



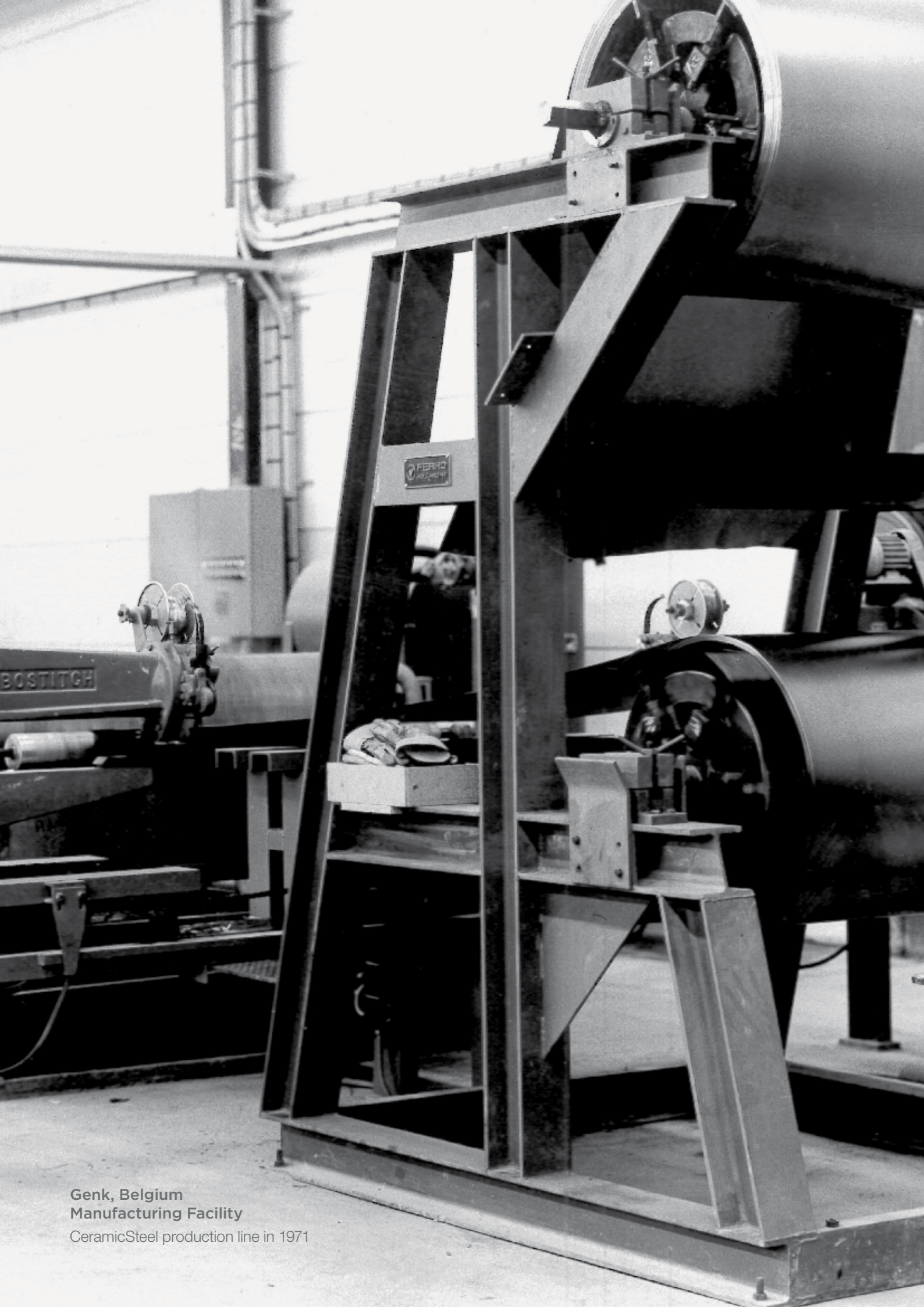
Enhancing Public Spaces

Architectural Panel Guide | Volume 1

PolyVision

PolyVision, a Steelcase company, makes durable CeramicSteel Panels to complement, enhance and protect architecture around the world.

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Genk, Belgium
Manufacturing Facility
CeramicSteel production line in 1971

A HISTORY OF INNOVATION

For over 60 years, PolyVision has been making surfaces that stand the test of time in even the most demanding environments. From train stations and tunnels to hotels and hospitals, PolyVision CeramicSteel surfaces span more than 185 million square meters (2 billion square feet) of architecture around the world.

From time-tested chalkboards for early classrooms to the walls of landmarks and infrastructure, our commitment remains the same: create the highest-quality and most durable CeramicSteel surfaces in the world while providing unmatched customer support.

As a Steelcase company, we partner with renowned visionaries, researchers and designers to continue our tradition of producing innovative products for architecture and building professionals.

1954

First light-gauge porcelain-on-steel surfaces produced and sold for both writing surface and architectural applications

1971

Manufacturing facility established in Genk, Belgium

1975

Expansion yields a new manufacturing facility in Okmulgee, Oklahoma, USA

1987

Proprietary screen printing on porcelain process introduced to the writing surface and architectural markets

2001

PolyVision acquired by Steelcase, the global leader in commercial furnishings

2015

Surface Imaging capabilities enhanced through new digital printing technologies in Genk, Belgium

A GLOBAL PARTNER

PolyVision operates on a global basis with a footprint that includes sales offices on three continents and customers and installations around the world. We understand the demands of global business as well as the nuances of local standards.

For tunnels built for the Winter Olympics in Russia, retail exteriors in Malaysia, legendary theme parks in Florida and France, and applications large and small around the globe, architects, designers and builders rely on superior surfaces from PolyVision.

Our global presence and experience ensure greater product availability, shorter lead times, dependable order control and shipping, and a superior level of service and support.

Central to our vision is a commitment to the global environment. The a³™ CeramicSteel surface, used in PolyVision panels, is 99% recyclable, made from 100% inorganic materials and backed by a 20-year limited warranty. We strive to partner with our customers to help them meet their sustainability goals and contribute to the enduring performance and beauty of architecture around the world.

20+

countries have used PolyVision CeramicSteel surfaces in architectural infrastructure

333+

completed PolyVision projects, ranging from bicycle tunnels to metro stations, and counting



Countries with completed PolyVision architectural projects are shown in dark gray. Noteworthy projects are numbered. See the list below.

Noteworthy Projects

1 Liverpool, UK

Mersey Queensway Road Tunnel

2 London, UK

Liverpool Street Station & various metro stations

3 Madrid, Spain

M-30 Road Tunnel & various metro stations

4 Sochi, Russia

Alpika-Service Route Road Tunnel

5 Singapore

Telok Ayer Street Station & various metro stations

6 San Francisco, CA, USA

San Francisco International Airport

7 Boston, MA, USA

Logan Airport, Callahan & Sumner Tunnels

8 New York City, NY, USA

Rockefeller Center, South Ferry & various metro stations



INFRASTRUCTURE: EVOLVING + EXPANDING

Research suggests that 60% of the world's population will live in urban areas by 2025. With this increase in population, urban renewal and renovation are also growing at a rapid pace worldwide as architecture and infrastructure continue to evolve. More public spaces, from metro stations to pedestrian corridors, are being transformed from once-bleak, anxiety-inducing spaces to enticing environments that offer visually appealing, fully engaging experiences.

Every infrastructure project, whether new construction or reconstruction, faces a changing architectural, technological and human landscape. Global transportation infrastructure is shifting dramatically. Growth in Asia is driving expansion of rapid transit and metro systems. In Europe, the economic recovery has made infrastructure improvements a top priority, and in North America an energy renaissance is fueling demands on infrastructure.

\$53 trillion
in global infrastructure
investments from
2010 to 2030

Organisation for Economic Co-operation
and Development, "Strategic Transport
Infrastructure Needs to 2030," March 2012

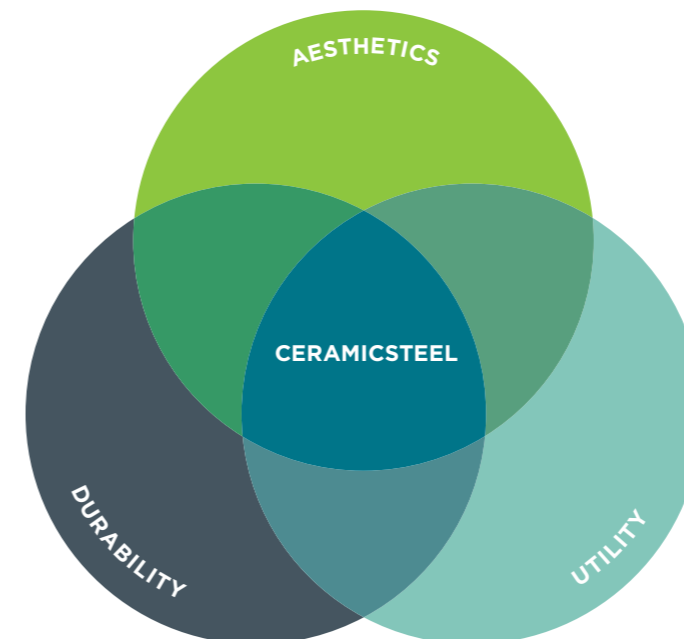
60%
of the world's population
is due to live in urban
areas by 2025

International Association of Public Transport,
"World Metro Figures - 2013," October 2013

AESTHETICS + DURABILITY + UTILITY

PolyVision a³ CeramicSteel, made specifically for architectural applications, has the power to transform any environment through its practically unlimited combination of colors, printing options, dimensions and applications.

CeramicSteel is one of the most durable surfaces available, combining the best qualities of porcelain and steel to create a surface that is unmatched in the industry. Strong, consistent and enduring, it will neither scratch nor corrode. It refuses stains and is colorfast. As a result, cleaning is easier, maintenance is minimal and life cycle costs are dramatically reduced.



OBSERVATIONS

An Unwelcoming Experience

Public transit is growing around the world and ridership is steadily increasing. Yet most transit spaces are the opposite of welcoming. They are marred by graffiti and rife with dirt and grime. These crowded and chaotic spaces make travelers feel confined in a dreary landscape.

Unappealing Transit Spaces

Space profoundly affects attitudes and behaviors. Transit spaces are often unappealing and off-putting with their monolithic aesthetics and jarring visual clutter. As a result, passengers moving quickly through these already hectic spaces have a more stressful experience.

Unmet Expectations

Modern technology raises expectations of being constantly connected to and informed about our surroundings. People expect to know where they are, to have a genuine sense of place. Instead, they are victims of poor wayfinding, with no connection to local architecture and culture. These spaces often pay little regard to traveler needs.

150 million

passengers per day
use metro systems
around the world

Organisation for Economic Co-operation and Development, "Strategic Transport Infrastructure Needs to 2030," March 2012

9.1%

increase in U.S. public
transit ridership from
2004 to 2013

American Society of Civil Engineers,
Report Card for America's Infrastructure

132

local public transport
journeys for each urban
inhabitant living in the
EU during 2012

International Association of Public Transport,
"Local Public Transport Trends in the
European Union," June 2014



OPPORTUNITIES

Revitalize Transit Spaces

Enhance and revitalize transit spaces with surfaces that are both beautiful and durable. For metro stations, air terminals, tunnels and other transportation spaces, PolyVision a³ CeramicSteel surfaces deliver:

- resistance to scratches, graffiti and chemicals
- superior aesthetics
- steel-strong, nonporous, impervious surfaces

Create Welcoming Places

The best human-centered spaces are personal and welcoming, offer local directions and cultural content, and extend local hospitality. These spaces make waiting times seem shorter, crowded areas feel less congested, and the journey more rewarding.

PolyVision a³ CeramicSteel Panels can help connect people with information and ideas, providing physical and emotional support for harried travelers. Human-centered environments encourage ridership and contribute positive economic and social benefits to the community.

Exceed Expectations

To meet the needs of a more global and mobile population, thoughtfully planned transit spaces engage and stimulate through pleasing aesthetics, graphics, artwork and local cultural imagery. PolyVision architectural panels offer:

- brilliant, colorfast full-color printing
- maps and wayfinding
- cultural and historical information
- decorative wall cladding and surfaces
- artwork and photography
- advertising and corporate branding



With wide-ranging aesthetic choices, unsurpassed durability in tough environments and reduced maintenance costs, CeramicSteel is the perfect choice for any project.



STANDARD PANEL SERIES

STANDARD PANEL SERIES

The core of PolyVision architectural panels, Standard Panels are extremely flat and built to endure high-traffic environments. a³ CeramicSteel is bonded to a substrate and a backside sheet with an unfinished edge to create a paneled look when used with a sealed framing system. Master panels can be cut to size. Enhance the Standard Panel by choosing from 2 finishes, 10 standard colors (page 32) or custom colors (page 33), or Surface Imaging (page 36).

Features & Benefits

- Defies aggressive and polluted environments
- Remove graffiti with no residue
- Difficult to scratch with knife
- Fire rating A2 possible
- Easy to clean with water or any solvent
- Smooth, inert surface
- Surface made from inorganic materials

Advantages

Unique quality characteristics



Ideas for Use

- Metro stations
- Train stations
- Airport terminals
- Underpasses
- Access tunnels
- Public spaces
- Corridors
- Lobbies

Standard Panel 1

a³ CeramicSteel Panel made with a cement-bonded particle board and a galvanized steel backer.



Standard Panel 2

a³ CeramicSteel Panel made with a calcium silicate fire resistant board and a galvanized steel backer.



Technical Information

Property	Thickness	Master Panel Size	Best Fire Class Rating Possible*	Panel Weight
Standard Panel 1	13.4 mm	1200 mm x 3050 mm	B	23.3 kg/m ²
Standard Panel 2	12.4 mm	1200 mm x 3050 mm	A2	21.0 kg/m ²

*According to the European Standard EN 13501-1

Sealed Framing System

Excellent corrosion resistance when used with a sealed framing system that clamps, covers and seals the panel perimeter.

Drawing for reference only—system not included.





PROTECTED EDGE PANEL SERIES

PROTECTED EDGE PANEL SERIES

The Protected Edge Panel includes all the features of the Standard Panel with the addition of a durable polyvinyl chloride (PVC) tape to form a protected edge. These panels are extremely flat and create a continuous look when used with a standard framing system. Master panels can be cut to size. Enhance the Protected Edge Panel by choosing from 2 finishes, 10 standard colors (page 32) or custom colors (page 33), or Surface Imaging (page 36).

Features & Benefits

- Defies aggressive and polluted environments
- Remove graffiti with no residue
- Difficult to scratch with knife
- Fire rating A2 possible
- Easy to clean with water or any solvent
- Smooth, inert surface
- Surface made from inorganic materials

Advantages

Unique quality characteristics



Ideas for Use

- Metro stations
- Train stations
- Airport terminals
- Underpasses
- Access tunnels
- Public spaces
- Corridors
- Lobbies

Protected Edge 1

a³ CeramicSteel Panel made with a cement-bonded particle board and a galvanized steel backer.



Protected Edge 2

a³ CeramicSteel Panel made with a calcium silicate fire resistant board and a galvanized steel backer.



Technical Information

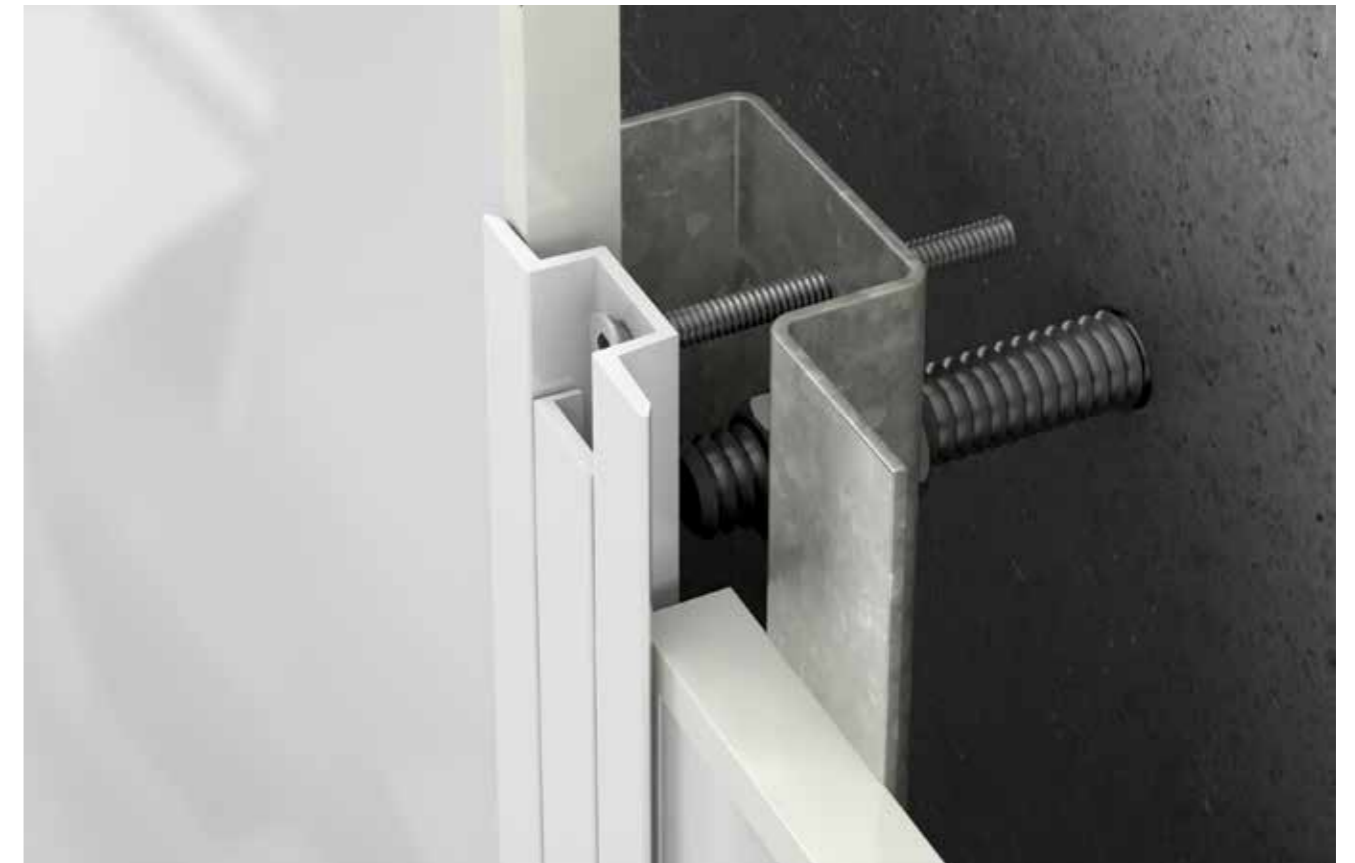
Property	Thickness	Master Panel Size	Best Fire Class Rating Possible*	Panel Weight
Protected Edge 1	13.4 mm	1200 mm x 3050 mm	B	23.3 kg/m ²
Protected Edge 2	12.4 mm	1200 mm x 3050 mm	A2	21.0 kg/m ²

*According to the European Standard EN 13501-1

Standard Framing System

Excellent corrosion resistance when used with a framed mounting system.

Drawing for reference only—system not included.





PANELS

FINISHED EDGE PANEL SERIES

FINISHED EDGE PANEL SERIES

The Finished Edge Panel is similar to the Standard Panel but offers added edge protection. A durable and attractive lacquer is applied to the precision-cut edges to create a seamless look. These panels are flat, ideal for flush mounting, and suitable for a fixing system that uses a hidden reveal or recessed joints. Master panels can be cut to size. Enhance the Finished Edge Panel by choosing from 2 finishes, 10 standard colors (page 32) or custom colors (page 33), or Surface Imaging (page 36).

Features & Benefits

- Defies aggressive and polluted environments
- Remove graffiti with no residue
- Difficult to scratch with knife
- Easy to clean with water or any solvent
- Smooth, inert surface
- Surface made from inorganic materials

Advantages

Unique quality characteristics



Ideas for Use

- Metro stations
- Train stations
- Airport terminals
- Underpasses
- Access tunnels
- Public spaces
- Corridors
- Lobbies

Finished Edge 1

a³ CeramicSteel Panel made with a cement-bonded particle board and a galvanized steel backer.



Technical Information

Property	Thickness	Master Panel Size	Best Fire Class Rating Possible*	Panel Weight
Finished Edge 1	13.4 mm	1185 mm x 3000 mm	D	23.3 kg/m ²

*According to the European Standard EN 13501-1

Seamless Framing System

Good corrosion resistance when used with a seamless installation.

Drawing for reference only—system not included.





FLEXIBLE PANEL SERIES

FLEXIBLE PANEL SERIES

The Flexible Panel offers all the benefits of the Protected Edge Panel plus a bend radius for special projects that require a curve. Like the Protected Edge Panels, this a³ CeramicSteel bonded panel is trimmed on the short edge with a durable polyvinyl chloride (PVC) tape. Supplied flat, these panels can be easily flexed during installation to the desired curvature. Master panels can be cut to size. Enhance the Flexible Panel by choosing from 2 finishes, 10 standard colors (page 32) or custom colors (page 33), or Surface Imaging (page 36).

Features & Benefits

- Defies aggressive and polluted environments
- Remove graffiti with no residue
- Difficult to scratch with knife
- Fire rating A2 possible
- Easy to clean with water or any solvent
- Smooth, inert surface
- Surface made from inorganic materials
- Available in lengths up to 5 meters

Advantages

Unique quality characteristics



Ideas for Use

- Metro stations
- Train stations
- Airport terminals
- Underpasses
- Access tunnels
- Roadway tunnels

Flexible 1

Single a³ CeramicSteel sheet with finished enamel on both sides.



Flexible 2

Two sheets of a³ CeramicSteel bonded back to back.



Flexible 3

Single a³ CeramicSteel sheet bonded to galvanized steel backer.



Flexible 4

Single a³ CeramicSteel sheet bonded to an aluminum backer.



Technical Information

Property	Thickness	Master Panel Size	Best Fire Class Rating Possible*	Panel Weight
Flexible 1	1.0 mm	1200 mm x 5000 mm	A2	6.4 kg/m ²
Flexible 2	1.7 mm	1200 mm x 5000 mm	A2	10.2 kg/m ²
Flexible 3	2.1 mm	1200 mm x 5000 mm	A2	14.6 kg/m ²
Flexible 4	2.9 mm	1200 mm x 5000 mm	A2	10.7 kg/m ²

*According to the European Standard EN 13501-1

Flexible Framing System



Excellent corrosion resistance when used with a fixing system that covers and clamps the perimeter and bends the panel to shape.

Drawing for reference only—system not included.



STANDARD PANEL COLORS

All a³ CeramicSteel Panels—Standard, Finished Edge, Protected Edge and Flexible—are available in the following 10 standard enamel colors.

	Traffic White* Matte 9016 RAL High Gloss 9016 RAL Pantone Match Cool Gray 1C		Mouse Gray Matte 7005 RAL High Gloss 7005 RAL Pantone Match 424 C
	Signal White Matte 9003 RAL High Gloss 9003 RAL Pantone Match Cool Gray 1C		Traffic Red High Gloss 3020 RAL Pantone Match 7599 C
	Cream Matte 9001 RAL High Gloss 9001 RAL Pantone Match 7527 C		Sky Blue High Gloss 5015 RAL Pantone Match 660 C
	Light Ivory Matte 1015 RAL High Gloss 1015 RAL Pantone Match 468 C		Gentian Blue Matte 5010 RAL High Gloss 5010 RAL Pantone Match 7686 C
	Light Gray Matte 7035 RAL High Gloss 7035 RAL Pantone Match 420C		Jet Black High Gloss 9005 RAL Pantone Match Neutral Black C

*Traffic White enamel is used for all Surface Imaging applications.

Actual colors may vary from the colors shown.
Please contact your sales representative for color samples.

CUSTOM PANEL COLORS

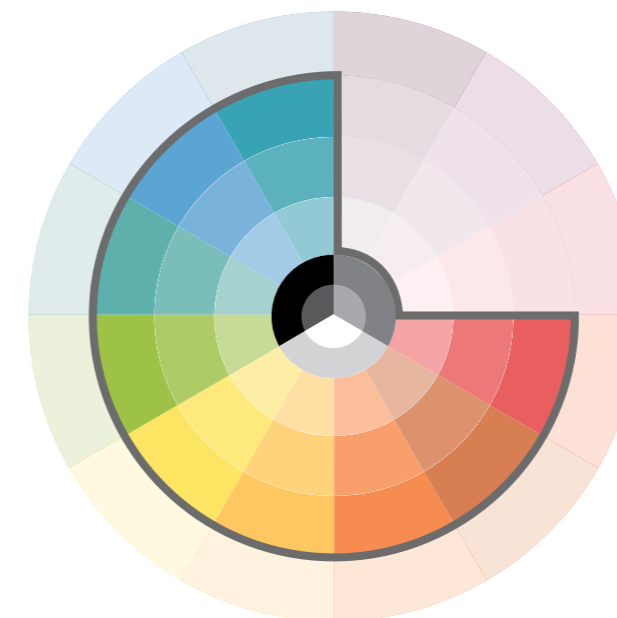
Custom enamel colors can be matched to a sample reference. The graphic below illustrates the approximate range of colors available.

Color 1

Custom color matched to sample or reference.

Panel Dimensions

Base Color Options	Max Dimensions (mm)
Color 1	1200 x 5000



Custom enamel color range

Highlighted colors (within dark gray border) represent the approximate ideal color range available for custom enamel.
Not all colors within the complete color wheel are possible.

INSPIRED PUBLIC SPACES

For more than 50 years, PolyVision has been mastering the ability to print on CeramicSteel. In hospitals, schools, transit spaces, pedestrian walkways and interior corridors, Surface Imaging has opened up endless opportunities to integrate art and imagery into architecture. The lasting durability of Surface Imaging on CeramicSteel enhances the environment's ability to inspire, assist or convey information.



There are countless possibilities for infusing art and design into the surrounding architecture. Whether displaying wayfinding or artistic expressions of nature, local culture or history, PolyVision Surface Imaging on CeramicSteel connects individuals to their surroundings.

Translation:

Captivating Marrakesh
Marrakesh is more than just a city. It is a pearl polished by history and its tradition of hospitality, which, for centuries, has known how to welcome visitors.

ADVANTAGES AND PROCESSES

Advantages of PolyVision Surface Imaging

In airport corridors, transit, healthcare and corporate spaces, Surface Imaging on CeramicSteel provides a tough, long-lasting solution for transforming public surfaces. Images are applied and fired in the range of 700 – 900 °C (1292 – 1652 °F) into the CeramicSteel surface, resulting in a durable product that is colorfast and will not scratch over time. Customizable graphics make it easy to communicate a wide range of messages, while durability in both the CeramicSteel and the graphics makes Surface Imaging suitable for a variety of spaces.

Aesthetics: customizable graphics

- Imagery
- Identity
- Symbolism
- Communication
- Wayfinding
- Emotion

Durability: both surface and image

- 20-year limited warranty
- Scratch and abrasion resistant
- Colorfast
- 99% recyclable
- 100% inorganic materials

Utility: fit for demanding environments

- Graffiti resistant
- Cleanable
- Bacteria resistant
- Chemical resistant
- Fire resistant

Digital Printing Process

PolyVision's Surface Imaging capabilities have advanced with technology. State-of-the-art digital printing and ceramic inks combined with the trusted durability of CeramicSteel produce custom work with shorter lead times, ideal for projects with unique images.

Screen Printing Process

PolyVision's semi-automatic flat table screen printing process yields durable artisanal products. This handcrafted product is ideal for large batch sizes, repeatable patterns and text ranging from single to multi-color jobs.

Getting Started

Our staff will walk you through the process, ensuring that you choose the method that best fits your project. Call or email the sales office closest to you.

SURFACE IMAGING OPTIONS

Digital 1

Single or multi-color digitally printed inorganic image.

Digital 2

Single or multi-color digitally printed inorganic image with added durability for exterior environments.

Screen 1

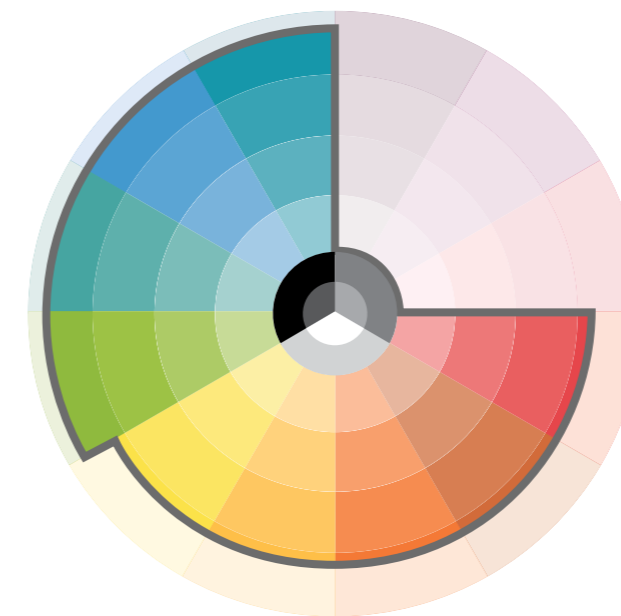
Single or multi-color screen printed inorganic images for any environment.

Panel Limitations

- Surface Imaging is available on all panels except Flexible Panels Series: Flexible 1
- All Surface Imaging must be completed on Traffic White base enamel for all panels (See Traffic White, Standard Panel Colors on page 32)

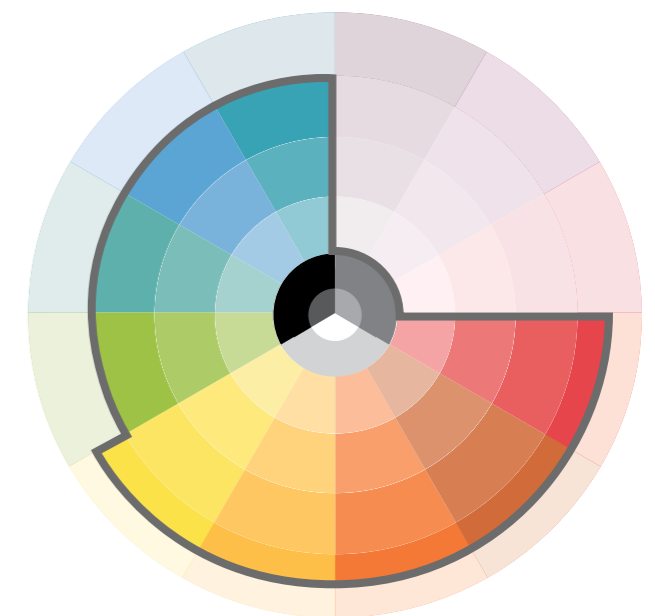
Panel Dimensions

Surface Imaging Options	Max Dimensions (mm)
Digital 1	1200 x 5000
Digital 2	1200 x 5000
Screen 1	1200 x 4000



Digital Printing: ideal color range

Highlighted colors (within dark gray border) represent the approximate ideal color range available for digital printing. Not all colors within the complete color wheel are possible.



Screen Printing: ideal color range

Highlighted colors (within dark gray border) represent the approximate ideal color range available for screen printing. Not all colors within the complete color wheel are possible.

CERTIFICATIONS

PolyVision a³ CeramicSteel products fulfill the following specifications:

International Standard

- ISO 28722

European Enamel Authority EEA 2004

- EEA 7.13 Interiors
- EEA 7.14 Exteriors

European Normalization CEN 2004

- EN 14431

Porcelain Enamel Institute PEI

- PEI 1001

PolyVision is a Steelcase company and certified for:

- Quality–ISO 9001
- Environment–ISO 14001
- Health & Safety–OHSAS 18001



PolyVision® a³™ CeramicSteel Surfaces and Architectural Panels: Limited International Warranty. CeramicSteel Surfaces and Architectural Panels have a limited warranty for 20 and 10 years, respectively, valid from the date of shipment. The limited warranty provides that the products, under normal atmospheric conditions and when sealed from moisture, will not fade, stain, discolor, craze, crack, flake, corrode or delaminate from the substrate or warp for the applicable period. Please see the full PolyVision a³ CeramicSteel Surfaces and Architectural Panels: Limited International Warranty for specific details, applicability and limitations.

Warranty effective 08.01.2011

CONTACT INFORMATION

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PolyVision®

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