

ONE COAT APPLICATION OF GROWTH CRYSTALS

12/30/2011
Application day

3/20/2012
81 Days After Application

DUAL GROWTH CRYSTAL SYSTEM DRIES CONCRETE

ONE COAT APPLICATION OF GROWTH CRYSTALS OFFERS LIFE OF CONCRETE PROTECTION

5/22/2012
144 Days After Application

2/11/2013
409 Days After Application

LESS ICE BUILD

USING
PROVEN DUAL CRYSTALLIZATION

THE CONCLUSION IS QUITE SIMPLE

ADDITIONAL LONG LASTING QUALITY ASSURANCE
FOR PRECAST, CONCRETE AND MASONRY

REACHING 85% SATURATION

INFORMATION PROVIDED BY THE FOLLOWING ENTITIES

- BRUNEL UNIVERSITY, LONDON
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- CTL GROUP (CHICAGO)
- DALLAS LABORATORIES
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THANK YOU..