

# Materials Comparison (kindly offered by our russian customer LAM0)

SAMPLE NO.		NAME OF SURFACE SAMPLE OR MATERIAL TESTED								
		CERAMIC				PLASTIC				
		1	2	3	4	5	6	7	8	9
No. of	Chemical reagent	Monolite Ipergres® Ceramic	KS-12 Ceramic - glossy enamel	KS-12 Ceramic - mat enamel	Quarella Ceramic	Sloplast Plastic	Trespa Top Lab Plastic	Wilsonart Plastic	Labolam Plastic	Isomax Plastic
1.	Nitric acid, concentrated 65%	Green	Green	Green	Green	Orange	Orange	Orange	Orange	Orange
2.	Nitric acid, diluted 10%	Green	Green	Green	Green	Yellow	Green	Green	Orange	Orange
3.	Sulphuric acid, concentrated 96%	Green	Green	Green	Red	Orange	Green	Yellow	Red	Orange
4.	Sulphuric acid, diluted 10%	Green	Green	Green	Green	Orange	Green	Green	Orange	Orange
5.	Nitric and sulphuric acids, concentr.1:3	Green	Green	Green	Red	Orange	Orange	Orange	Red	Orange
6.	Hydrofluoric acid (37%)	Orange	Orange	Orange	Orange	Orange	Yellow	Green	Orange	Green
7.	Hydrochloric acid, concentrated 37%	Green	Green	Green	Green	Orange	Green	Green	Orange	Orange
8.	Hydrochloric acid, diluted 10%	Green	Green	Green	Green	Orange	Green	Green	Orange	Orange
9.	Phosphoric acid (73%)	Green	Green	Green	Green	Yellow	Green	Green	Yellow	Yellow
10.	Chromic acid (60%)	Green	Yellow	Yellow	Green	Yellow	Green	Green	Orange	Green
11.	Sodium dichromate	Green	Green	Green	Green	Green	Green	Green	Green	Yellow
12.	Potassium dichromate (concentrated sulphuric acid solution)	Green	Green	Yellow	Green	Yellow	Green	Green	Yellow	Green
13.	Ammonia (28%)	Green	Green	Green	Green	Green	Green	Green	Green	Green
14.	Trichloroacetic acid	Green	Green	Green	Green	Green	Green	Green	Orange	Green
15.	Acetic acid, glacial	Green	Green	Green	Green	Yellow	Green	Green	Yellow	Green
16.	Hydrogen peroxide (33%)	Green	Green	Green	Green	Yellow	Green	Green	Yellow	Green
17.	Sodium hydroxide (50%)	Green	Green	Green	Green	Green	Green	Green	Green	Green
18.	Sodium hydroxide (10%)	Green	Green	Green	Green	Green	Yellow	Green	Green	Green
19.	Potassium hydroxide (50%)	Green	Green	Green	Green	Green	Green	Green	Orange	Green
20.	Potassium hydroxide (10%)	Green	Green	Green	Yellow	Green	Yellow	Green	Green	Green
21.	Acetone	Green	Green	Green	Green	Green	Green	Green	Green	Green
22.	Toluene	Green	Green	Green	Green	Green	Green	Green	Green	Green
23.	Hexane	Green	Green	Green	Green	Green	Green	Green	Green	Green
24.	Dioxane	Green	Green	Green	Green	Green	Green	Green	Green	Green
25.	Butyl acetate, mineral spirits, o-xylol (1:1:1)	Green	Green	Green	Green	Green	Green	Green	Green	Green
26.	Benzene	Green	Green	Green	Green	Green	Green	Green	Green	Green
27.	Dichloroethane	Green	Green	Green	Green	Green	Green	Green	Yellow	Green
28.	Dichloroethane	Green	Green	Green	Green	Green	Green	Green	Green	Green
29.	Carboxylic acid, phenol (90%)	Green	Green	Green	Green	Green	Green	Green	Green	Green
30.	Methyl ethyl ketone	Green	Green	Green	Green	Green	Green	Green	Green	Green
31.	Carbon tetrachloride	Green	Green	Green	Green	Green	Green	Green	Green	Green
32.	Dimethylformamide	Green	Green	Green	Green	Green	Green	Green	Green	Green
33.	Potassium permanganate solution	Green	Orange	Yellow	Orange	Orange	Orange	Yellow	Orange	Orange
34.	Iodine solution	Green	Orange	Green	Orange	Orange	Orange	Orange	Orange	Orange
35.	Bromine phenol blue (0,1%)	Green	Orange	Green	Orange	Orange	Green	Green	Yellow	Orange
36.	Methyl red (0,1%)	Green	Orange	Green	Orange	Orange	Green	Yellow	Orange	Orange
37.	Methyl orange (0,1%)	Green	Orange	Green	Orange	Orange	Green	Yellow	Orange	Orange
38.	Methyl blue (0,1%)	Green	Orange	Orange	Orange	Yellow	Orange	Orange	Yellow	Orange
39.	Phenolphthalein (0,1%)	Green	Orange	Orange	Orange	Yellow	Orange	Orange	Yellow	Orange
	Abrasion resistance (scratch)	Green	Green	Green	Green	Yellow	Yellow	Yellow	Orange	Yellow
	Shock resistance	Green	Green	Green	Green	Green	Green	Green	Green	Green
	100 C°	Green	Green	Green	Green	Green	Green	Green	Green	Green
	150 C°	Green	Green	Green	Green	Green	Green	Green	Green	Green
	200 C°	Green	Green	Green	Green	Yellow	Orange	Orange	Orange	Orange
	300 C°	Green	Green	Green	Green	Orange	Red	Red	Red	Red

● Green - no visible effect  
 ● Yellow - slightly visible stain  
 ● Orange - stain  
 ● Red - perceivable cracks on the surface

NAME OF SURFACE SAMPLE OR MATERIAL TESTED											
	COMPOUNDS		OTHER MATERIALS								
10	11	12	13	14	15	16	17	18	19	20	21
Labgrade Plastic	Durcon epoxy compound	Krizopol epoxy compound	Glassfiber Reinforced Plastic	Polypropylene	Lexan polycarbonate	Stainless steel	Varnished Metal	Glossy Laminate	Mat Laminate	Puhos white waterproof melamine	Glass
Red	Orange	Orange	Orange	Orange	Orange	Green	Red	Orange	Orange	Red	Green
Orange	Orange	Yellow	Yellow	Green	Green	Orange	Yellow	Yellow	Red	Red	Green
Yellow	Green	Green	Green	Green	Green	Red	Green	Yellow	Orange	Red	Green
Orange	Orange	Orange	Orange	Orange	Orange	Green	Red	Yellow	Orange	Red	Green
Orange	Orange	Orange	Orange	Yellow	Green	Orange	Orange	Orange	Orange	Red	Orange
Orange	Green	Yellow	Green	Green	Green	Orange	Green	Yellow	Orange	Red	Green
Yellow	Green	Green	Green	Green	Green	Orange	Green	Yellow	Orange	Red	Green
Green	Green	Green	Green	Green	Green	Green	Green	Yellow	Orange	Yellow	Green
Green	Orange	Yellow	Orange	Green	Green	Orange	Orange	Orange	Orange	Orange	Green
Green	Green	Yellow	Orange	Green	Green	Green	Green	Yellow	Orange	Orange	Green
Green	Green	Yellow	Orange	Green	Green	Green	Yellow	Yellow	Orange	Orange	Green
Yellow	Orange	Yellow	Yellow	Green	Green	Green	Yellow	Yellow	Orange	Yellow	Green
Green	Yellow	Yellow	Green	Green	Green	Green	Red	Yellow	Yellow	Yellow	Green
Green	Green	Green	Orange	Yellow	Green	Green	Green	Green	Green	Green	Green
Green	Green	Yellow	Orange	Yellow	Green	Green	Yellow	Yellow	Yellow	Yellow	Green
Green	Green	Yellow	Orange	Green	Green	Green	Orange	Yellow	Yellow	Yellow	Green
Green	Yellow	Yellow	Red	Green	Red	Green	Orange	Green	Green	Green	Green
Green	Green	Orange	Green	Orange	Red	Green	Orange	Green	Green	Green	Green
Green	Yellow	Yellow	Red	Yellow	Red	Green	Orange	Green	Green	Green	Green
Green	Green	Yellow	Yellow	Green	Green	Green	Orange	Green	Green	Green	Green
Orange	Orange	Orange	Orange	Green	Yellow	Orange	Yellow	Orange	Orange	Orange	Green
Orange	Orange	Orange	Orange	Yellow	Yellow	Orange	Yellow	Orange	Orange	Orange	Green
Green	Yellow	Orange	Green	Green	Green	Green	Orange	Yellow	Orange	Orange	Green
Orange	Orange	Orange	Orange	Green	Green	Green	Orange	Yellow	Orange	Orange	Green
Green	Green	Yellow	Yellow	Green	Green	Green	Yellow	Green	Green	Green	Green
Orange	Yellow	Yellow	Yellow	Red	Yellow	Green	Yellow	Orange	Orange	Orange	Green
Green	Green	Green	Green	Orange	Green	Green	Green	Orange	Orange	Orange	Red
Green	Green	Green	Green	Red	Yellow	Green	Green	Red	Red	Red	Green
Orange	Green	Yellow	Green	White	Orange	Green	Green	White	White	White	Green
Red	Yellow	Orange	Orange	White	Red	Green	Yellow	White	White	White	Green

# Performances

The Department for Territory and Geological Resources of the Politecnico in Turin and the Ceramic Centre in Bologna have carried out some physical and mechanical tests on **MONOLITE IPERGRES®** samples with these results:

VARIABLE	VALUE
Density (weight for unit of volume g/cm <sup>3</sup> ) - DIN 51064	2.17
Weight H20 mm Worktops per Square meter (+/- 5%)	43.50
Weight H28 mm Worktops per Square meter (+/- 5%)	44.80
Weight H38 mm Worktops per Square meter (+/- 5%)	48.50
Dimensional and geometrical properties - UNI EN ISO 10545 - 2	Compliant
Colour stability to Light and UV rays - UNI EN ISO 10545 - 16	Maximum
Determination of modulus of rupture and breaking strength - EN ISO 10545 - 4	
• Average breaking load (N)	16114
• Average breaking strength (N)	14649
• Average Modulus of rupture (N/m <sup>2</sup> )	43.10
Flexural strength after frost resistance test (EN 100 - MPa)	40.60
Determination of impact resistance by measurement of coefficient of restitution - EN ISO 10545 - 5	0.80
Determination of deep abrasion, hardness according to Mohs - EN 101	6
Linear Thermal Expansion Coefficient (10 <sup>-6</sup> °C <sup>-1</sup> ) - UNI EN ISO 10545 - 8	6.50 - 7.00
Thermal Shock Resistance - UNI EN ISO 10545 - 9	OK
Crazing Resistance - UNI EN ISO 10545 - 11	OK
Frost Resistance - UNI EN ISO 10545 - 12	OK
Determination of chemical resistance of glazed surface - EN ISO 10545 - 13	OK
Determination of stain resistance of glazed surface - EN ISO 10545 - 14	OK
Releasing of Dangerous Substances, skid resistance - UNI EN ISO 10545 - 15 Pb Cd	0.00 0.00
Thermal Resistance (exposure up to 10 Hrs.)	up to 900°C
Behaviour in Fire (Combustible material) - DIN EN 13501 - 1	NO

# Six Points for the Best Choice

---

- 1 MONOLITE IPERGRES®** worktops are super resistant although really light. Its resistance values are so high to allow a thickness of 20 mm.
- 2 MONOLITE IPERGRES®** has shown to be highly resistant to indirect tensile stress through flexural test. Its resistance values are two-threefold higher than those performed by marble and granites.
- 3 MONOLITE IPERGRES®** is frost-proof.
- 4 MONOLITE IPERGRES®** fully vitrified and glazed surface cannot absorb grease and liquids, making the surface very hygienic to use. This material cannot get stained because of its impermeability, any detergent can be used.
- 5 MONOLITE IPERGRES®** glazed surface has an excellent abrasion, scoring and scratching resistance. Equal to the one performed by the best granites and even much higher than marble abrasion resistance.
- 6 MONOLITE IPERGRES®** has brilliant impact resistance. About 60% higher than the one shown by "granito grigio perlato" (pearl grey granite).



# Chemical Resistance Tests (in alphabetical order A → Z)

REAGENT	RESULT
Acetic Acid (99%)	No effects
Acetic Anhydride	No effects
Acetone	No effects
Acetonitrile	No effects
Acridine Orange	No effects
Alizarin Complexone Dihydrate	No effects
Ammonium Hydroxide (28%)	No effects
Amylacetat	No effects
Aniline blue, Water Soluble	No effects
Benzene	No effects
Butyl Alcohol	No effects
Carbol Fuchsin	No effects
Carbon Tetrachloride	No effects
Carmine	No effects
Chloroform	No effects
Chromium (VI) Oxide (60%)	No effects
Congo Red	No effects
Copper Sulphate (10%)	No effects
Cresol	No effects
Crystal Violet (Gentian)	No effects
Dichlor Acetic Acid	No effects
Dichlormethane	No effects
Dioxane	No effects
Eosin B	No effects
Ethylalcohol	No effects
Ethyl Acetate	No effects
Ethylene Glycol	No effects
Ethyl Ether	No effects
Ferric (III) Chloride (10%)	No effects
Formaldehyde (37%)	No effects
Formic Acid (99%)	No effects
Fuchsin (basic)	No effects
Furfural	No effects
Gasoline	No effects
Giemsa Stain	No effects
Hydrochloric Acid (37%)	No effects
Hydrofluoric Acid (48%)	Failed
Hydrogen Peroxide	No effects
Iodine Solution (0.1 N)	No effects

REAGENT	RESULT
Iodine (Crystals and Tincture)	No effects
Malachite Green Oxalate	No effects
Methylalcohol	No effects
Methylene Blue	No effects
Methylethylketone	No effects
Methylisobutylketone	No effects
Methyl Violet 2B	No effects
Mono Chlorobenzene	No effects
n-Butyl Acetate	No effects
n-Hexane	No effects
Naphtaline	No effects
Nitric Acid (70%)	No effects
Perchloric Acid (60%)	No effects
Phenol	No effects
Phosphoric Acid (85%)	No effects
Potassium Iodite (10%)	No effects
Potassium Permanganate(10%)	No effects
Safranin O	No effects
Silver Nitrate (1%)	No effects
Sodium Chloride (10%)	No effects
Sodium Hydroxide (40%)	No effects
Sodium Hydroxide (flakes)	No effects
Sodium Hypochlorite (13%)	No effects
Sudan III	No effects
Sulphuric Acid (98%)	No effects
1/2 Sulphuric Acid (85%)+ 1/2 Nitric Acid (70%)	No effects
Tetrahydrofurane	No effects
Toluene	No effects
Trichlorethylene	No effects
Xylene	No effects
Zinc Chloride Saturated	No effects

## Informations based on in-house and Worldwide Customers' Tests as of May 2012.

Informations provided and intended only to show **MONOLITE IPERGRES®** wide range of applications but not valid as guarantee in any way. Customers are kindly asked to conduct their own tests for specific needs and applications.