Polyvision
SURFACEMATTERS

Testing CeramicSteel

Durability Through Strict Testing
We are dedicated to providing products of the highest quality. Our CeramicSteel surfaces have undergone thorough testing to ensure they meet the stringent requirements of contemporary applications. These tests demonstrate exceptional attributes, including resistance to scratches, flames, oil, and alkaline substances. Each assessment has been carefully designed to highlight the durability, reliability, and versatility of our CeramicSteel products.

Purpose of the Tests
These tests compare CeramicSteel's performance with other materials, including glass, HPL, and ceramic tiles. The results offer data-driven evidence supporting CeramicSteel's suitability for use in kitchens, bathrooms, and other challenging environments.

Overview of Testing
The testing process included internal and external laboratories to measure critical performance metrics and is assessed according to ISO standards. The surface durability is examined using scratch, hardness, impact and abrasion tests. The ability to resist flames and oil/grease is tested under extreme conditions to simulate real-life scenarios. Additionally, stain, alkaline and acid resistance were evaluated to confirm the material's reliability in harsh environments. Magnetic properties were compared to establish the product versatility.

Key Findings

- CeramicSteel consistently outperformed competing materials, demonstrating superior resistance across all categories below.
- Results indicated that CeramicSteel is particularly effective in environments demanding high resistance to mechanical wear, flame exposure, and chemical contact.
- While materials like HPL
  and ceramic tiles performed adequately, only CeramicSteel matched the performance of glass in key areas, solidifying its position as a top choice for backsplashes, toilet partitions and walls.

Scratch Resistance

Ensuring a Surface That Stands the Test of Time
Scratch resistance is essential for any surface material, particularly in high-traffic areas such as corridors, kitchens, bathrooms, and commercial spaces. CeramicSteel offers outstanding scratch resistance, ensuring its surface stays smooth, intact, and visually appealing, even after years of use.

CERAMICSTEEL UNAFFECTED SURFACE

Test Overview
CeramicSteel was tested using a diamond indenter (Mohs scale rating of 10) with a gradually increasing insertion force to measure scratch resistance.
This test, conducted by ISO 15695, simulates real-world wear and tear that the material may experience over time. The assessment determines whether the surface shows visible scratches after being subjected to the increasing force.

Test Results
A durable surface must show a minimum resistance of 7 N, ensuring no visible scratches appeared even under rigorous testing. CeramicSteel performance surpasses industry standards with a score of 10 N for scratch resistance and emphasizes the material's ability to endure everyday impacts and abrasions.

GLASS UNAFFECTED SURFACE

PAINTED ALU

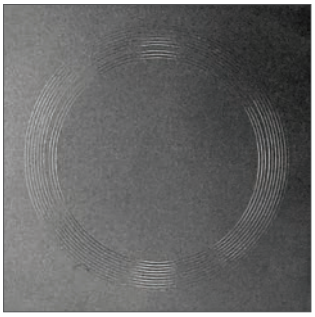
TILE

MARBLE

GRANITE

HPL

ARCYLIC



STAINLESS STEEL

Why Scratch Resistance Matters
A scratch-resistant surface maintains its aesthetic appeal and reduces maintenance costs, minimizing the need for frequent replacements. CeramicSteel's high scratch resistance provides a long-lasting, low-maintenance solution for any environment.

Mohs Hardness

Scratch Resistance Testing

CeramicSteel was tested for surface hardness using the Mohs scale, following the EN 15771 standard to ensure industry-compliant results. On this scale, a rating of 5 is considered the minimum for a durable surface. CeramicSteel achieved a Mohs hardness rating of 6, outperforming many common materials such as HPL. This result confirms its strong resistance to everyday scratches from household and commercial tools, making it a reliable choice for high-traffic and demanding environments.

Mohs Handness Scale

Mineral Name	Scale Number	Common Object
Diamond	10	
Corundum	9	
Topaz	8	Masonty Drill (8.5)
Quartz	7	
Orthoclase	6	Steel Nail (6.5)
Apatite	5	Knife (5.5)
Flurite	4	
Calcite	3	Copper Coin (3.5)
Gypsum	2	Finger Nail (2.5)
Talc	1	

CERAMICSTEEL

Comparison with Other Materials

CeramicSteel shows a superior balance of hardness and versatility compared to other materials. CeramicSteel provides additional benefits such as impact resistance and easier handling, making it a practical and durable choice.

GLASS

PAINTED ALU

TILE

MARBLE

GRANITE

HPL

ARCYLIC

STAINLESS STEEL

Why Mohs Hardness Matters

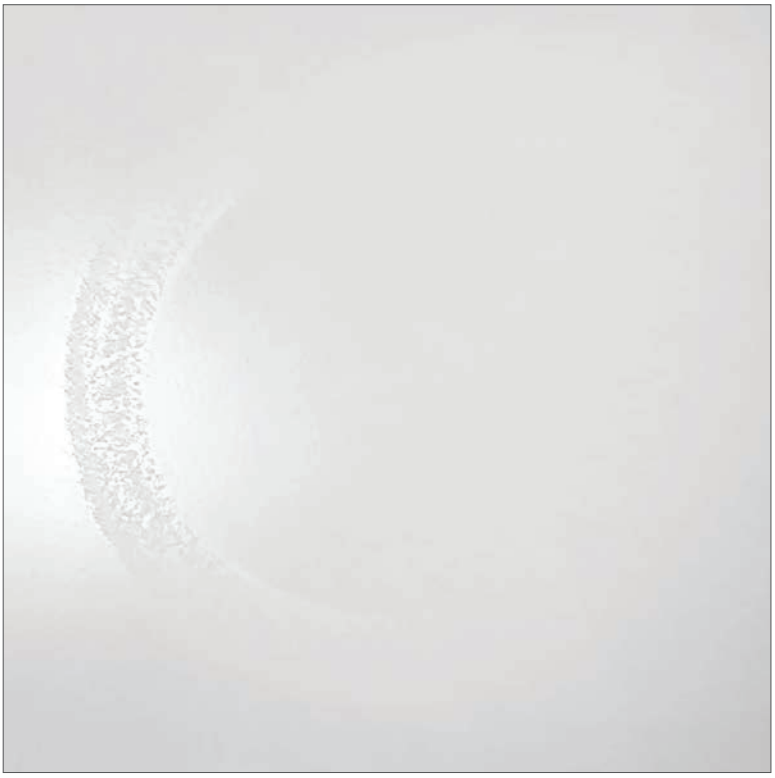
CeramicSteel's high Mohs rating resists daily wear, keeping surfaces looking polished and lasting longer with less maintenance.

Abrasion Resistance

Built to Resist Friction and Wear
CeramicSteel's high abrasion resistance ensures long-lasting surface quality, even under constant contact and friction.

Test Overview
Using ASTM C501 standards, we ran 1,000 revolutions with 1 kg pressure and S33 emery paper. CeramicSteel showed minimal mass loss—under 0.10 g—proving its durability in high-wear environments.

Comparison with Other Materials
CeramicSteel outperforms commonly used materials. CeramicSteel's versatility and ease of application make it a superior choice for high-traffic and high-impact areas.



CERAMICSTEEL

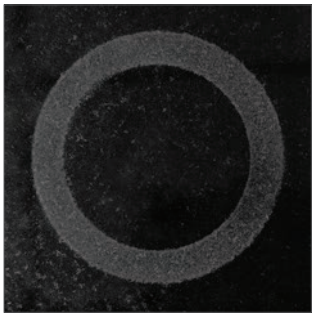
NOT MEASURABLE

GLASS

PAINTED ALU

TILE

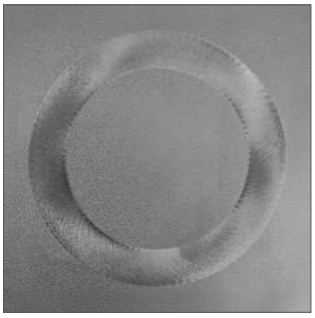
MARBLE



GRANITE

HPL

ARCYLIC



STAINLESS STEEL

Why Abrasion Resistance Matters
A material's capacity to resist abrasion significantly affects its durability and appearance. CeramicSteel's exceptional wear resistance ensures it remains attractive and functional, even with regular use, minimizing maintenance and replacement needs.

Acid Resistance

Protecting Surfaces from Corrosive Substances
Acid resistance is crucial for materials exposed to acidic environments. CeramicSteel's acid resistance guarantees its durability and performance, even in harsh chemical settings.

Test Overview
The acid resistance of CeramicSteel was evaluated using ISO 28706-2:2008 standards. The test involved exposing the material to boiling citric acid for 2.5 hours. The objective was to measure any potential degradation or mass loss caused by the acidic environment.

Test Results
CeramicSteel demonstrated exceptional resistance, with a mass loss much lower than 18.5 g/m² after 2.5 hours of exposure. This showcases the material's ability to maintain its structural integrity and appearance, even when subjected to strong acids. and high-impact areas.

CERAMICSTEEL

Comparison with Other Materials
CeramicSteel outperformed other materials in acid resistance tests, showing less degradation and proving to be a more versatile and durable choice overall.

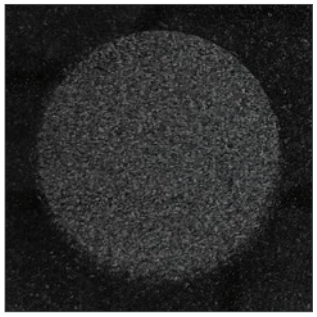
NOT MEASURABLE

GLASS

PAINTED ALU

TILE

MARBLE



GRANITE

HPL

ARCYLIC

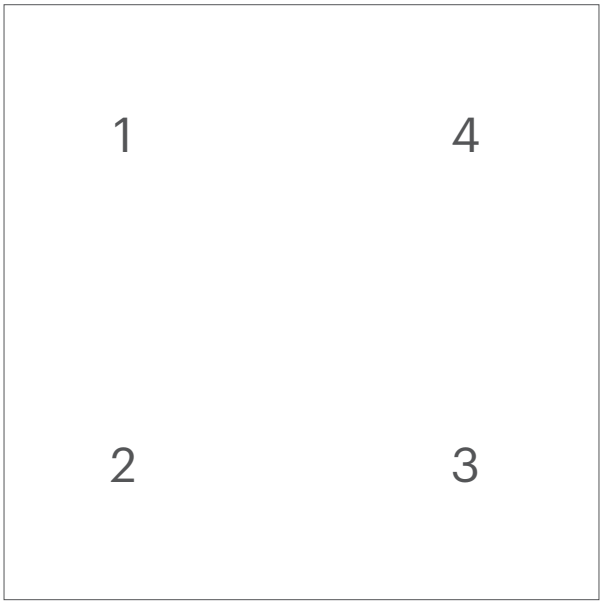
STAINLESS STEEL

Why Acid Resistance Matters
Acidic substances can cause significant damage to unprotected surfaces, resulting in wear, discoloration, or even structural degradation. CeramicSteel offers high resistance to acids, ensuring both its longevity and appearance, making it a dependable choice for residential and industrial applications.

Chemical Resistance

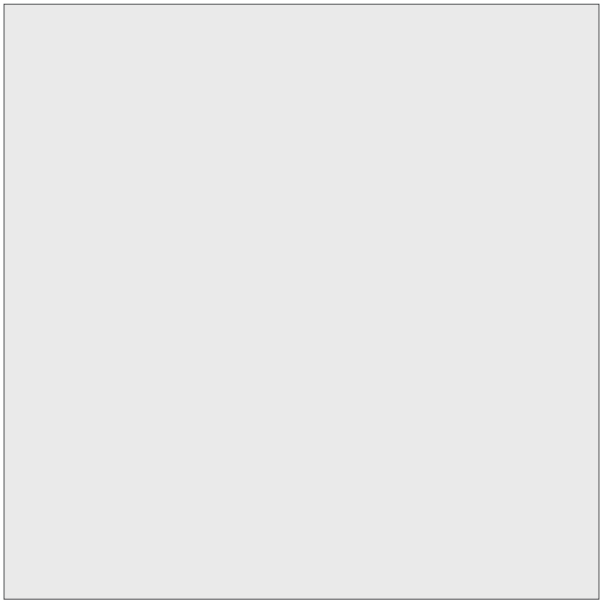
Durability Against Stains & Chemicals
CeramicSteel offers excellent stain and chemical resistance, making it ideal for high-use areas like kitchens. It resists food, oil, degreasers, and beverage stains, ensuring long-term cleanliness, durability, and aesthetics. Its resistance to solvents and alkaline substances allows for easy cleaning without surface damage.

Test Overview
Chemical resistance is defined as a surface's ability to withstand exposure to various substances over time. According to EN 438-2:2016+A1:2018, Clause 26, CeramicSteel was tested for 16 hours against the following:
1. Deionized water 2. Ink 3. Ethanol
4. Alkaline-based degreaser



A minimum performance rating of 5—indicating no visible change—is required for optimal resistance.

CERAMICSTEEL

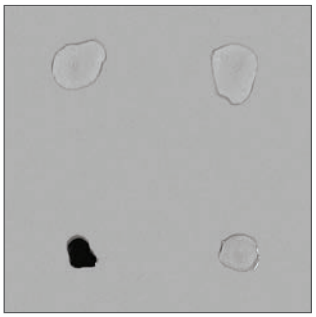


CERAMICSTEEL AFTER CLEANING

Test Results
After 16 hours of exposure, CeramicSteel showed no change in color or gloss. The test area remained indistinguishable from the surrounding surface, achieving the highest rating (5). While not intended for prolonged exposure to extreme alkaline conditions, CeramicSteel effectively resists common alkaline cleaners such as oven degreasers.

Comparison with Other Materials
CeramicSteel offers superior stain resistance compared to materials like marble because it is non-porous, preventing inks and other chemical substances from seeping in. This makes stains easy to clean, unlike porous materials like marble or painted steel, which absorb liquids and can be difficult—or even impossible—to restore to their original state.

Chemical Resistance


GLASS

GLASS


PAINTED ALU

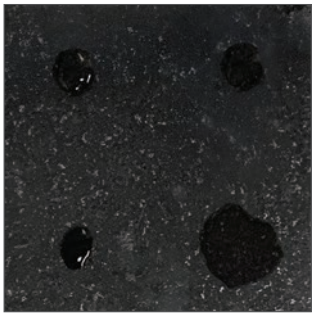
PAINTED ALU


TILE

TILE


MARBLE

MARBLE


GRANITE

GRANITE


HPL

HPL


ARCYLIC

ARCYLIC


STAINLESS STEEL

STAINLESS STEEL

Why Alkaline Resistance Matters

Alkaline substances, while less commonly encountered than acids, can still cause damage to unprotected surfaces. CeramicSteel's resistance to short-term alkaline exposure ensures its suitability for everyday applications, providing a balance of durability and reliability.

Flame Resistance

Designed for Safety Under Fire Exposure
Flame resistance is a vital property for materials used in residential and commercial applications. CeramicSteel's outstanding fire resistance guarantees safety, reliability, and minimal damage even in extreme conditions.

Test Overview
The flame resistance of CeramicSteel was tested by exposing the surface to an open flame for durations of 10 seconds. After exposure, the surface was cleaned with water or a solvent to assess any visual changes or damage. This test simulates real-life scenarios where surfaces may be exposed to heat or fire.

Test Results
CeramicSteel demonstrated outstanding flame resistance, with no visible changes or damage detected after flame exposure and subsequent cleaning. This confirms the material's ability to maintain its structural integrity and aesthetic appeal even when exposed to high temperatures.

CERAMICSTEEL

CERAMICSTEEL AFTER CLEANING

Comparison with Other Materials
When compared to materials like HPL and ceramic tiles, CeramicSteel outperformed in flame resistance. Glass, while inherently flame-resistant, does not offer the same level of versatility or ease of installation as CeramicSteel.

Flame Resistance


GLASS

GLASS


PAINTED ALU

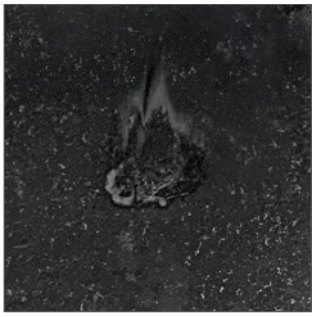
PAINTED ALU


TILE

TILE


MARBLE

MARBLE


GRANITE

GRANITE


HPL

HPL


ARCYLIC

ARCYLIC


STAINLESS STEEL

STAINLESS STEEL

Why Flame Resistance Matters

Flame resistance is vital for ensuring the safety of surfaces in the event of fire exposure. CeramicSteel's ability to endure high temperatures without degradation makes it a reliable and secure choice for a wide range of applications.

Oil Resistance

Resilient Against Hot Oil and Grease
Oil resistance is a vital characteristic of surfaces used in kitchens and commercial food preparation areas. CeramicSteel's capacity to endure the effects of hot oil and grease ensures it remains functional and visually appealing even in demanding conditions.

Test Overview
CeramicSteel was tested for oil resistance by applying
1. Oil heated to 180°C 2. Grease heated to 180°C directly onto its surface. The material was allowed to sit for 7 days before undergoing a cleaning process with water. This test simulated real-world conditions where surfaces are exposed to oil spills and splashes for extended periods.

1

2

CERAMICSTEEL

CERAMICSTEEL AFTER CLEANING

Test Results
CeramicSteel showed excellent resistance, exhibiting no visible changes or damage after extended exposure to hot oil and thorough cleaning. This outcome confirms the material's appropriateness for applications where oil and grease are prevalent.

Comparison with Other Materials
Such as granite and marble in oil resistance testing, which showed signs of staining or damage under similar conditions. CeramicSteel's ability to resist high temperatures and greasy substances makes it a superior choice for kitchen and food preparation environments.

Oil Resistance


GLASS

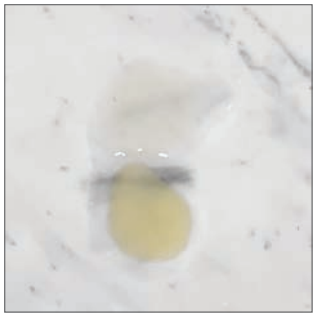
GLASS


PAINTED ALU

PAINTED ALU


TILE

TILE


MARBLE

MARBLE


GRANITE

GRANITE


HPL

HPL


ARCYLIC

ARCYLIC


STAINLESS STEEL

STAINLESS STEEL

Why Oil Resistance Matters

Oil and grease can cause considerable damage to surfaces over time, resulting in stains, discoloration, and degradation. CeramicSteel offers excellent oil resistance, providing a long-lasting and low-maintenance solution that minimizes cleaning efforts and preserves its aesthetic appeal.

Impact Resistance

Designed to Withstand Sudden Impact and Shock
Impact resistance is a key factor in determining the durability of a material, especially in high-use environments where accidental impacts are common. CeramicSteel's superior ability to withstand sudden forces ensures its longevity and reliability in various applications.

Test Overview
The impact resistance of CeramicSteel was evaluated using ISO 4532 standards.

In this test:

- A **5 mm steel ball** was dropped onto the surface with a force of **75 Newton**.
- The material was then observed for **24 hours** to assess any resulting damage.
- The criteria for success required that **surface chipping did not exceed 2 mm** in diameter.

Test Results
CeramicSteel passed the impact resistance test, demonstrating minimal chipping well within the acceptable limit. The surface remained largely intact, confirming its ability to effectively absorb and disperse impact forces.

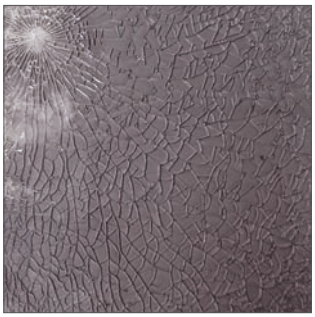
CERAMICSTEEL

CERAMICSTEEL

Comparison with Other Materials
Compared to HPL and ceramic tiles, CeramicSteel exhibited superior resistance to sudden impact. While glass was more susceptible to cracking or shattering under similar conditions, CeramicSteel maintained its structural integrity with minimal surface damage.

Impact Resistance


GLASS


GLASS


PAINTED ALU


PAINTED ALU


TILE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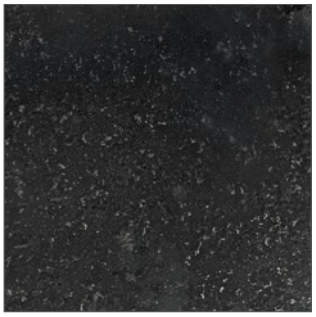
MARBLE


MARBLE


GRANITE


GRANITE


HPL


HPL


ARCYLIC


ARCYLIC


STAINLESS STEEL


STAINLESS STEEL

Why Impact Resistance Matters
Materials used in busy environments must be capable of handling sudden shocks without breaking or degrading. CeramicSteel's impressive impact resistance minimizes the risk of visible damage, reducing maintenance costs and ensuring long-term performance.

Magnetic Force

Harnessing the Power of Magnetism for Versatile Applications
The magnetic properties of a surface determine its ability to attract and hold magnets securely. A firm magnetic surface enables the attachment of magnetic accessories such as shelves, hooks, and racks without the need for adhesives or drilling, making it a practical and flexible solution for various environments.

Test Overview
The magnetic strength of CeramicSteel was evaluated by measuring the maximum holding power of a magnetic tray before detachment from the surface. This test clearly indicates the surface's ability to support magnetic accessories efficiently.

Test Results
CeramicSteel demonstrated exceptional magnetic properties due to its ferromagnetic composition. The surface provided strong and stable attachment for magnets, ensuring reliable performance for accessories and organizational tools.

Comparison with Other Materials
Ferromagnetic materials like steel and iron exhibit strong magnetic attraction, whereas non-magnetic materials such as glass, plastic, and ceramic do not support magnetic attachments. CeramicSteel's magnetic capabilities set it apart from alternative surfaces, making it a superior choice for applications requiring magnetic functionality. Glass and stainless steel can be magnetic, but their magnetic strength will be lower than that of CeramicSteel.

CERAMICSTEEL

STAINLESS STEEL

GLASS

Why Magnetic Properties Matter
A strong magnetic surface enhances functionality by allowing adaptable, non-invasive storage and display solutions. CeramicSteel's ferromagnetic properties provide users with a durable and versatile surface that maximizes efficiency while maintaining a clean and professional appearance.

Conclusion

CeramicSteel's Unmatched Performance Across All Tests
Setting a New Standard in Surface Durability

After rigorous testing across multiple performance categories, **CeramicSteel has emerged as the top-performing material**, consistently excelling over alternative surfaces such as glass, ceramic tile, marble, granite, stainless steel, painted aluminum, acrylic, and HPL.
The results prove that CeramicSteel is the ideal choice for applications that demand superior **durability, reliability, versatility and longevity**.

Why CeramicSteel is the Best Choice

Based on all tested categories, **CeramicSteel outperformed every other material**, ranking at 100% overall performance. Other materials showed weaknesses in different areas.

TEST		Ceramic Steel	Glass	Ceramic Tile	Marble	Granite	Stainless Steel	Painted Alu	Acrylic	HPL
Scratch Resistance	Min 7N	10N	10N	6N	0N	3N	1N	0N	1N	7N
Mohs Hardness	Min 5	6	6	5	3	5	3	1	2	2
Abrasion Resistance	Max 0,1grw	0,0220gr	/	0,0315gr	0,890gr	0,0601gr	0,1570gr	0,1423gr	1,4543gr	0,0506gr
Acid Resistance	Max 18,5gr/m²	0,522gr/m²	/	4,238gr/m²	975gr/m²	15,60gr/m²	0,26gr/m²	167,75gr/m²	0,442gr/m²	2,08gr/m²
Chemical Resistance	Min Rating 5*	5	5	5	2	5	4	4	4	5
Flame Resistance	Min Rating 5*	5	5	4	3	4	2	1	2	2
Oil Resistance	Min Rating 5*	5	5	5	2	4	5	5	5	5
Impact Resistance	Max 2mm	0mm	Failure	0mm	5mm	5mm	0mm	2mm	0mm	0mm
Magnetic Force	Min 1kg	4kg	0,2kg**	NA	NA	NA	1,5kg***	NA	NA	NA
	Succes Rate	**100%**	**77,8%**	**66,7%**	**0%**	**44,4%**	**55,6%**	**11,1%**	**33,3%**	**66,7%**

**** 4mm glass board with steel backer *** Ferritic stainless steel / Not Measurable**

Rating (EN438-2)
Rating 5: No visible change.
Rating 4: Slight change of gloss and/or colour, only visible at certain viewing angles.
Rating 3: Moderate change of gloss and/or colour
Rating 2: Marked change of gloss and/or colour.
Rating 1: Surface distortion and/or blistering.

The Best Choice for Demanding Applications

With its exceptional durability, high resistance to impact, fire, chemicals, and scratches, and its magnetic capabilities, CeramicSteel is the ultimate surface solution for:

- **Kitchens & Bathrooms –** Resists stains, heat, and mechanical wear.
- **Commercial Interiors –** Perfect for high-traffic areas that demand durability.
- **Industrial & Public Spaces –** Performs under the most challenging conditions.
- **Retail & Educational Use –** Strong magnetic properties enable versatile applications.

SURFACEMATTERS™

Polyvision® SURFACEMATTERS