



Materiale autoportante costituito da strati di carta kraft nera impregnata con resine termoindurenti e da uno o più strati superficiali di carta decorativa impregnata con resine aminoplastiche, pressati ad alta pressione e alta temperatura. La superficie non è tossica, è chimicamente inerte e fisiologicamente sicura, provata per contatto con gli alimenti. Per la sua alta resistenza agli agenti chimici, è particolarmente adatto per l'impiego in laboratori fisici e chimici, fotografici, cosmetici, elettronici, nucleari, per scuole e per cucine industriali.

*Self-supporting material consisting of layers of black kraft paper impregnated with thermosetting resins and layers of decorative paper impregnated with aminoplastic resins; all bonded together by means of high pressure and heat. The surface is non-toxic, chemically inert and physiologically safe. It is approved for use in contact with foodstuffs. For its outstanding resistance to chemicals, it is particularly suitable for applications in chemistry, physics, photography, cosmetics, electronics and nuclear laboratories, for schools and industrial kitchens.*

CARATTERISTICA PROPERTY	METODO DI PROVA TEST METHOD (EN 438:2016)	PROPRIETÀ O ATTRIBUTO PROPERTY OR ATTRIBUTE	UNITÀ UNIT (max o min) (max or min)	VALORI VALUES										
Spessore Thickness	EN 438 - 2.5	Spessore Thickness	mm	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">8.0 &lt; t &lt; 12.0</td> <td style="width: 50%; text-align: right;">± 0.50</td> </tr> <tr> <td>12.0 &lt; t &lt; 16.0</td> <td style="text-align: right;">± 0.60</td> </tr> <tr> <td>16.0 &lt; t &lt; 20.0</td> <td style="text-align: right;">± 0.70</td> </tr> <tr> <td>20.0 &lt; t &lt; 25.0</td> <td style="text-align: right;">± 0.80</td> </tr> <tr> <td>25.0 &lt; t</td> <td style="text-align: right;">da concordare to be agreed</td> </tr> </table>	8.0 < t < 12.0	± 0.50	12.0 < t < 16.0	± 0.60	16.0 < t < 20.0	± 0.70	20.0 < t < 25.0	± 0.80	25.0 < t	da concordare to be agreed
8.0 < t < 12.0	± 0.50													
12.0 < t < 16.0	± 0.60													
16.0 < t < 20.0	± 0.70													
20.0 < t < 25.0	± 0.80													
25.0 < t	da concordare to be agreed													
Planarità Flatness	EN 438 - 2.9	Scostamento massimo * Maximum deviation *	mm/m	<table style="width: 100%; border: none;"> <tr> <td colspan="2" style="text-align: center;">due facce decorative two decorative sides</td> </tr> <tr> <td style="width: 50%;">2.0 ≤ t &lt; 6.0</td> <td style="width: 50%; text-align: right;">≤ 8.0</td> </tr> <tr> <td>6.0 ≤ t &lt; 10.0</td> <td style="text-align: right;">≤ 5.0</td> </tr> <tr> <td>10.0 ≤ t</td> <td style="text-align: right;">≤ 3.0</td> </tr> </table>	due facce decorative two decorative sides		2.0 ≤ t < 6.0	≤ 8.0	6.0 ≤ t < 10.0	≤ 5.0	10.0 ≤ t	≤ 3.0		
due facce decorative two decorative sides														
2.0 ≤ t < 6.0	≤ 8.0													
6.0 ≤ t < 10.0	≤ 5.0													
10.0 ≤ t	≤ 3.0													
Lunghezza e larghezza Length and width	EN 438 - 2.6	Lunghezza e larghezza Length and width	mm	+ 10 / - 0										
Linearità dei bordi Edges Straightness	EN 438 - 2.7	Scostamento massimo Maximum deviation	mm/m	1.5										
Ortogonalità Squareness	EN 438 - 2.8	Scostamento massimo Maximum deviation	mm/m	1.5										
Resistenza all'usura della superficie Resistance to surface wear	EN 438 - 2.10	res. all'usura wear resistance	giri revolutions	IP ≥ 150 <sup>1</sup>										



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Res. all'immersione in acqua bollente <i>Resistance to immersion in boiling water</i>	EN 438 - 2.12	aspetto <i>appearance</i>	classificazione <i>rating</i>	≥ 4		
		aumento massa <i>mass increase</i>	%	CGS	CGF	
		aumento spessore <i>thickness increase</i>	%	5 ≤ t	≤ 2	≤ 3
		aspetto superficie <i>surface appearance</i>  bordo <i>edge</i>	classificazione <i>rating</i>	≥ 4		≥ 3
Resistenza al calore secco (160 °C) <i>Resistance to dry heat</i>	EN 438 - 2.16	aspetto <i>appearance</i>	classificazione <i>rating</i>	≥ 4		
Resistenza al calore umido (100 °C) <i>Resistance to wet heat</i>	EN 438 - 2.18	aspetto <i>appearance</i>	classificazione <i>rating</i>	≥ 4		
Stabilità dimensionale a temperatura elevata <i>Dimensional stability at elevated temperature</i>	EN 438 - 2.17	variazione dimensionale cumulativa <i>cumulative dimensional change</i>	% long. long. % trasv. transv.	5 ≤ t ≤ 0,30 ≤ 0,60		
Res. all'urto con sfera di grande diametro <i>Res. to impact by large diameter ball</i>	EN 438 - 2.21	altezza di caduta <i>drop height</i>  diametro impronta <i>indentation diameter</i>	mm (min)  mm (max)	1800  10		
Resistenza alle fessurazioni (laminato stratificato) <i>Resistance to crazing (thick laminates)</i>	EN 438 - 2.24	aspetto <i>appearance</i>	classificazione <i>rating</i>	≥ 4		
Resistenza alla scalfittura <i>Resistance to scratching</i>	EN 438 - 2.25	forza finitura liscia <i>force smooth finish</i>	classificazione <i>rating</i>	≥ 2		
		forza finitura strutturata <i>force textured finish</i>		≥ 3		
Resistenza alle macchie <i>Resistance to staining</i>	EN 438-2.26	aspetto gruppi 1 e 2 <i>appearance groups 1 and 2</i>	classificazione <i>rating</i>	5		
		aspetto gruppo 3 <i>appearance group 3</i>		4		
Solidità dei colori Alla luce <i>Lightfastness</i>	EN 438-2.27	contrasto <i>contrast</i>	grado scala grigi <i>grey scale rating</i>	≥ 4		
Resistenza al vapore d'acqua <i>Resistance to water vapour</i>	EN 438-2.14	aspetto <i>appearance</i>	classificazione <i>rating</i>	≥ 4		
Conduttività termica <i>Thermal conductivity</i>	EN 12664: 2001	-	W/mK	0,25		
Resistenza elettrica <i>Electrical resistance</i>	EN 61340-4-1	RV (23° C / 50% RH)	Ohm	1x10 <sup>9</sup> - 1x10 <sup>11</sup>		



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Resistenza a flessione <i>Flexural strength</i>	EN ISO 178	forza <i>stress</i>	MPa	≥ 100
Modulo di elasticità a flessione (E) <i>Flexural modulus (E)</i>	EN ISO 178	forza <i>stress</i>	MPa	≥ 10000
Densità <i>Density</i>	ISO 1183	densità <i>density</i>	g/cm <sup>3</sup>	≥ 1.35
Resistenza ai prodotti chimici <i>Resistance to chemical products</i>	Conforme al protocollo SEFA 8 Per ulteriori sostanze chimiche vedere allegato <i>SEFA 8 protocol compliant</i> For further info on specific chemical agent see annex			

\* A condizione che siano rispettate le modalità e le condizioni di stoccaggio del laminato consigliate dal produttore.  
*Provided that the laminate is stored in the manner and conditions recommended by the manufacturer.*

Nota: Si consiglia di contattare il produttore per dettagli sui rapporti delle prove di comportamento al fuoco e sui certificati ottenuti e per informazioni sui metodi di prova di comportamento al fuoco e relative specifiche.

*Note: The laminate manufacturer should be contacted for details of fire test reports and certifications held, and for information on fire test methods and specifications.*



### RESISTENZA A SOSTANZE E REAGENTI

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La seguente lista, pur non esaustiva, offre una panoramica della resistenza della superficie del laminato PRINT HPL LABGRADE all'azione delle sostanze chimiche più comunemente incontrate o utilizzate all'interno di laboratori di analisi. Per quelle non elencate in questo documento, si prega di contattare il Servizio Commerciale Abet Laminati.

Data la similarità e la facilità interpretative della nomenclatura comune (non IUPAC), i nomi delle sostanze chimiche sono riportati in lingua inglese per una più agevole identificabilità.

#### SEZIONE A

La superficie decorativa del LABGRADE resiste alle seguenti sostanze chimiche dopo 24 ore di contatto, senza che queste ne alterino l'aspetto o la funzionalità.

Sostanza	Formula chimica bruta		
A-naphthaline	C <sub>10</sub> H <sub>7</sub> NH <sub>2</sub>	Cedar wood oil, thickened	
A-naphthole	C <sub>10</sub> H <sub>7</sub> OE	Chloral hydrate	CCl <sub>3</sub> CH(OH) <sub>2</sub>
Acetic acid	CH <sub>3</sub> COOH	Chlorobenzene	CHCl <sub>3</sub>
Acetic acid ethyl ester	CH <sub>3</sub> COOC <sub>2</sub> H <sub>5</sub>	Cholesterol	C <sub>27</sub> H <sub>45</sub> OH
Acetic acid iso-amyl ester	CH <sub>3</sub> COCH <sub>5</sub> H <sub>11</sub>	Citric acid	C <sub>6</sub> H <sub>8</sub> O <sub>7</sub>
Active Carbon		Clay	
Alcoholic beverages	ROH	Coal	
Alcohols		Cocaine C <sub>17</sub> H <sub>21</sub> O <sub>4</sub> N	
- Primary	RCH <sub>2</sub> OH	Coffee	
- Secondary	RR'CHOH	Caffeine	
- Tertiary	RR'R'COH	Cooking salt	NaCl
Aldehydes	RCHO	Copper sulphate	CuSO <sub>4</sub>
Alum solution	KAl(SO <sub>4</sub> ) <sub>3</sub>	Cosmetics	
Aluminium sulphate	Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub>	Cresol	CH <sub>3</sub> C <sub>6</sub> H <sub>4</sub> OH
Amides RCONH <sub>2</sub>		Cresylic acid	CH <sub>3</sub> C <sub>6</sub> H <sub>4</sub> COOH
Amines		Cyclo hexane	C <sub>6</sub> C <sub>11</sub> OH
- Primary	RNH <sub>2</sub>	Cyclo hexanol	C <sub>6</sub> C <sub>12</sub>
- Secondary	(RR')NH	Detergents	
- Tertiary	(RR'R'')N	Dextrose	C <sub>6</sub> H <sub>12</sub> O <sub>6</sub>
Ammonia	NH <sub>4</sub> OH	Digitonine	C <sub>56</sub> H <sub>92</sub> O <sub>29</sub>
Ammonium chloride	NH <sub>4</sub> Cl	Dimethyl formamide	HCON(CH <sub>3</sub> ) <sub>2</sub>
Ammonium sulphate	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	Dioxane C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>	
Ammonium thiocyanate	NH <sub>4</sub> SCN	Dulcitol	C <sub>6</sub> H <sub>14</sub> O <sub>6</sub>
Amyl acetate	CH <sub>3</sub> COOC <sub>5</sub> H <sub>11</sub>	Dyes, paints	
Amyl alcohol	C <sub>5</sub> H <sub>11</sub> OH	Dimethyl sulphoxide	(CH <sub>3</sub> ) <sub>2</sub> SO
Aniline	C <sub>6</sub> H <sub>5</sub> NH <sub>2</sub>	Earth	
Animal fats		Ethanol C <sub>2</sub> H <sub>5</sub> OH	
Animal feedstock		Ethyl acetate	CH <sub>3</sub> COOC <sub>2</sub> H <sub>5</sub>
Arabinose	C <sub>5</sub> H <sub>10</sub> O <sub>5</sub>	Ethylene chloride	
Ascorbic acid	C <sub>6</sub> H <sub>8</sub> O <sub>6</sub>	(di-chloro-ethylene)	CH <sub>2</sub> :CC <sub>12</sub>
Asparagic acid	C <sub>4</sub> H <sub>7</sub> O <sub>4</sub> N	Fats	
Asparagine	C <sub>4</sub> H <sub>8</sub> O <sub>3</sub> N <sub>2</sub>	Feedstuffs	
Baking yeast		Foodstuffs	
Barium chloride	BaCl <sub>2</sub>	Formaldehyde	HCHO
Barium sulphate	BaSO <sub>4</sub>	Formic acid up to 10%	HCOOH
Benzaldehyde	C <sub>6</sub> H <sub>5</sub> CHO	Fructose	C <sub>6</sub> H <sub>12</sub> O <sub>6</sub>
Benzene	C <sub>6</sub> H <sub>6</sub>	Galactose	
Benzidine	NH <sub>2</sub> C <sub>6</sub> H <sub>4</sub> C <sub>6</sub> H <sub>4</sub> NH <sub>2</sub>	Gelatin	
Benzonic acid	C <sub>6</sub> H <sub>5</sub> COOH	Glacial acetic acid	CH <sub>3</sub> COOH
Biogel		Glucose C <sub>6</sub> H <sub>12</sub> O <sub>6</sub>	
Blood		Glycerine	CH <sub>2</sub> OH.CHOH.CH <sub>2</sub> OH
Blood test seren		Glyocol	NH <sub>2</sub> CH <sub>2</sub> COOH
Boric acid	H <sub>3</sub> BO <sub>3</sub>	Ethylene Glycol	HOCH <sub>2</sub> .CH <sub>2</sub> OHC
Butyl acetate	CH <sub>3</sub> COOC <sub>4</sub> H <sub>9</sub>	Graphite	
Butyl alcohol	C <sub>4</sub> H <sub>9</sub> OH	Gypsum CaSO <sub>4</sub> .2H <sub>2</sub> O	
Cadmium acetate	Cd(CH <sub>3</sub> COO) <sub>2</sub>	Heparine	C <sub>26</sub> H <sub>42</sub> N <sub>2</sub> O <sub>3</sub> 7S <sub>5</sub>
Cadmium sulphate	CdSO <sub>4</sub>	Heptanol	C <sub>7</sub> H <sub>15</sub> OH
Calcium carbonate (chalk)	CaCO <sub>3</sub>	Hexane C <sub>6</sub> H <sub>14</sub>	
Calcium chloride	CaCl <sub>2</sub>	Hexanol C <sub>6</sub> H <sub>13</sub> OH	
Calcium hydroxide	Ca(OH) <sub>2</sub>	Hydroquinone	HOC <sub>6</sub> H <sub>4</sub> OH
Calcium nitrate	Ca(NO <sub>3</sub> ) <sub>2</sub>	Hypophysine	
Cane sugar	C <sub>12</sub> H <sub>22</sub> H <sub>11</sub>	Immersion oil	
Carbol-xylene	C <sub>6</sub> H <sub>5</sub> OH-C <sub>6</sub> H <sub>4</sub> (CH <sub>3</sub> ) <sub>2</sub>	Inorganic salts and their mixtures	
Carbolic acid	C <sub>6</sub> H <sub>5</sub> OH	Inosite	C <sub>6</sub> H <sub>6</sub> (OH) <sub>6</sub>
Carbon tetra chloride	CCl <sub>4</sub>	Insecticides	
Caseine		Iso-proponal	C <sub>3</sub> H <sub>6</sub> OH
Castor oil		Lactic acid	CH <sub>3</sub> CHOHCOOH
Caustic soda up to 10%	NaOH	Lactic sugar	C <sub>12</sub> H <sub>22</sub> O <sub>11</sub>



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Lactose C <sub>12</sub> H <sub>22</sub> O <sub>11</sub>		Rhamnose	C <sub>6</sub> H <sub>12</sub> O <sub>5</sub> .H <sub>2</sub> O
Lead acetate	Pb(CH <sub>3</sub> COO) <sub>2</sub>	Rochelle salt	
Lead nitrate	Pb(NO <sub>3</sub> ) <sub>2</sub>	Saccharose = raw sugar	
Levulose	C <sub>6</sub> H <sub>12</sub> O <sub>6</sub>	Salicylic acid	C <sub>6</sub> H <sub>4</sub> OHCOOH
Lipstick		Salicylic aldehyde	C <sub>6</sub> H <sub>4</sub> OH.CHO
Lithium Hydroxide up to 10%	LiOH	Soap	
Lithium carbonate	Li <sub>2</sub> CO <sub>3</sub>	Sodium acetate	CH <sub>3</sub> COONa
Magnesium carbonate	MgCO <sub>3</sub>	Sodium bisulfite	NaHSO <sub>3</sub>
Magnesium chloride	MgCl <sub>2</sub>	Sodium carbonate	Na <sub>2</sub> CO <sub>3</sub>
Magnesium hydroxide	Mg(OH) <sub>2</sub>	Sodium chloride	NaCl
Magnesium sulphate	MgSO <sub>4</sub>	Sodium citrate	Na <sub>3</sub> C <sub>6</sub> H <sub>5</sub> O <sub>7</sub> .5H <sub>2</sub> O
Maltose C <sub>12</sub> H <sub>22</sub> O <sub>11</sub>		Sodium di-ethyl-barbiturate	NaC <sub>8</sub> H <sub>11</sub> N <sub>2</sub> O <sub>3</sub>
Mannite C <sub>6</sub> H <sub>14</sub> O <sub>6</sub>		Sodium carbonate	Na <sub>2</sub> CO <sub>3</sub>
Mannose	C <sub>6</sub> H <sub>12</sub> O <sub>6</sub>	Sodium bicarbonate	NaHCO <sub>3</sub>
Methylene chloride		Sodium hypo-sulphate	Na <sub>2</sub> S <sub>2</sub> O <sub>4</sub>
DiChloromethane	CH <sub>2</sub> Cl <sub>2</sub>	Sodium nitrate	NaNO <sub>3</sub>
Mercury Hg		Sodium phosphate	Na <sub>3</sub> PO <sub>4</sub>
Mesoinosite	C <sub>6</sub> H <sub>6</sub> (OH) <sub>6</sub>	Sodium silicate	Na <sub>2</sub> SiO <sub>3</sub>
Methanol	CH <sub>3</sub> OH	Sodium sulfate	Na <sub>2</sub> SO <sub>4</sub>
Milk		Sodium sulfide	Na <sub>2</sub> S
Mineral oils		Sodium sulphite	Na <sub>2</sub> SO <sub>3</sub>
Mineral salts		Sodium tartrate	Na <sub>2</sub> C <sub>4</sub> H <sub>4</sub> O <sub>6</sub>
Nail lacquer		Sodium Thiosulphate	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>
Nail lacquer remover		Soot	
Nickel sulphate	NiSO <sub>4</sub>	Sorbite	C <sub>6</sub> H <sub>14</sub> O <sub>6</sub>
Nicotine C <sub>10</sub> H <sub>14</sub> N <sub>2</sub>		Standard I-agar nutrient	
Nonne-Apet reagent		Standard II-agar nutrient	
Octanol (Octylacohol)	C <sub>8</sub> H <sub>17</sub> OH	Standard I-bouillon nutrient	
Ointments		Standard II-bouillon nutrient	
Oleic acid	CH <sub>3</sub> (CH <sub>2</sub> ) <sub>7</sub> CH:CH(CH <sub>2</sub> ) <sub>7</sub> COOH	Starch	
Olive Oil		Starch common salt solution	
Organic solvents		Stearic acid	C <sub>17</sub> H <sub>35</sub> COOH
P-amino aceto-phenone	NH <sub>2</sub> .C <sub>6</sub> H <sub>4</sub> COCH <sub>3</sub>	Styrene	C <sub>6</sub> H <sub>5</sub> .CH:CH <sub>2</sub>
P-nitro phenol	C <sub>6</sub> H <sub>4</sub> NO <sub>2</sub> OH	Sugar & sugar derivatives	H <sub>22</sub> O <sub>11</sub>
Pandy's reagent		Sulphur	S
Paraffin alkane hydrocarbons	C <sub>n</sub> H <sub>2n+2</sub>	Talcum	3MgO, 4SiO <sub>2</sub> , H <sub>2</sub> O
Paraffin oil		Tannin	C <sub>76</sub> H <sub>52</sub> O <sub>46</sub>
Pentanol	C <sub>5</sub> H <sub>11</sub> CH	Tartaric acid	C <sub>4</sub> H <sub>6</sub> O <sub>6</sub>
Petroleum benzine (petrol)		Tea	
Percaulic acid	HClO <sub>4</sub>	Terpentine	
Phenolphthaleine	C <sub>20</sub> H <sub>14</sub> O <sub>4</sub>	Tetra hydro furan	C <sub>4</sub> H <sub>8</sub> O
Phenol & phenolic derivates	C <sub>6</sub> H <sub>5</sub> OH	Tertraline	C <sub>10</sub> H <sub>12</sub>
Polishes (creams & waxes)		Thiourea	NH <sub>2</sub> CSNH <sub>2</sub>
Potassium aluminium sulphate	KAl(SO <sub>4</sub> ) <sub>2</sub>	Thymol	C <sub>10</sub> H <sub>14</sub> O
Potassium bromate	KBr	Thymol buffer solution	
Potassium bromide	KBrO <sub>3</sub>	Toluene	C <sub>6</sub> H <sub>5</sub> CH <sub>3</sub>
Potassium carbonate	K <sub>2</sub> CO <sub>3</sub>	Trehalose	C <sub>12</sub> H <sub>22</sub> O <sub>11</sub>
Potassium chloride	KCl	Trichorethylene	C <sub>2</sub> HCl <sub>3</sub>
Potassium hexa cyano ferrate	K <sub>4</sub> Fe(CN) <sub>6</sub>	Trypsin	
Potassium hydroxide up to 10%	KOH	Tryptophane	C <sub>11</sub> H <sub>12</sub> O <sub>2</sub> N <sub>2</sub>
Potassium iodate	KIO <sub>3</sub>	Urease	
Potassium nitrate	KNO <sub>3</sub>	Uric acid	C <sub>5</sub> H <sub>4</sub> N <sub>4</sub> O <sub>3</sub>
Potassium sodium tartrate	KNaC <sub>4</sub> H <sub>4</sub> O <sub>6</sub>	Uric acid solution	CO(HN <sub>2</sub> ) <sub>2</sub>
Potassium sulphate	K <sub>2</sub> SO <sub>4</sub>	Urine	
Potassium tartrate	K <sub>2</sub> C <sub>4</sub> H <sub>4</sub> O <sub>6</sub>	Vanilline	C <sub>8</sub> H <sub>8</sub> O <sub>3</sub>
Potato starch		Vaseline	
Potter's reagent		Water	H <sub>2</sub> O
Propanol	C <sub>3</sub> H <sub>7</sub> OH	Water colours	
1.2-propylene glycol	CH <sub>3</sub> CHOH <sub>2</sub> OH	Xylene	C <sub>6</sub> H <sub>4</sub> (CH) <sub>2</sub>
Pyridine	C <sub>5</sub> H <sub>5</sub> N	Zinc chloride	ZnCl <sub>2</sub>
Quinine		Zinc sulphate	ZnSO <sub>4</sub>
Rafinose	C <sub>18</sub> H <sub>32</sub> O <sub>15</sub> .5H <sub>2</sub> O		

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**SEZIONE B**

La superficie decorativa del LABGRADE non viene funzionalmente alterata dalle sostanze chimiche sotto elencate (specialmente se allo stato liquido), a patto che entro 10 minuti dall'avvenuto contatto accidentale, l'area interessata venga tamponata con un panno asciutto, poi pulita con un panno inumidito con acqua, quindi risciacquata con acqua e infine asciugata con un panno di carta assorbente.

Sostanza	Formula chimica bruta	Sostanza	Formula chimica bruta
Aluminium chloride	$AlCl_3$	Mercuric chloride solution	$HgCl_2$
Amino-sulphonic acid up to 10%	$NH_2SO_3H$	Mercuric dichromate	$HgCr_2O_7$
Ammonium hydrogen sulphate	$NH_4.HSO_4$	Millon's reagent	$Hg(NO_3)_2$
Aniline dyes		Nylander's reagent	
Arsenic acid up to 10%	$H_3AsO_4$	Oxalic acid	$COOH.COOH$
Sodium hydroxide over 10%	$NaOH$	Picric acid	$C_6H_2OH(NO_2)_3$
Crystal violet (gentian violet)	$C_{24}H_{26}N_3Cl$	Potassium chromate	$K_2CrO_4$
Esbach's reagent	$C_{16}H_{16}N_3ClS$	Potassium dichromate	$K_2Cr_2O_7$
Ferric chloride	$FeCl_3$	Potassium hydrogen sulphate	$KHSO_4$
Ferrous chloride	$FeCl_2$	Potassium hydroxide over 10%	$KOH$
Fuchsine	$C_{19}H_{19}N_3O$	Potassium iodine	$KI$
Hair dyeing & bleaching agents		Potassium permanganate	$KMnO_4$
Hydrochloric acid up to 10%	$HCl$	Sodium hydrogen sulphate	$NaHSO_4$
Inorganic acids up to 10%		Sodium hypochlorite	$NaClO$
Iodine	$I_2$	Sulphuric acid up to 10%	$H_2SO_4$
Lithium hydroxide over 10%	$LiOH$		

**SEZIONE C**

Le sostanze chimiche sottoelencate devono essere rimosse immediatamente in caso di contatto accidentale con la superficie decorativa del LABGRADE in quanto possono danneggiarla irreparabilmente anche solo a seguito di un tempo di contatto dell'ordine di pochi secondi.

Sostanza	Formula chimica bruta	Sostanza	Formula chimica bruta
Amino sulphonic acid* <sup>3</sup>	$NH_2SO_3H$	Chrome – sulphuric acid	$K_2Cr_2O_7+H_2SO_4$
Inorganic acids * e.g.		1 part potassium dichromate; 1.5 parts water; 18.4 parts concentrated sulfuric acid (95.5 - 96.5%)	
Aqua regia	$HNO_3+HCl$ molar ratio 1:3	Hydrochloric acid	$HCl$
Arsenic acid	$H_3AsO_4$	Hydrobromic acid	$HBr$

\* In concentration higher than 10%

**SEZIONE D**

Ripetute esposizioni a vapori corrosivi delle sostanze chimiche di seguito elencate possono provocare l'alterazione della superficie decorativa del LABGRADE.

Sostanza	Formula chimica bruta
Acid Fumes	
Bromine	$Br_2$
Chlorine	$Cl_2$
Nitrous fumes	$N_xO_y$
Sulphur dioxide	$SO_2$



### RESISTANCE TO CHEMICAL SUBSTANCES

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The following list whilst not claiming to be exhaustive gives a survey of the resistance of PRINT HPL LABGRADE to the action of commonly encountered or used substances. For resistance to chemicals not listed hereunder please contact Abet Laminati Sales Office.

#### SECTION A

The decorative surface of LABGRADE withstand to the following chemical for 24 hours of contact without any change of appearance or reduction of the service life.

Chemical	Gross chemical formula		
A-naphthaline	C <sub>10</sub> H <sub>7</sub> NH <sub>2</sub>	Citric acid	C <sub>6</sub> H <sub>8</sub> O <sub>7</sub>
A-naphthole	C <sub>10</sub> H <sub>7</sub> OH	Clay	
Acetic acid	CH <sub>3</sub> COOH	Coal	
Acetic acid ethyl ester	CH <sub>3</sub> COOC <sub>2</sub> H <sub>5</sub>	Cocaine	C <sub>17</sub> H <sub>21</sub> O <sub>4</sub> N
Acetic acid iso-amyl ester	CH <sub>3</sub> COCH <sub>5</sub> H <sub>11</sub>	Coffee	
Active Carbon		Caffeine	
Alcoholic beverages	ROH	Cooking salt	NaCl
Alcohols		Copper sulphate	CuSO <sub>4</sub>
- Primary	RCH <sub>2</sub> OH	Cosmetics	
- Secondary	RR'CHOH	Cresol	CH <sub>3</sub> C <sub>6</sub> H <sub>4</sub> OH
- Tertiary	RR'R'COH	Cresylic acid	CH <sub>3</sub> C <sub>6</sub> H <sub>4</sub> COOH
Aldehydes	RCHO	Cyclo hexane	C <sub>6</sub> C <sub>11</sub> OH
Alum solution	KAl(SO <sub>4</sub> ) <sub>3</sub>	Cyclo hexanol	C <sub>6</sub> C <sub>12</sub>
Aluminium sulphate	Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub>	Detergents	
Amides	RCONH <sub>2</sub>	Dextrose	C <sub>6</sub> H <sub>12</sub> O <sub>6</sub>
Amines		Digitonine	C <sub>56</sub> H <sub>92</sub> O <sub>29</sub>
- Primary	RNH <sub>2</sub>	Dimethyl formamide	HCON(CH <sub>3</sub> ) <sub>2</sub>
- Secondary	(RR')NH	Dioxane	C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>
- Tertiary	(RR'R'')N	Dulcete	C <sub>6</sub> H <sub>8</sub> (OH) <sub>6</sub>
Ammonia	NH <sub>4</sub> OH	Dyes, paints	
Ammonium chloride	NH <sub>4</sub> Cl	Dimethyl sulphoxide	(CH <sub>3</sub> ) <sub>2</sub> SO
Ammonium sulphate	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	Earth	
Ammonium thiocyanate	NH <sub>4</sub> SCN	Ethanol	C <sub>2</sub> H <sub>5</sub> OH
Amyl acetate	CH <sub>3</sub> COOC <sub>5</sub> H <sub>11</sub>	Ethyl Ether	C <sub>4</sub> H <sub>10</sub> O
Amyl alcohol	C <sub>5</sub> H <sub>11</sub> OH	Ethyl acetate	CH <sub>3</sub> COOC <sub>2</sub> H <sub>5</sub>
Aniline	C <sub>6</sub> H <sub>5</sub> NH <sub>2</sub>	Ethylene chloride	
Animal fats		(di-chloro-ethylene)	C <sub>2</sub> H <sub>2</sub> Cl <sub>2</sub>
Animal feedstock		Fats	
Arabinose	C <sub>5</sub> H <sub>10</sub> O <sub>5</sub>	Feedstuffs	
Ascorbic acid	C <sub>6</sub> H <sub>8</sub> O <sub>6</sub>	Foodstuffs	
Asparagic acid	C <sub>4</sub> H <sub>7</sub> O <sub>4</sub> N	Formaldehyde	HCHO
Asparagine	C <sub>4</sub> H <sub>8</sub> N <sub>2</sub> O <sub>3</sub>	Formic acid up to 10%	HCOOH
Baking yeast		Fructose	C <sub>6</sub> H <sub>12</sub> O <sub>6</sub>
Barium chloride	BaCl <sub>2</sub>	Galactose	
Barium sulphate	BaSO <sub>4</sub>	Gelatin	
Benzaldehyde	C <sub>6</sub> H <sub>5</sub> CHO	Glacial acetic acid	CH <sub>3</sub> COOH
Benzene	C <sub>6</sub> H <sub>6</sub>	Glucose	C <sub>6</sub> H <sub>12</sub> O <sub>6</sub>
Benzidine	C <sub>12</sub> H <sub>12</sub> N <sub>2</sub>	Glycerine	CH <sub>2</sub> OH.CHOH.CH <sub>2</sub> OH
Benzonic acid	C <sub>6</sub> H <sub>5</sub> COOH	Glyocol	NH <sub>2</sub> CH <sub>2</sub> COOH
Biogel		Ethylene Glycol	HOCH <sub>2</sub> .CH <sub>2</sub> OH
Blood		Graphite	
Blood test seren		Gypsum	CaSO <sub>4</sub> ·2(H <sub>2</sub> O)
Boric acid	H <sub>3</sub> BO <sub>3</sub>	Heparine	C <sub>26</sub> H <sub>42</sub> N <sub>2</sub> O <sub>37</sub> S <sub>5</sub>
Butyl acetate	CH <sub>3</sub> COOC <sub>4</sub> H <sub>9</sub>	Heptanol	C <sub>7</sub> H <sub>15</sub> OH
Butyl alcohol	C <sub>4</sub> H <sub>9</sub> OH	Hexane	C <sub>6</sub> H <sub>14</sub>
Cadmium acetate	Cd(CH <sub>3</sub> COO) <sub>2</sub>	Hexanol	C <sub>6</sub> H <sub>13</sub> OH
Cadmium sulphate	CdSO <sub>4</sub>	Hydroquinone	HOC <sub>6</sub> H <sub>4</sub> OH
Calcium carbonate (chalk)	CaCO <sub>3</sub>	Hypophysine	
Calcium chloride	CaCl <sub>2</sub>	Immersion oil	
Calcium hydroxide	Ca(OH) <sub>2</sub>	Inorganic salts and their mixtures	
Calcium nitrate	Ca(NO <sub>3</sub> ) <sub>2</sub>	Inosite	C <sub>6</sub> H <sub>6</sub> (OH) <sub>6</sub>
Cane sugar	C <sub>12</sub> H <sub>22</sub> H <sub>11</sub>	Insecticides	
Carbol-xylene	C <sub>6</sub> H <sub>5</sub> OH-C <sub>6</sub> H <sub>4</sub> (CH <sub>3</sub> ) <sub>2</sub>	Iso-proponal	C <sub>3</sub> H <sub>6</sub> OH
Carbolic acid	C <sub>6</sub> H <sub>5</sub> OH	Lactic acid	CH <sub>3</sub> CHOHCOOH
Carbon tetra chloride	CCl <sub>4</sub>	Lactic sugar	C <sub>12</sub> H <sub>22</sub> O <sub>11</sub>
Caseine		Lactose	C <sub>12</sub> H <sub>22</sub> O <sub>11</sub>
Castor oil		Lead acetate	Pb(CH <sub>3</sub> COO) <sub>2</sub>
Caustic soda up to 10%	NaOH	Lead nitrate	Pb(NO <sub>3</sub> ) <sub>2</sub>
Cedar wood oil, thickened		Levulose	C <sub>6</sub> H <sub>12</sub> O <sub>6</sub>
Chloral hydrate	CCl <sub>3</sub> CH(OH) <sub>2</sub>	Lipstick	
Chlorobenzene	CHCl <sub>3</sub>	Lithium Hydroxide up to 10%	LiOH
Cholesterol	C <sub>27</sub> H <sub>45</sub> OH	Lithium carbonate	Li <sub>2</sub> CO <sub>3</sub>



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Magnesium carbonate	MgCO <sub>3</sub>	Salicylic aldehyde	C <sub>6</sub> H <sub>4</sub> OHCHO
Magnesium chloride	MgCl <sub>2</sub>	Soap	
Magnesium hydroxide	Mg(OH) <sub>2</sub>	Sodium acetate	CH <sub>3</sub> COONa
Magnesium sulphate	MgSO <sub>4</sub>	Sodium bisulfite	NaHSO <sub>3</sub>
Maltose	C <sub>12</sub> H <sub>22</sub> O <sub>11</sub>	Sodium carbonate	Na <sub>2</sub> CO <sub>3</sub>
Mannite	C <sub>6</sub> H <sub>14</sub> O <sub>6</sub>	Sodium chloride	NaCl
Mannose	C <sub>6</sub> H <sub>12</sub> O <sub>6</sub>	Sodium citrate	Na <sub>3</sub> C <sub>6</sub> H <sub>5</sub> O <sub>7</sub> ·5H <sub>2</sub> O
Methylene chloride		Sodium di-ethyl-barbiturate	NaC <sub>8</sub> H <sub>11</sub> N <sub>2</sub> O <sub>3</sub>
Dichloromethane	CH <sub>2</sub> Cl <sub>2</sub>	Sodium carbonate	Na <sub>2</sub> CO <sub>3</sub>
Mercury	Hg	Sodium bicarbonate	NaHCO <sub>3</sub>
Mesoinosite	C <sub>6</sub> H <sub>6</sub> (OH) <sub>6</sub>	Sodium hyposulphite	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>
Methanol	CH <sub>3</sub> OH	Sodium nitrate	NaNO <sub>3</sub>
Milk		Sodium phosphate	Na <sub>3</sub> PO <sub>4</sub>
Mineral oils		Sodium silicate	Na <sub>2</sub> SiO <sub>3</sub>
Mineral salts		Sodium sulfate	Na <sub>2</sub> SO <sub>4</sub>
Nail lacquer		Sodium sulfide	Na <sub>2</sub> S
Nail lacquer remover		Sodium sulphite	Na <sub>2</sub> SO <sub>3</sub>
Nickel sulphate	NiSO <sub>4</sub>	Sodium tartrate	Na <sub>2</sub> C <sub>4</sub> H <sub>4</sub> O <sub>6</sub>
Nicotine	C <sub>10</sub> H <sub>14</sub> N <sub>2</sub>	Sodium Thiosulphate	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>
Nonne-Apet reagent		Soot	
Octanol (Octylacohol)	C <sub>8</sub> H <sub>17</sub> OH	Sorbite	C <sub>6</sub> H <sub>14</sub> O <sub>6</sub>
Ointments		Standard I-agar nutrient	
Oleic acid	CH <sub>3</sub> (CH <sub>2</sub> ) <sub>7</sub> CH:CH(CH <sub>2</sub> ) <sub>7</sub> COOH	Standard II-agar nutrient	
Olive Oil		Standard I-bouillon nutrient	
Organic solvents		Standard II-bouillon nutrient	
P-amino aceto-phenone	NH <sub>2</sub> ·C <sub>6</sub> H <sub>4</sub> COCH <sub>3</sub>	Starch	
P-nitro phenol	C <sub>6</sub> H <sub>4</sub> NO <sub>2</sub> OH	Starch common salt solution	
Pandy's reagent		Stearic acid	C <sub>17</sub> H <sub>35</sub> COOH
Paraffin alkane hydrocarbons	C <sub>n</sub> H <sub>2n+2</sub>	Styrene	C <sub>6</sub> H <sub>5</sub> ·CH:CH <sub>2</sub>
Paraffin oil	C <sub>15</sub> H <sub>11</sub> ClO <sub>7</sub>	Sugar & sugar derivatives	C <sub>12</sub> H <sub>22</sub> O <sub>11</sub>
Pentanol	C <sub>5</sub> H <sub>11</sub> CH	Sulphur	S
Petroleum benzine (petrol)		Talcum	3MgO, 4SiO <sub>2</sub> , H <sub>2</sub> O
Percaulic acid	HClO <sub>4</sub>	Tannin	C <sub>76</sub> H <sub>52</sub> O <sub>46</sub>
Phenolphthaleine	C <sub>20</sub> H <sub>14</sub> O <sub>4</sub>	Tartaric acid	C <sub>4</sub> H <sub>6</sub> O <sub>6</sub>
Phenol & phenolic derivates	C <sub>6</sub> H <sub>5</sub> OH	Tea	
Polishes (creams & waxes)		Terpentine	
Potassium aluminium sulphate	KAl(SO <sub>4</sub> ) <sub>2</sub>	Tetra hydro furan	C <sub>4</sub> H <sub>8</sub> O
Potassium bromate	KBr	Tertraline	C <sub>10</sub> H <sub>12</sub>
Potassium bromide	KBrO <sub>3</sub>	Thiourea	NH <sub>2</sub> CSNH <sub>2</sub>
Potassium carbonate	K <sub>2</sub> CO <sub>3</sub>	Thymol	C <sub>10</sub> H <sub>14</sub> O
Potassium chloride	KCl	Thymol buffer solution	
Potassium hexa cyano ferrate	K <sub>4</sub> Fe(CN) <sub>6</sub>	Toluene	C <sub>6</sub> H <sub>5</sub> CH <sub>3</sub>
Potassium hydroxide up to 10%	KOH	Trehalose	C <sub>12</sub> H <sub>22</sub> O <sub>11</sub>
Potassium iodate	KIO <sub>3</sub>	Trichorethylene	C <sub>2</sub> HCl <sub>3</sub>
Potassium nitrate	KNO <sub>3</sub>	Trypsin	
Potassium sodium tartrate	KNaC <sub>4</sub> H <sub>4</sub> O <sub>6</sub>	Tryptophane	C <sub>11</sub> H <sub>12</sub> O <sub>2</sub> N <sub>2</sub>
Potassium sulphate	K <sub>2</sub> SO <sub>4</sub>	Urease	
Potassium tartrate	K <sub>2</sub> C <sub>4</sub> H <sub>4</sub> O <sub>6</sub>	Uric acid	C <sub>5</sub> H <sub>4</sub> N <sub>4</sub> O <sub>3</sub>
Potato starch		Uric acid solution	CO(HN <sub>2</sub> ) <sub>2</sub>
Potter's reagent		Urine	
Propanol	C <sub>3</sub> H <sub>7</sub> OH	Vanilline	C <sub>8</sub> H <sub>8</sub> O <sub>3</sub>
1.2-propylene glycol	CH <sub>3</sub> CHOH <sub>2</sub> OH	Vaseline	
Pyridine	C <sub>5</sub> H <sub>5</sub> N	Water	H <sub>2</sub> O
Quinine		Water colours	
Rafinose	C <sub>18</sub> H <sub>32</sub> O <sub>15</sub> ·5H <sub>2</sub> O	Xylene	(CH <sub>3</sub> ) <sub>2</sub> C <sub>6</sub> H <sub>4</sub> Yeasts
Rhamnase	C <sub>6</sub> H <sub>12</sub> O <sub>5</sub> ·H <sub>2</sub> O	Zinc chloride	ZnCl <sub>2</sub>
Rochelle salt	KNaC <sub>4</sub> H <sub>4</sub> O <sub>6</sub> ·4H <sub>2</sub> O	Zinc sulphate	ZnSO <sub>4</sub>
Saccharose = raw sugar			
Salicylic acid	C <sub>6</sub> H <sub>4</sub> OHCOOH		

#### SECTION B

The decorative surface of LABGRADE is not functionally altered by the contact of the chemicals listed here below (especially if in a liquid state), provided that within 10 minutes after the accidental contact the surface area in question is being tamponed with a dry rag, subsequently cleaned with a water dampened rag then rinsed with water and lastly dried by an absorbent paper.

Chemical	Gross chemical formula		
Aluminium chloride	AlCl <sub>3</sub>	Arsenic acid up to 10%	H <sub>3</sub> AsO <sub>4</sub>
Amino-sulphonic acid up to 10%	NH <sub>2</sub> SO <sub>3</sub> H	Sodium hydroxide over 10%	NaOH
Ammonium hydrogen sulphate	NH <sub>4</sub> ·HSO <sub>4</sub>	Crystal violet (gentian violet)	C <sub>25</sub> H <sub>30</sub> CIN <sub>3</sub>
Aniline dyes		Esbach's reagent	C <sub>16</sub> H <sub>16</sub> N <sub>3</sub> CIS

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Ferric chloride	FeCl <sub>3</sub>	Oxalic acid	COOH.COOH
Ferrous chloride	FeCl <sub>2</sub>	Picric acid	C <sub>6</sub> H <sub>2</sub> OH(NO <sub>2</sub> ) <sub>3</sub>
Fuchsine	C <sub>19</sub> H <sub>19</sub> N <sub>3</sub> O	Potassium chromate	K <sub>2</sub> CrO <sub>4</sub>
Hair dyeing & bleaching agents		Potassium dichromate	K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub>
Hydrochloric acid up to 10%	HCl	Potassium hydrogen sulphate	KHSO <sub>4</sub>
Inorganic acids up to 10%		Potassium hydroxide over 10%	KOH
Iodine	I <sub>2</sub>	Potassium iodine	KI
Lithium hydroxide over 10%	LiOH	Potassium permanganate	KMnO <sub>4</sub>
Mercuric chloride solution	HgCl <sub>2</sub>	Sodium hydrogen sulphate	NaHSO <sub>4</sub>
Mercuric dichromate	HgCr <sub>2</sub> O <sub>7</sub>	Sodium hypochlorite	NaClO
Millon's reagent	Hg(NO <sub>3</sub> ) <sub>2</sub>	Sulphuric acid up to 10%	H <sub>2</sub> SO <sub>4</sub>
Nylander's reagent			

**SECTION C**

In case of contact the following substances must be immediately removed from the LABGRADE decorative surface since they can irreparably damage it even after a short contact time of few seconds.

<b>Chemical</b>	<b>Gross chemical formula</b>		
Amino sulphonic acid * <sup>3</sup>	NH <sub>2</sub> SO <sub>3</sub> H	Chrome – sulphuric acid	K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub> +H <sub>2</sub> SO <sub>4</sub>
Inorganic acids * <sup>3</sup> e.g.		1 part potassium dichromate; 1.5 parts water; 18.4 parts concentrated sulfuric acid (95.5 - 96.5%)	
Aqua regia	HNO <sub>3</sub> +HCl molar ratio 1:3	Hydrochloric acid	HCl
Arsenic acid	H <sub>3</sub> AsO <sub>4</sub>	Hydrobromic acid	HBr

\*<sup>3</sup> In concentration higher than 10%

**SECTION D**

Repeated exposures to corrosive vapours of the following listed chemicals lead to a functional and aesthetic damage of LABGRADE decorative surface.

<b>Chemical</b>	<b>Gross chemical formula</b>
Acid Fumes	
Bromine	Br <sub>2</sub>
Chlorine	Cl <sub>2</sub>
Nitrous fumes	N <sub>x</sub> O <sub>y</sub>
Sulphur dioxide	SO <sub>2</sub>