SCHOTT
glass made of ideas

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Glass For Fire Protection and Safety

ZAK World Of Facades | June 27, 2019

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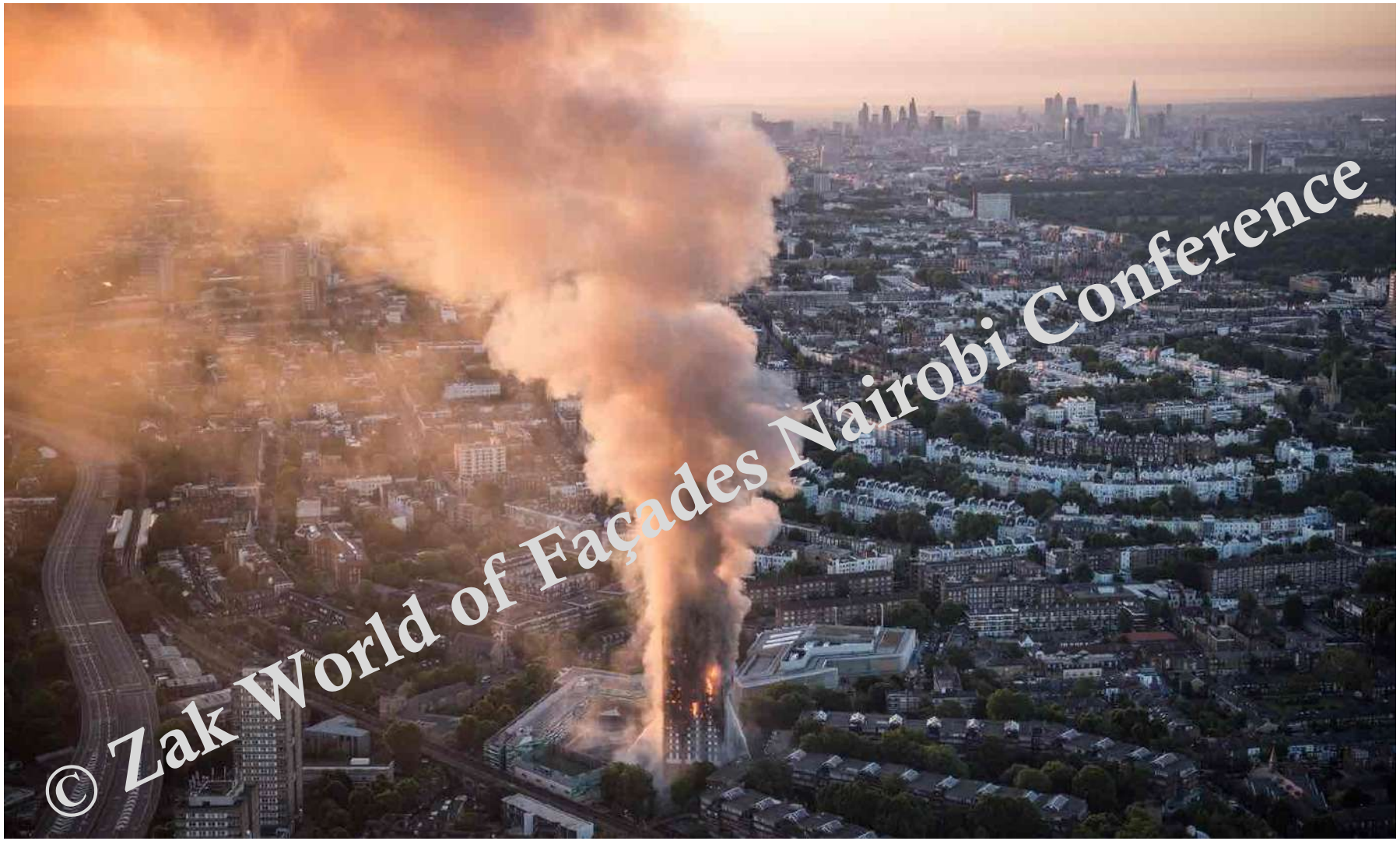

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Panic

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Why Do We Panic?

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Why Do We Panic?

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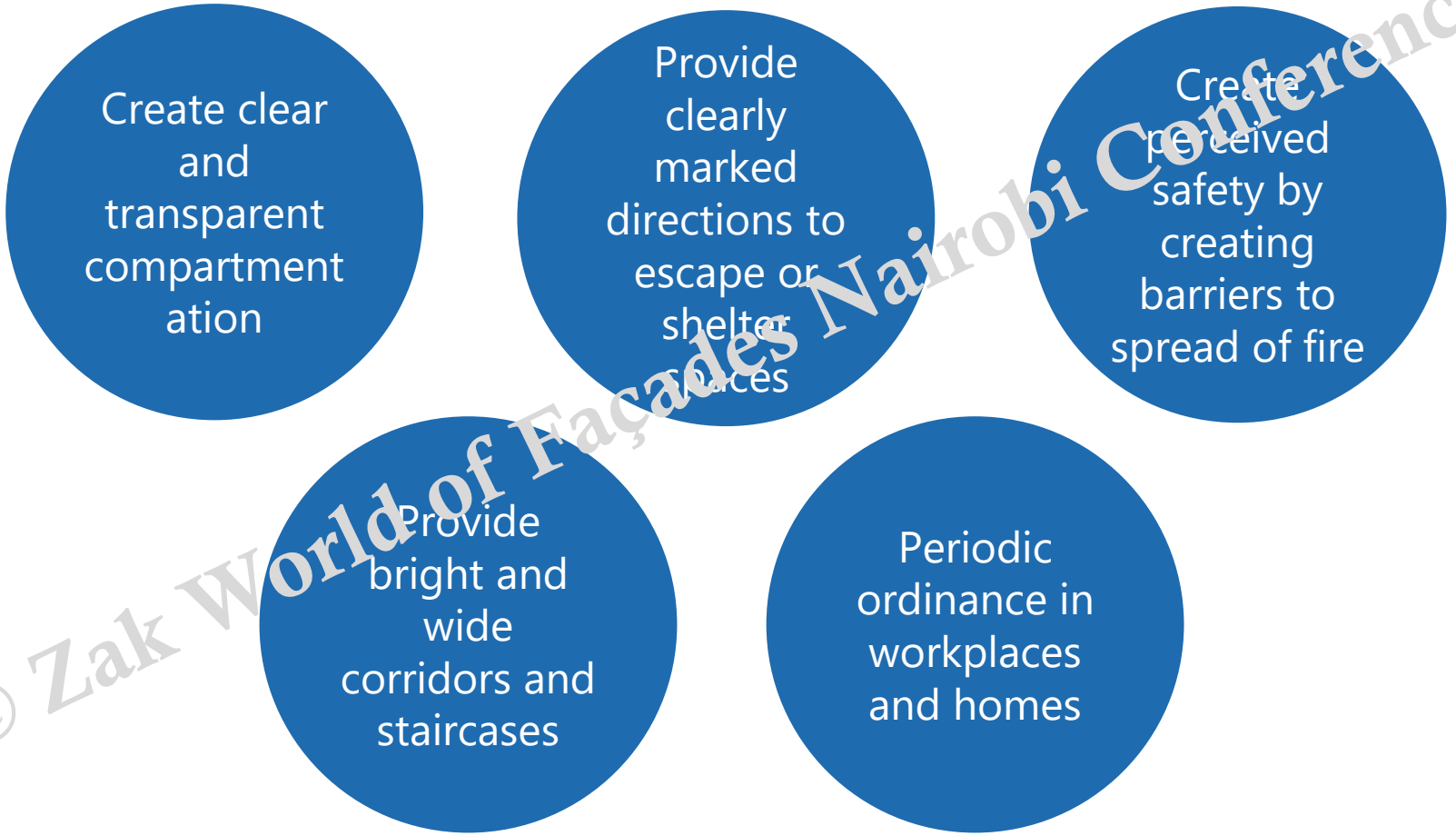
Architecturally How Can We Reduce or Prevent Panic?



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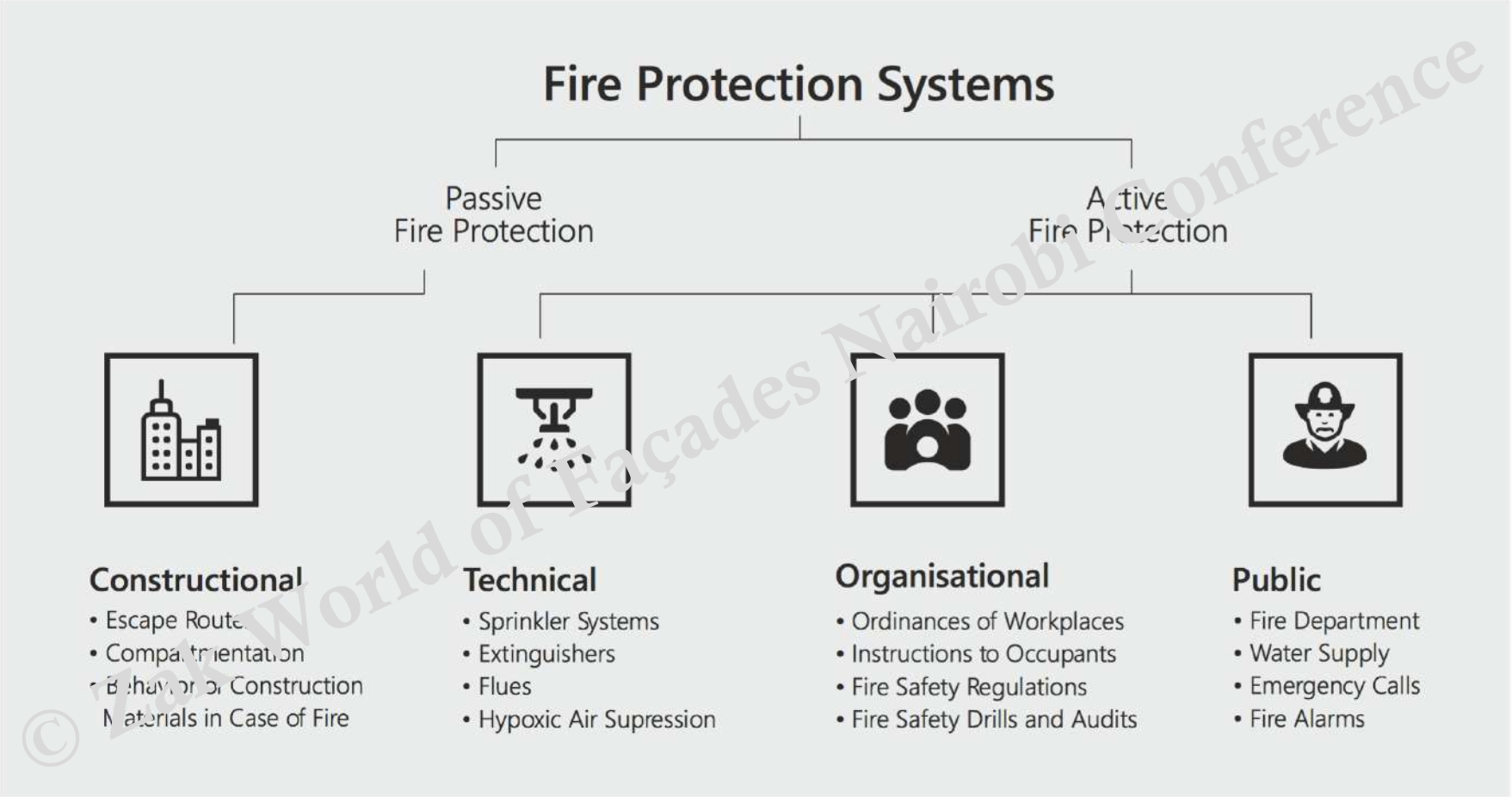
Basics of Fire Protection Systems



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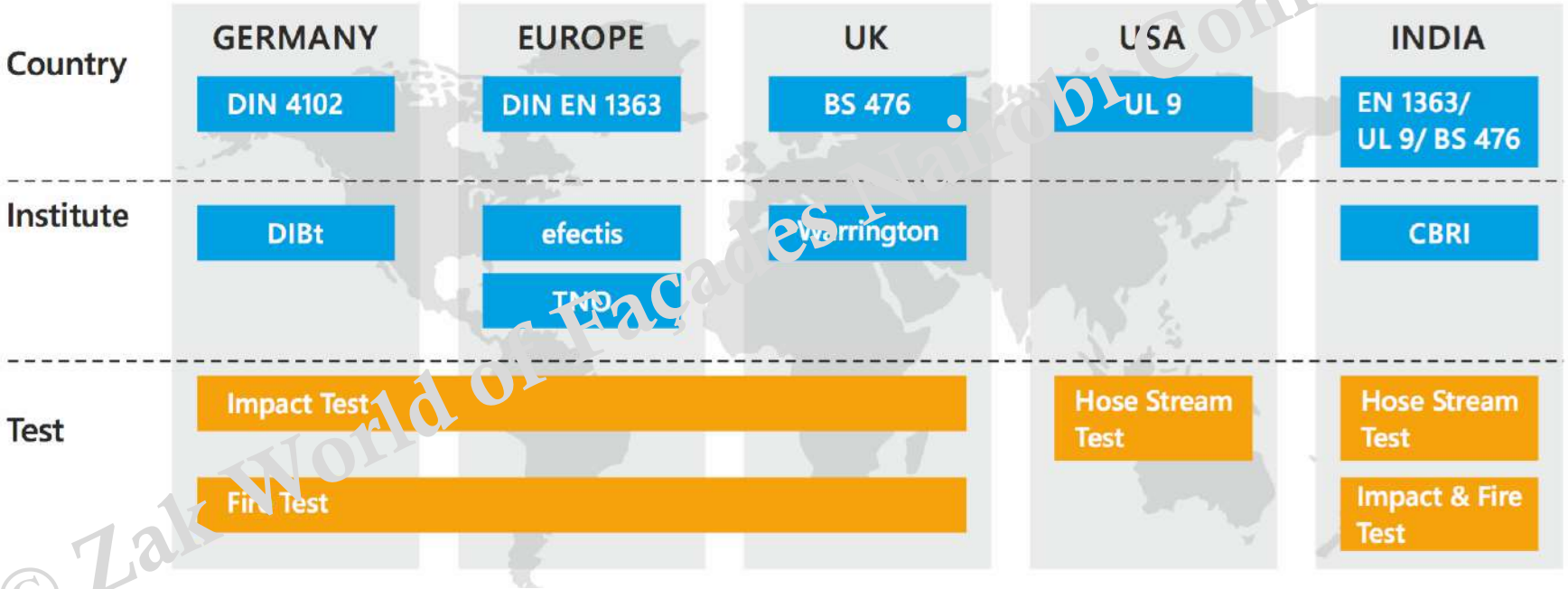
Passive Fire Protection is Determined by Regulations



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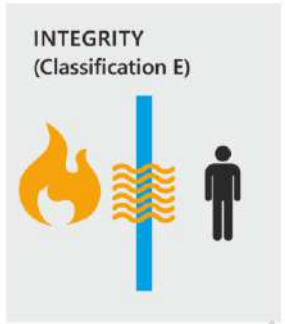
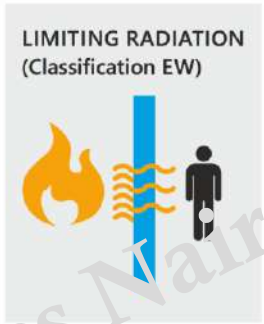
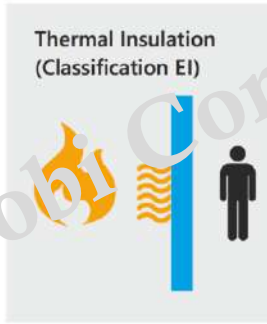
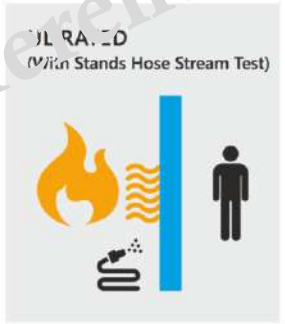
Fire-Rated Glass Classifications

	E	EW	EI	UL
				
Prevention of Passage of Flames	✓	✓	✓	✓
Prevention of Passage of Smoke	✓	✓	✓	✓
Reducing Heat-Radiation to 15 kW/m²		✓	✓	
Prevention Increase in Temperature to <140 K or max. 180 K			✓	
Ability to Withstand Hose Stream Test				✓

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Applications of Fire-Resistant Glazing in Buildings

Staircase Enclosures

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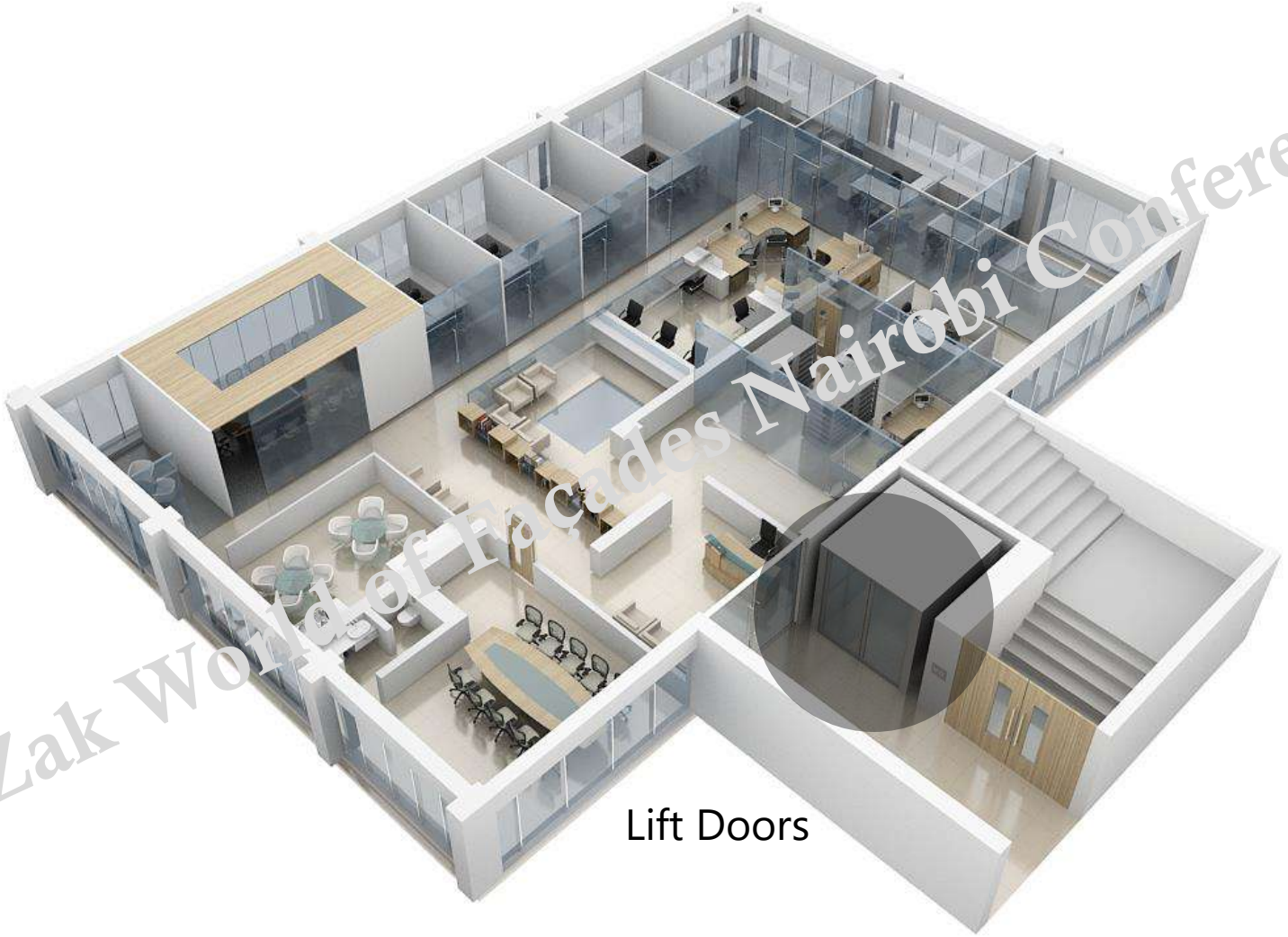
Applications of Fire-Resistant Glazing in Buildings



Lift Doors

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Applications of Fire-Resistant Glazing in Buildings

Facades &
Windows

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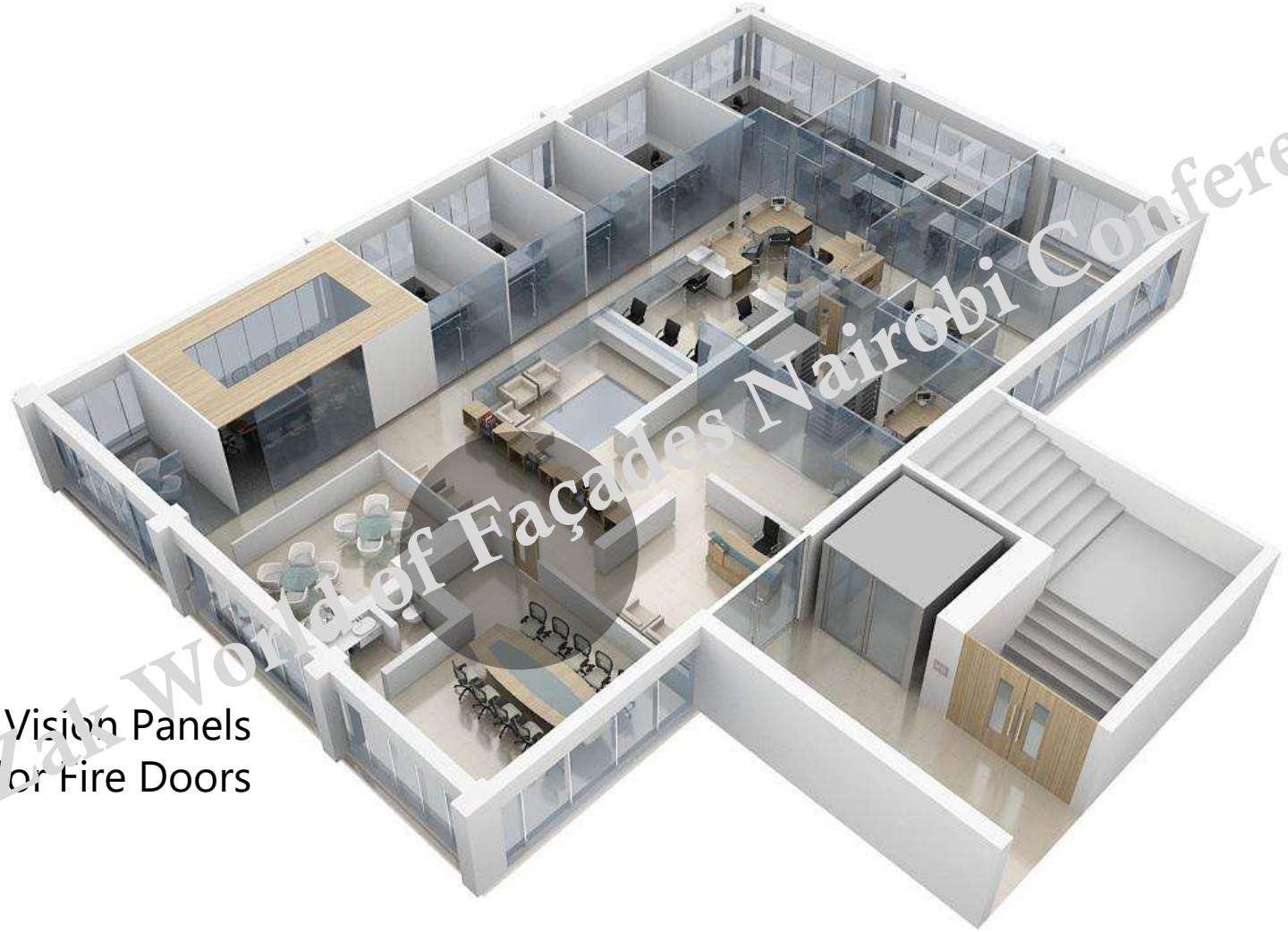
Applications of Fire-Resistant Glazing in Buildings



Vision Panels
for Fire Doors

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Applications of Fire-Resistant Glazing in Buildings

Ceilings
& Floors

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Compartmentation

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Data Server
Enclosures

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Glass or glazing?
The most beautiful glass is nothing without the right system!

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Fire-Rated Glazing is Always a System Solution

Frame

Glass

Fitting

Sealant

Blocks

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Transparency Matters!

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Transparency Matters!

- See who has to be rescued.
- Understand total extent of fire and plan resources accordingly.
- Understand the safe areas and escape accordingly.
- Psychologically better for occupants to understand the fire conditions.

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PYRAN® S - more than just ordinary glass

Thickness	6 mm	8 mm	10 mm	12 mm
Fire Resistance Class	E 120	E 120	E 120	E 120
Weight	13.7 kg/m^2	18.2 kg/m^2	22.8 kg/m^2	27.4 kg/m^2
Light Transmission	92%	92%	91%	91%
U-Value	5.8 W/m^{2}K	5.8 W/m^{2}K	5.8 W/m^{2}K	5.8 W/m^{2}K
Sound Insulation Value	31 dB	32 dB	33 dB	34 dB
Impact Rating (EN 12600)	1B1	1B1	1B1	1B1

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PYRAN® S - more than just ordinary glass

120 MINUTE COMPLETE FIRE-PROTECTION
Tested for 120 minutes integrity, stability and protection against flames, hot gases and smoke as per BS476 Part 22. Provides radiation control (15kW/m^2) for 68 minutes as per EN 1634-1.

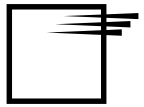
FULLY TOUGHENED FOR SAFETY AND FLEXIBILITY
A borosilicate glass, PYRAN® S is a fully toughened, monolithic and non-wired fire-resistant glass as per DIN EN 13024-1. Compliant to Class A category of Impact Resistance as per BS 6206: 1981.

CLARITY THAT TRANSCENDS BOUNDARIES
PYRAN® S is an super-clear transparent glass with no green tint or iron impurities. With a light transmission of 92%, it provides unmatched aesthetics, clearer than even ultra-clear glass!

REMAINS TRANSPARENT THROUGHOUT THE FIRE
Does not lose transparency during fire. This is extremely beneficial in critical fire-safety applications like doors, windows and partitions to facilitate human rescue from fire to non-fire side and also helps fire-rescue authorities judge the intensity of fire and plan rescue operations accordingly.

UNLIMITED LIFE AND FIRE-PERFORMANCE WARRANTY
With no interlayers or coating, PYRAN® S gets its fire-resistance from the unique borosilicate composition and lasts a lifetime. It never discolours or loses appearance over time and is unaffected by high ambient temperatures or UV rays.

NO PROBABILITY OF SPONTANEOUS BREAKAGE
The high-grade borosilicate composition does not contain nickel-sulphide inclusions and hence eliminates the chances of spontaneous breakage. Due to this unique characteristic, heat-soaking is not needed.



SAME WEEK DELIVERY TIME
Our sophisticated inventory-management system ensures we never stock out of the base glass and can effect extremely quick delivery times. So now you can maintain just-in-time inventory levels and order glass precisely when you need it.

RESISTANCE TO CHEMICALS
Since the glass is without any coating or interlayers, the resistance to chemicals like acids, alkalis and chlorine is extremely high. This is extremely critical in places with high chemical content in air like oil refineries, chemical factories and oil rigs.

MADE IN GERMANY. CUSTOMIZED IN INDIA.
PYRAN® S is manufactured in Germany and shipped in customizable form to India for local processing. Giving you the best of both worlds: unbeatable quality with unbelievable service levels.

REUSABILITY
Under very minor fires that are extinguished within a few minutes, PYRAN® S can potentially be reused; however the glazing components might require change.

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The Way Forward

- Clearly marked and unblocked directions to refuge areas
- Refuge areas to be 2 or 3 walls with fire-resistant materials
- Openable panels of minimum 1.5 m X 1.5 m for escape should be provided

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The Way Forward

- Red triangles should be marked on the openable panels from outside for easy identification
- Use toughened glasses only for openable panels (laminated glasses strictly not allowed)

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The Way Forward

- Proper training should be provided to building occupants with periodic fire drills

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The Way Forward

- All staircases should lead to the ground floor
- Staircase entrances should have two-hour fire rated doors, compulsorily with vision panels

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CBI Headquarters Building at BKC, Mumbai

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Mumbai International Airport

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Delhi International Airport

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Hyderabad International Airport

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Chandigarh International Airport

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Omkar 1973 Fire-Doors, Mumbai (under construction)

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President Museum, New Delhi

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BASF Global Research Centre, Navi Mumbai

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BMW Shop, Paris

- **PYRAN® S laminates, butt joint glazing**
- **partition**
- **steel frame**
- **E 30**

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Expert competence for your construction project

Our service

- development of system solutions in cooperation with partners
- competent consultancy with the help of skilled sales engineers (national/international)
- full size fire test furnace for customized solutions
- customer trainings
- efficient logistic

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Our competence is your safety!

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“Every building is like a person. Single and unrepeatable.”

~Ayn Rand~

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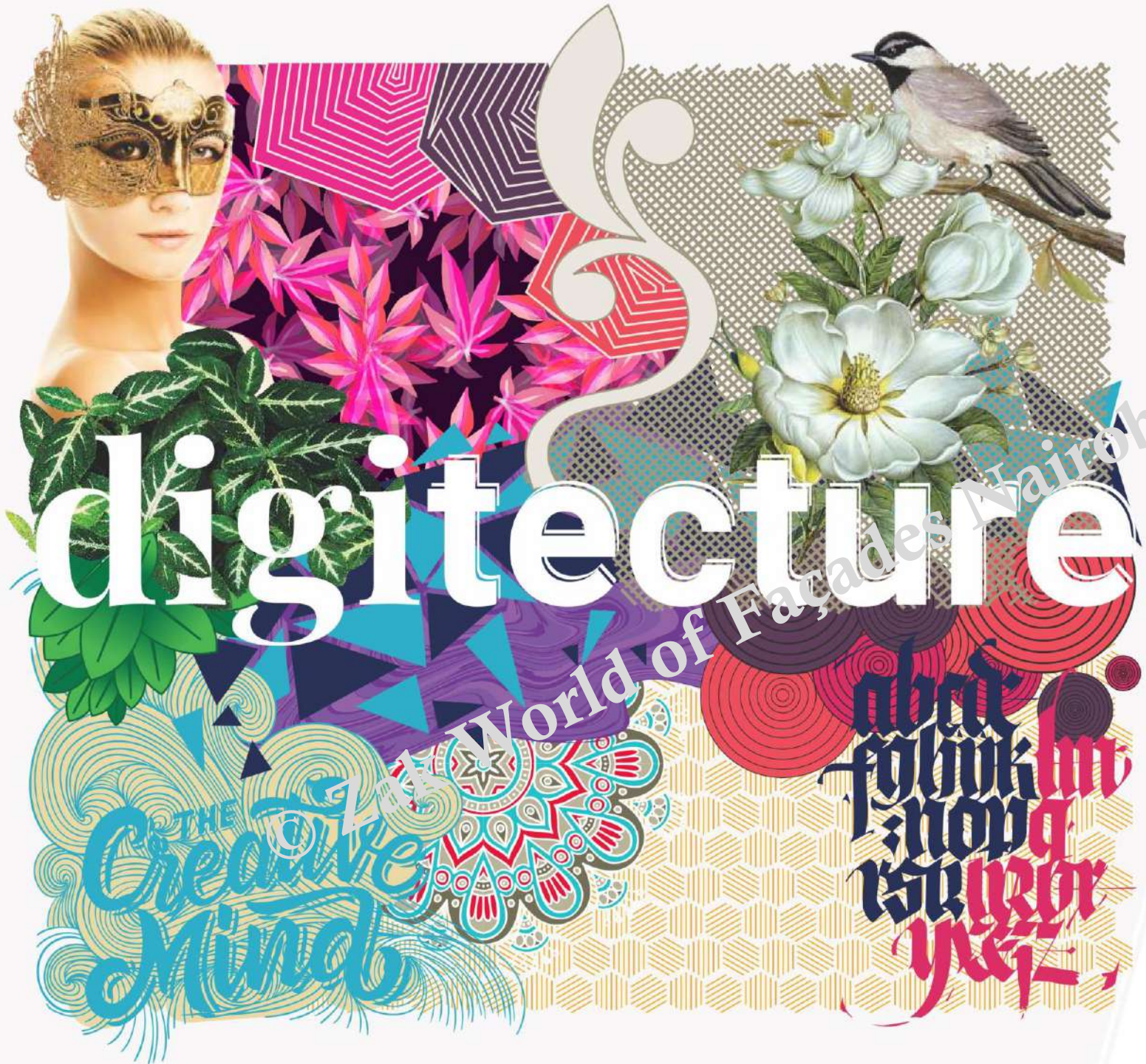

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The time for ***What if*** in architecture has arrived!

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digitecture™ is the latest addition to our innovative and popular Creations portfolio. While the inherent properties of glass add great aesthetic and functional value to interior and exterior spaces, our Creations product vertical redefines the boundaries of architectural design.

Now, glass is your canvas.
The possibilities are limitless.

CREATIONS

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01 *What if*

my facade is unlike any other in the city

I2I Headquarters, Pune
Client: Ideas To Impacts
Architect: Archivista Engineering Projects
Product: digitecture™ on Ultra Clear Glass

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University of Limerick
Ireland
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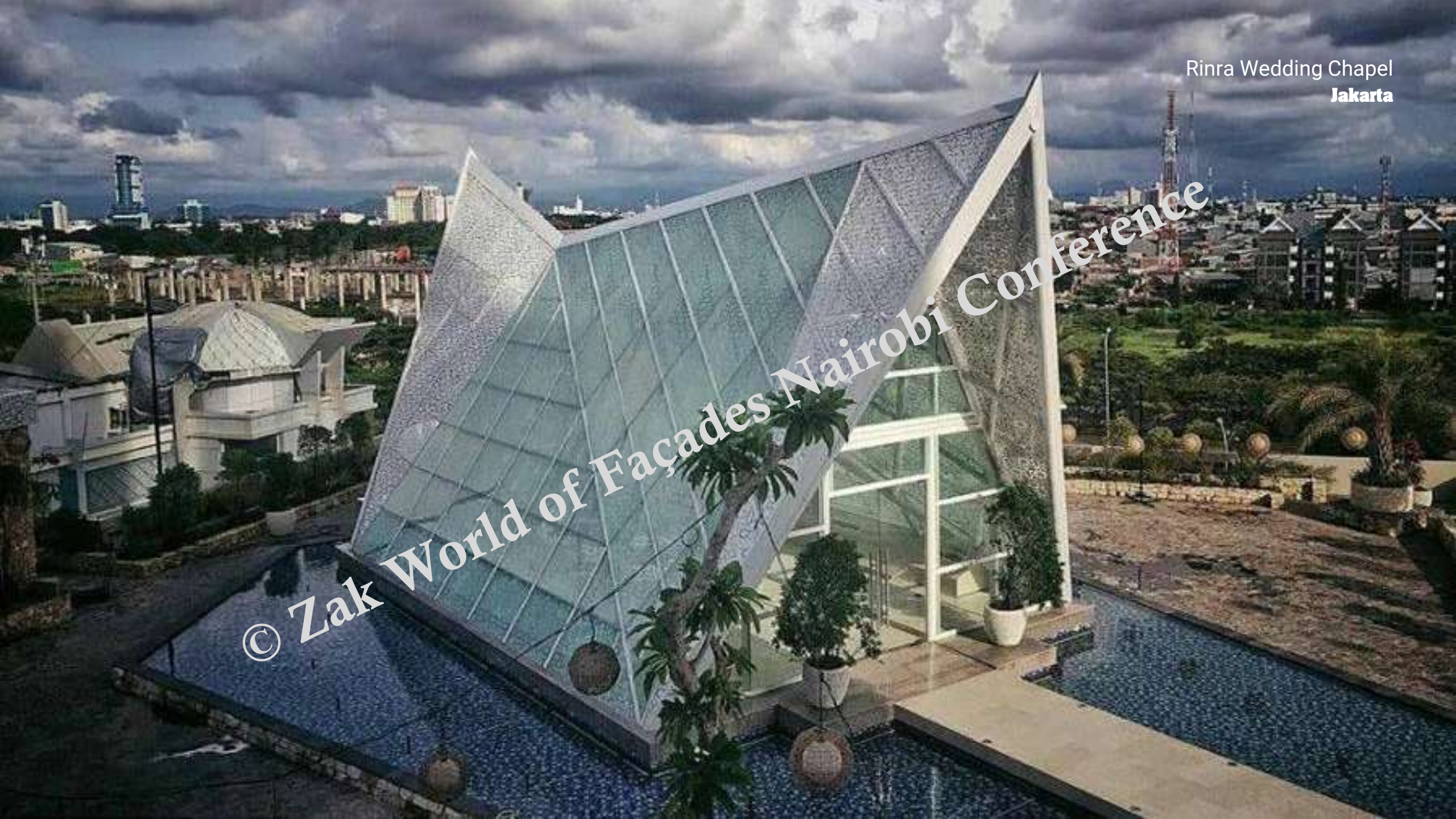
Rinra Wedding Chapel
Jakarta
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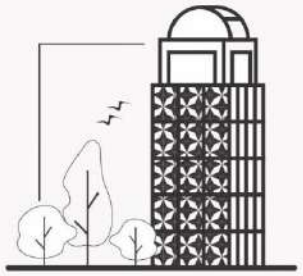
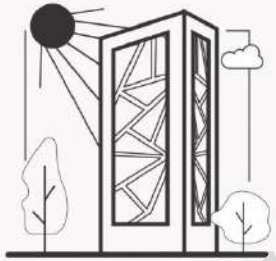
digitecture™ - Facade

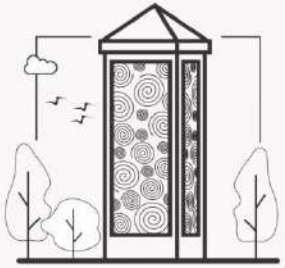


Life-Long Print
Durability



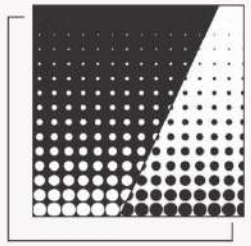
Substantial Reduction
in Heat Gain

Create Precise
Border Frits



Prints on Surface
One Possible

Easy Panel
Tracking



Precise Dual-Tone
Printing of Patterns

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02
What if

My interiors can truly reflect what's essentially me

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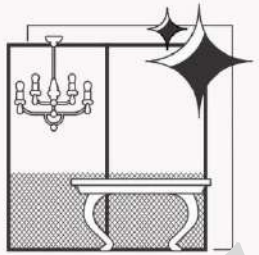
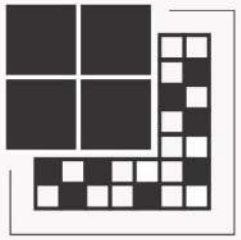
digitecture™ - Interior

Zero
VOC



Easy
Maintenance

Printing on
Fire-Rated Glass



Industry Highest
Resolution

Varying Transparency
Levels

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03 *What if*

Every time I shower, I am doubly rejuvenated

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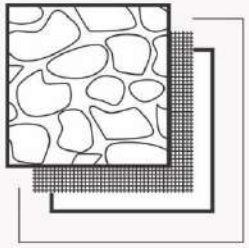
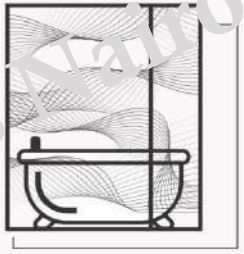
digitecture™ - Shower

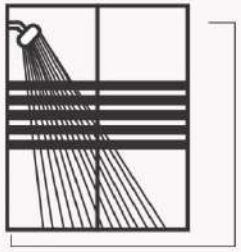
Zero
VOC



Interlaver
Compatibility



Easy to
Clean



Water-Proof
Translucence

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04
What if

My kitchen makes me feel special every time I surprise my family with culinary delights

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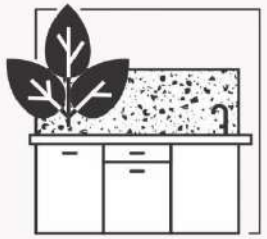
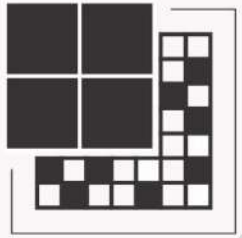
digitecture™ - Kitchen backsplashes

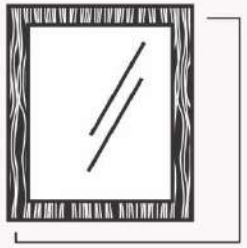


Zero
VOC



Industry Highest
Resolution

No
Staining



Compatible with
Silicones

Easy
Maintenance

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05 *What if*

The vision through my patio is the best on offer

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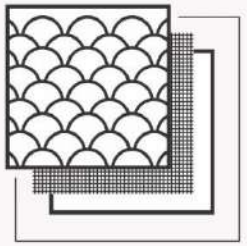
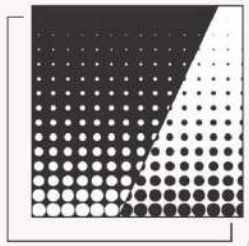
digitecture™ - Railing



Interlayer
Compatibility



Precise Dual-Tone
Printing of Patterns

Added
Aesthetics

Easy to
Maintain

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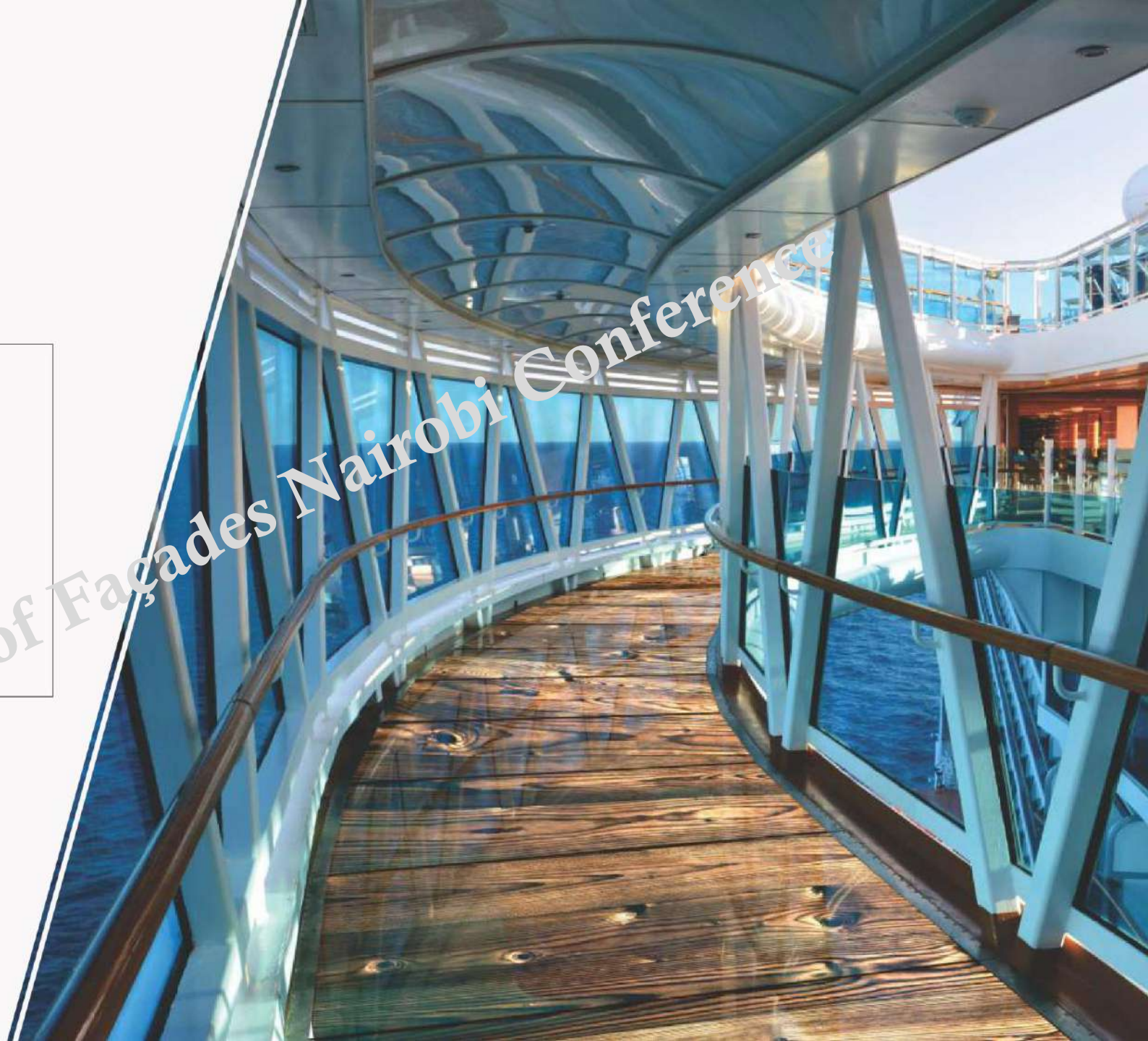
06 *What if*

Every step I take leaves an unforgettable and lasting impression



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digitecture™ - Floors & Walkways

Added
Aesthetics

Interlayer
Compatibility

Backlighting
Possible

Superior
Anti-Skid Treatment

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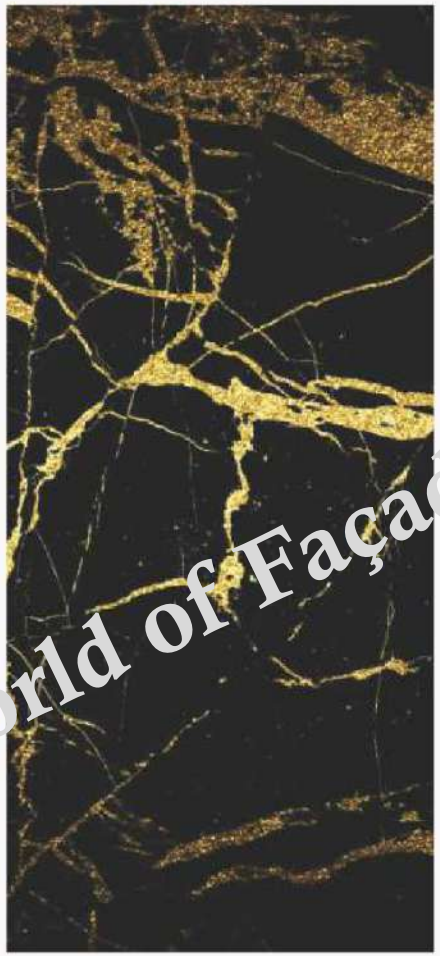
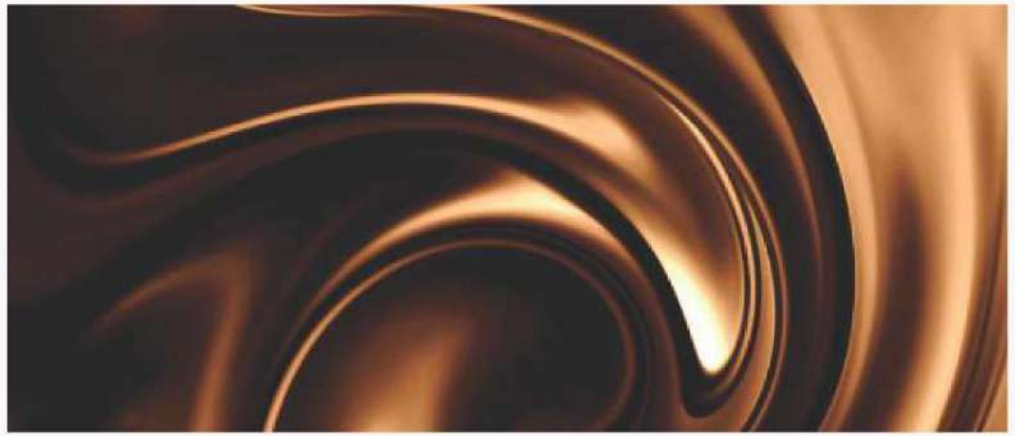
Premium Prints

Obtaining the glitter and lustre of precious metals is now possible because of our class-leading ink range that will undoubtedly impart a feeling of luxury to your interior and exterior spaces like no other product.



Royal Gold

Perfect Platinum



Gleaming Luster

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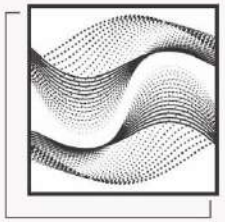
digitecture™ - Library



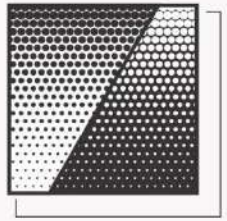
Lines & Dots

Photo Print

Textures

Patterns

Frames



Dual Tones

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DTNT-1001

DTNT 1002

DTNT 1005

DTNT 1006

DTNT 1003

DTNT 1004

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Nature

Sublime, pure and with all of God's goodness.

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Places
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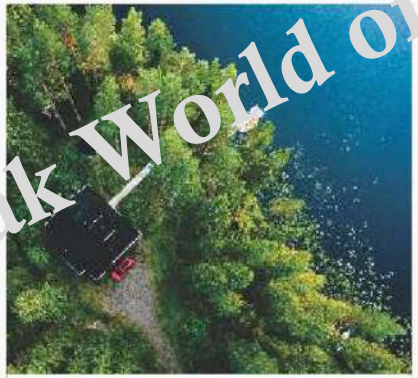
Places

Take your architecture to places most travelled. And least.

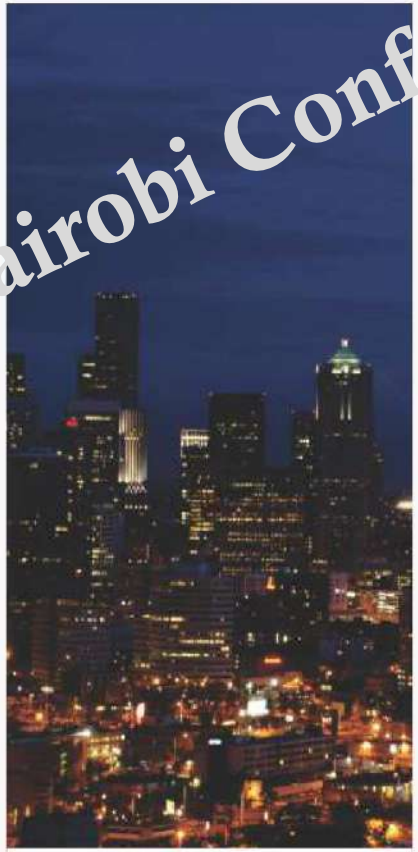
DTPL 2010

DTPL 2011



DTPL 2013

DTPL 2014



DTPL 2016

DTPL 2015

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Textures

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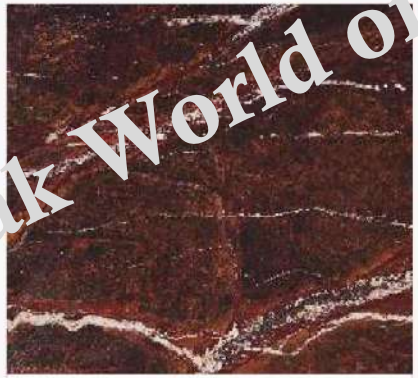
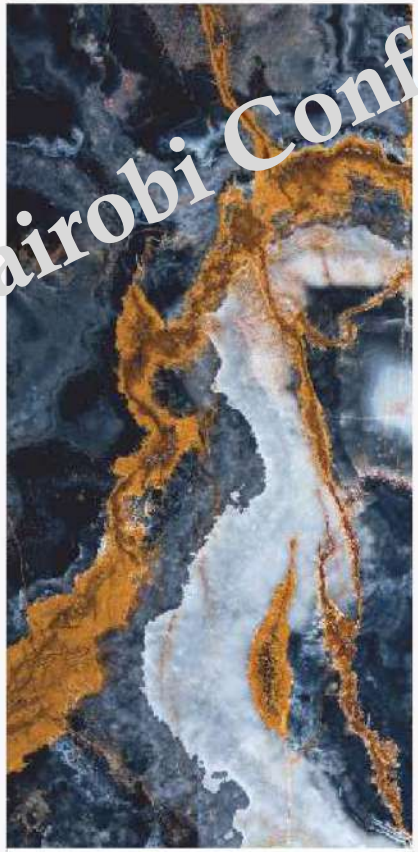
DTTX 3001

DTTX 3005



DTTX 3008

DTTX 3009



DTTX 3003

DTTX 3006

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Textures

Inspired from nature, created for you.

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Artistic

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Artistic

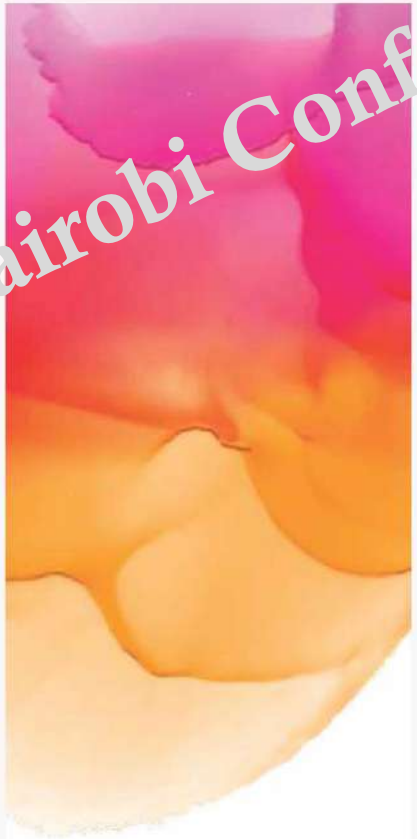
Challenge your creativity to create visual masterpieces.

DTAR 4001

DTAR 4002

DTAR 4008

DTAR 4009



DTAR 4015

DTAR 4006

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Patterns

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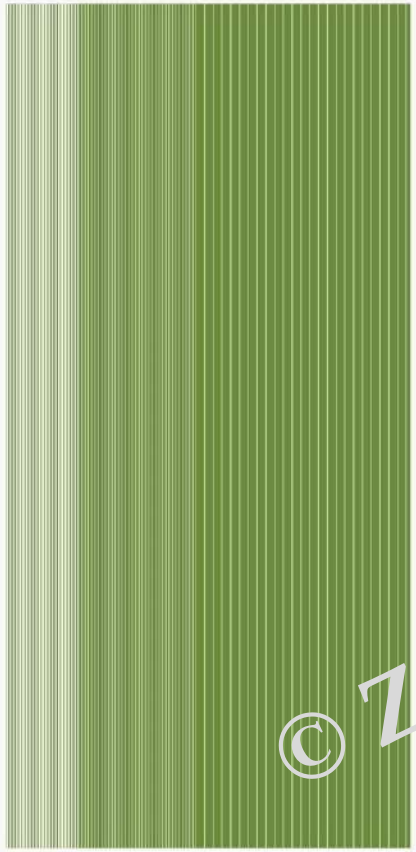
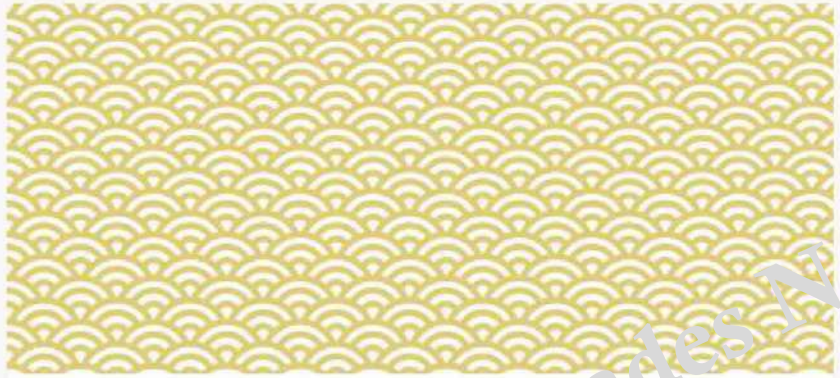
Patterns

Infinitely scalable, infinitely bespoke.



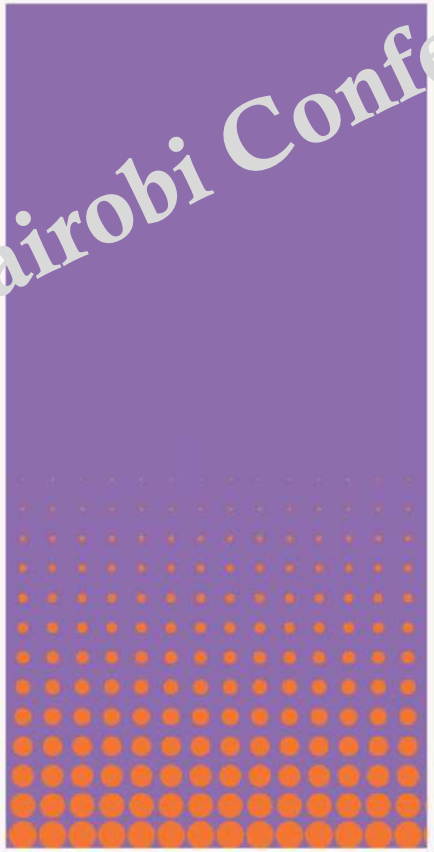
DTPT 5010



DTPT 5013

DTPT 5017

DTPT 5016



DTPT 5015

DTPT 5018

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Branding

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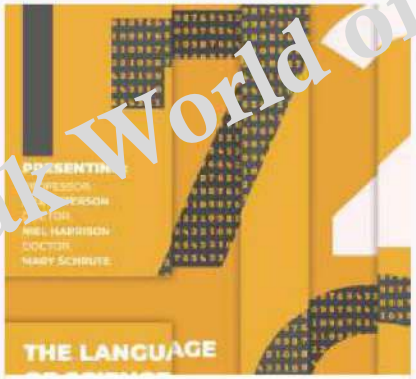
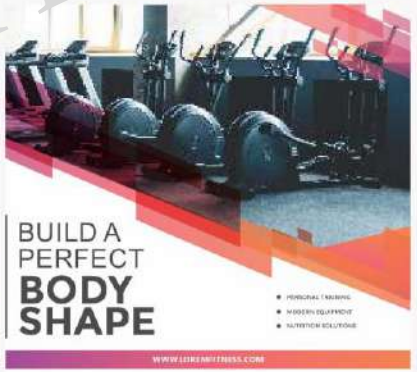
DTBN 6001

DTBN 6002



DTBN 6008



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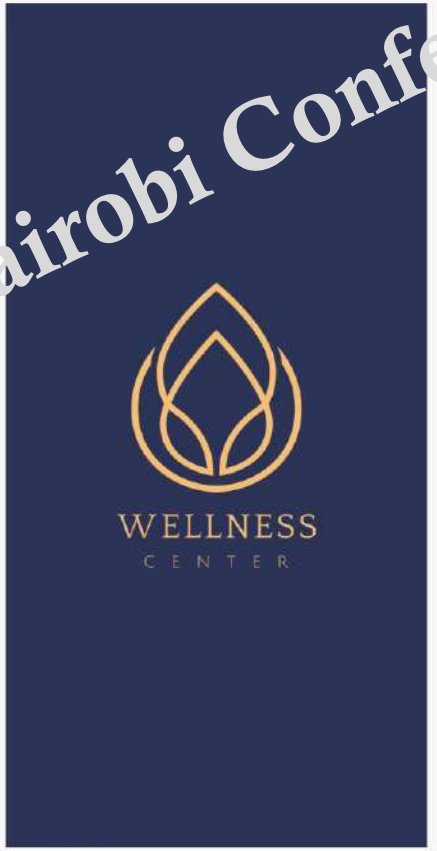

DTBN 6003

DTBN 6004

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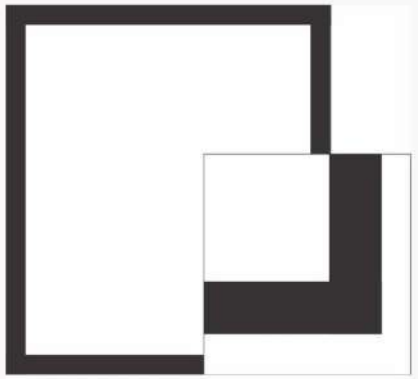
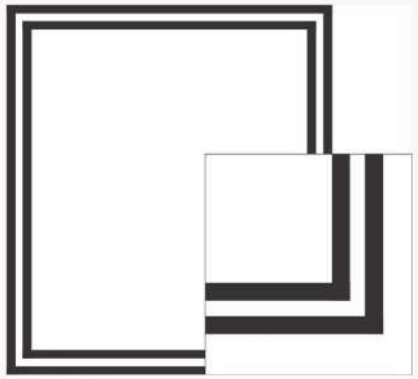


DTBD 7001



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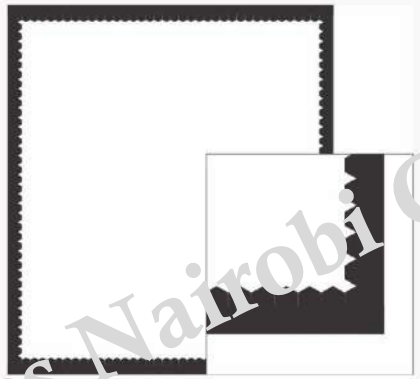

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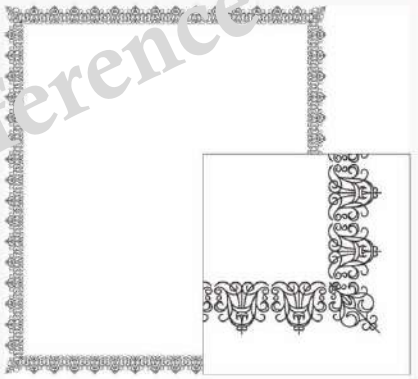

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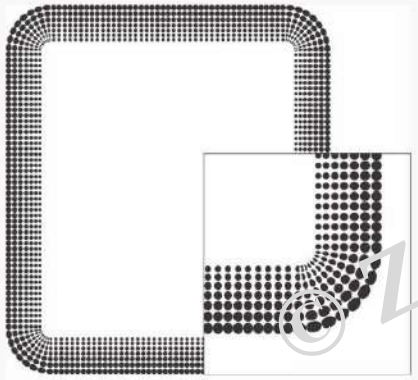

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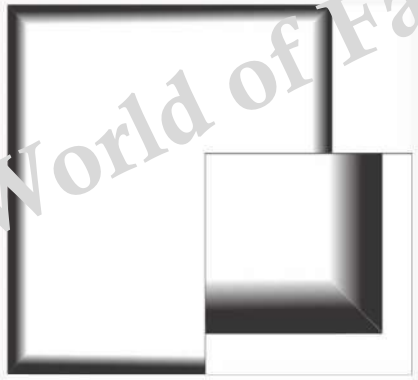

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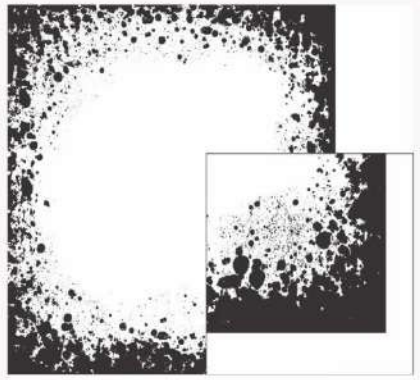

DTBD 7006

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Borders

Create that impeccable look for every panel.

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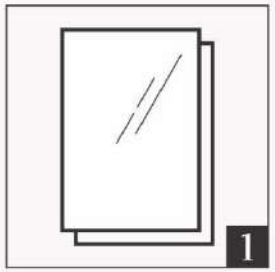
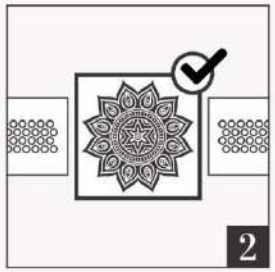


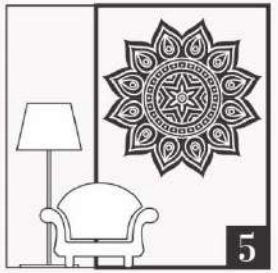
Choose Your Glass



Select Your Design

Printing on Glass

Heat-Treatment



Final Product

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FG Glass in World Map

"World is small for who dreams big"

- 43 Years In Glass business
- 100+ Years Combined Experience
- 30+ Worldwide Footprints
- 200+ Prestigious Projects
- 6 Manufacturing Plants
- 6 Offices Across continents

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Thank You for Your Attention!

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suresh@fgglass.com

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