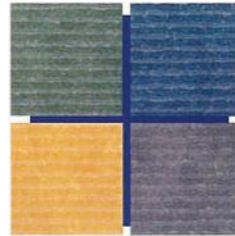
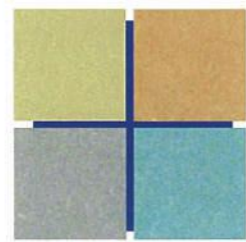


HIGH PRESSURE DECORATIVE LAMINATE

The DUROPAL decorative range offers essential solutions necessary for creative design: colourful plain finishes, natural-looking wood and stone reproductions as well as trend-setting fantasy decors.



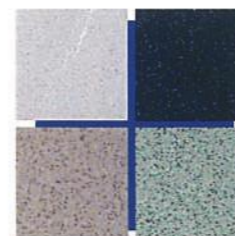
Modern surfaces emphasise both feel and texture and highlight the natural effect of the decors.



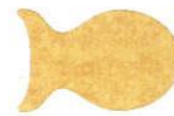
Designers, Architects and

Cabinetmakers require an increasingly sophisticated range of

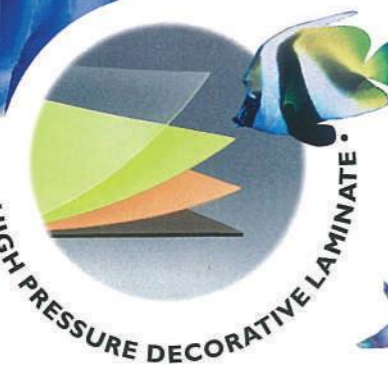
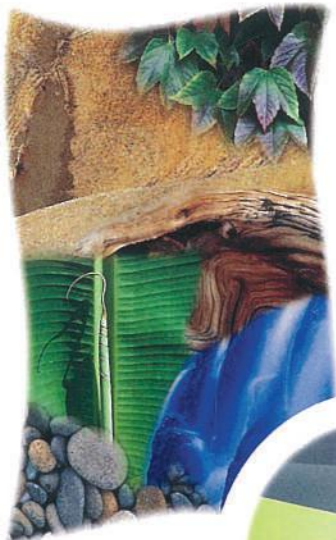
products for consumers who demand innovative and individual products.



DUROPAL High Pressure Decorative Laminate offers Colours for the Senses.

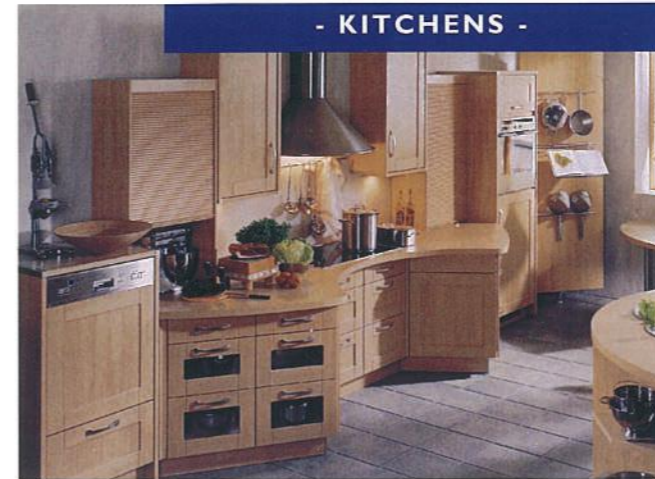


DUROPAL



DUROPAL AT A GLANCE

- KITCHENS -



COLOURS FOR THE SENSES

Vibrant Colours and Designer Shades From Europe? Duropal blends sophisticated technology and precise manufacturing processes with designer shades and colours to achieve the very best High Pressure Decorative Laminate available anywhere in the world.

DUROPAL HIGH PRESSURE DECORATIVE LAMINATES

Duropal's total range of High Pressure Decorative Laminates are visual inspirations of colour that work in harmony to provide solutions for all your interior design requirements. Their beauty enhances workplaces, bathrooms, kitchens, in fact any application you desire and their superior manufacture guarantees quality, durability and lasting protection.

INTERNATIONAL STANDARDS

Duropal High Pressure Decorative Laminate not only meets, but exceeds International Standards: ISO45861 BS3784 EN438 (DIN68602), AS/NZS 1859.22 1997

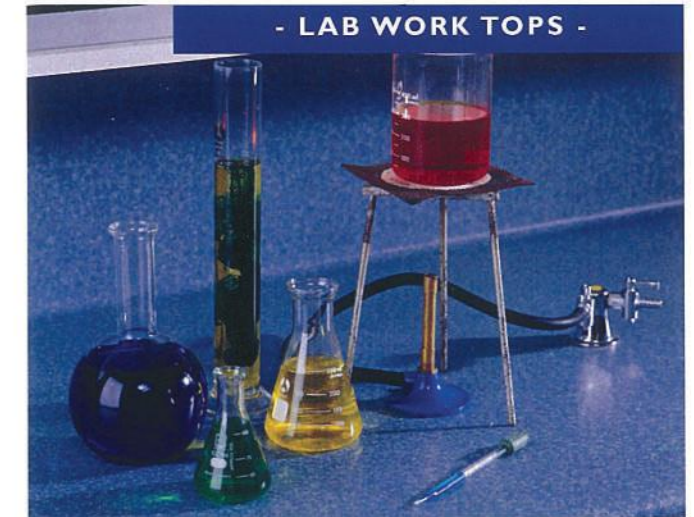
HIGH TECHNOLOGY HIGH RESISTANCE

Duropal High Pressure Decorative Laminates (HPDL) are made from several layers of craft paper impregnated with melamine resin. This unique and superior process guarantees durability and exceptional resistance to "wear and tear", and ensures lasting protection from the penetration of chemicals and temperature extremes.

HIGH CHEMICAL TOLERANCE

Duropal's resistance to many damaging chemicals, when compared to the complete range of both standard and postform high pressure laminates, is regarded superior to all other high pressure decorative laminates (HPDL). That is why Duropal HPDL is continually specified for commercial, industrial and laboratory applications especially when the prerequisite is an ability to withstand harsh chemicals on a daily basis, while incorporating postformability.

- LAB WORK TOPS -



- RETAIL SHOPFITTING -



HIGH FASHION HIGH DESIGN

Duropal is Europe's largest manufacturer and market leader of postform grade (NFS) High Pressure Decorative Laminate. They continue to develop new and exciting additions to their international range of colours and designs.

Duropal's Australian Colours for the Senses incorporates the very latest trends in plain colours, fantasy decors, stones, granites and wood reproductions, while its fashionable decors, including recent releases - Myriads, Aqua, Terra, Ocean and Sandstones express what is best from Europe.

Comparison of International Standards and DUROPAL properties for high pressure decorative laminates (HPDL)

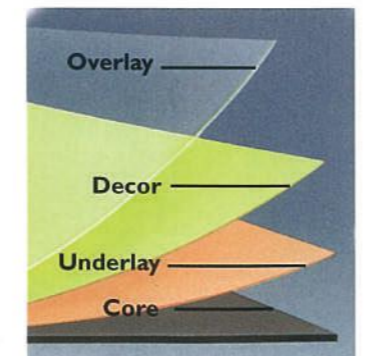
PROPERTY	Test method see EM438 AS/M237	Property or attribute	Units (max./min.)	HORIZONTAL APPLICATION					VERTICAL APPLICATION			
				DUROPAL Test Results 0.8mm		OTHER BRANDS			DUROPAL Test Results 0.5mm		OTHER BRANDS	
				Standard, postforming and fire-retardant grades		Standard Grades	Postforming	Fire retardant	Standard and postforming grades		Standard Grades	Postforming
				DUROPAL High Gloss matt woodgrains (FR+LG+UL) Perfect Finish (PF)	All other DUROPAL Surface Textures	Any Surface Texture			DUROPAL Woodgrains & § Perfect finish	All other DUROPAL Surface Textures	Any Surface Texture	
Appearance		Appearance		D	D	D	D	D	D	D	D	D
Resistance to surface wear (Abrasion)		Plain colours decor/wood	Revolutions, min.	600	600	350	300	350	600	600	150	150
				400	400	350	300	350	400	400	150	150
Resistance to Impact	(alternative)*	Spring force	N min	25	25	25	20	25	20	20	20	15
Resistance to scratching	(C)	load	N min.	2.5°(Duropal test)	2.5°(Duropal test)	C	C	C	2.5°(Duropal test)	2.5°	C	C
Resistance to stains		appearance		G	G	G	G	G	G	NO CHANGE	G	G
Resistance to colour change in artificial light	(alternative)*	wool standard	min.	6	6	6	6	6	6	6	6	6
Resistance to cigarette burns	(alternative)*	appearance		H	NO CHANGE	H	H	H	H	NO CHANGE	H	X
Formability	(alternative)*	radius	max.mm	8	8	X	19	X	5	5	X	13
Reaction to fire	(C)			Q	Q	X	X	Q	X	X	X	X

* The IS recommended test has been selected where alternative test may be used
 C Under consideration (N.B. DUROPAL has items under consideration)
 D No defects shall be visible from a viewing distance of 2m
 F No deterioration other than loss of gloss shall be visible to the naked eye.
 G No blistering or discolouration shall show at the final examination.
 H No deterioration other than slight loss of gloss and slight permanent brown staining shall be visible to the naked eye.
 N Newton.
 Q Material shall meet specific requirements for reaction to fire in its application in the country of use.
 X No requirement is specified.

- HEAT RESISTANCE
- IMPACT RESISTANCE
- CHEMICAL RESISTANCE
- STAIN RESISTANCE
- GRAFFITI RESISTANCE



Laminate Breakdown



Product Specification	
Sizes:	ISO486 AS/M237
	2050mm x 1300mm
	2050mm x 950mm
	2050mm x 650mm
	4100mm x 1300mm
	4100mm x 950mm
	4100mm x 650mm
	4100mm x 340mm
	4100mm x 150mm
Thickness:	0.8mm
Postformable:	Complete Range

DUROPAL High Pressure Laminate Postforming Grade / NFS March 20, 1991 Ref: 410059 This report has been prepared by Curtin Consultancy Services, University of Western Australia - A. Zurhaar BAppSc. GradDipChem WAIT MAppSc (Curtin) MRACI C CHEM

Samples of the Laminate were to be exposed to a number of chemicals and the effects of exposure noted. The chemicals chosen were considered to be those most likely to come into contact with the Laminates when used in laboratory environments and those which would be the most aggressive to this particular type of product. Three series of chemical tests were performed on the Laminate. The first two were an examination of the effects of spillage of a chemical onto the Laminate. The third was an examination of the effects of prolonged contact. This was accomplished by sample immersion for a defined period of time.

Chemical resistance is generally affected by both temperature and the length of time of chemical contact with the surface. The results of these tests should provide a comprehensive assessment of the chemical resistance afforded by the Laminate under extreme conditions. A thermal resistance test was also requested. A sample of the Laminate was to be exposed to both reflected heat and direct heat from the Bunsen Burner to assess the resistance to heat and flames.

1.2 SPILLAGE/SPLASH TESTS

Each of the test chemicals were "spilled" onto samples of the Laminate, left for 10 minutes and the effects noted. The tests were completed with Reagents at room temperature and also at 50 degrees.

This test sequence should simulate the Laminate's resistance to short term exposure of hot and cold Reagents. This type of exposure is commonly encountered in accidental spillages where removal and washing is not delayed. The results of these tests are presented in the following tables.

Reagents at room temperature

Reagents	Observation
Bleach (12% avail Chlorine)	No effect/deterioration of laminate
Brine	No effect/deterioration of laminate
Sulphuric Acid (Dilute - 1M)	No effect/deterioration of laminate
Hydrochloric Acid (Dilute - 1M)	No effect/deterioration of laminate
Ammonium Hydroxide (Dilute - 1M)	No effect/deterioration of laminate
Sodium Hydroxide (Dilute - 1M)	No effect/deterioration of laminate
Sulphuric Acid (Concentrated)	Some discolouration (yellow staining) loss of shine, no visual structural change.
Hydrochloric Acid (Concentrated)	No effect/deterioration of laminate
Nitric Acid (Concentrated)	Definite loss of shine, yellow staining no visible structural deterioration.
Ammonia (Concentrated)	No effect/deterioration of laminate
Sodium Hydroxide (Concentrated)	No effect/deterioration of laminate
Solvents	
Ketone (Acetone)	No effect/deterioration of laminate
Alcohol (Ethanol)	No effect/deterioration of laminate
Aromatic (Toluene)	No effect/deterioration of laminate
Chlorinated (Dichloroethane)	No effect/deterioration of laminate
Petrol	No effect/deterioration of laminate
Diesel	No effect/deterioration of laminate

1.3 IMMERSION TESTS

Samples of the Laminate were partially immersed in each of the chemicals for a period of one week. The solvents were continually replenished to compensate for losses due to evaporation. When complete, the samples were removed, washed and examined. The results of these tests are presented in the Tables below.

Reagents	Observation
Bleach (12% avail Chlorine)	No effect/deterioration of laminate
Brine	No effect/deterioration of laminate
Sulphuric Acid (Dilute - 1M)	Bubbling of surface, loss of shine
Hydrochloric Acid (Dilute - 1M)	Bubbling, brittle in bubbled area
Ammonium Hydroxide (Dilute - 1M)	No effect/deterioration of laminate
Sodium Hydroxide (Dilute - 1M)	No effect/deterioration of laminate
Sulphuric Acid (Concentrated)	Severe deterioration, loss of shine, very brittle, crumbles in hand.
Hydrochloric Acid (Concentrated)	Bubbling of surface, loss of shine
Nitric Acid (Concentrated)	Severe deterioration, discolouration (yellow) bubbling of surface
Ammonia (Concentrated)	No effect/deterioration of laminate
Sodium Hydroxide (Concentrated)	No effect/deterioration of laminate
Solvents	
Ketone (Acetone)	No effect/deterioration of laminate
Alcohol (Ethanol)	No effect/deterioration of laminate
Aromatic (Toluene)	No effect/deterioration of laminate
Chlorinated (Dichloroethane)	No effect/deterioration of laminate
Petrol	No effect/deterioration of laminate
Diesel	No effect/deterioration of laminate

Reagents at 50 degrees

Reagents	Observation
Bleach (12% avail Chlorine)	No effect/deterioration of laminate
Brine	No effect/deterioration of laminate
Sulphuric Acid (Dilute - 1M)	No effect/deterioration of laminate
Hydrochloric Acid (Dilute - 1M)	No effect/deterioration of laminate
Ammonium Hydroxide (Dilute - 1M)	No effect/deterioration of laminate
Sodium Hydroxide (Dilute - 1M)	No effect/deterioration of laminate
Sulphuric Acid (Concentrated)	Discoloured (blackened on contact), structural damage to surface evident. Chemical reaction has occurred.
Hydrochloric Acid (Concentrated)	No effect/deterioration of laminate
Nitric Acid (Concentrated)	Severe loss of shine. No visible structural deterioration.
Ammonia (Concentrated)	No effect/deterioration of laminate
Sodium Hydroxide (Concentrated)	No effect/deterioration of laminate
Solvents	
Ketone (Acetone)	No effect/deterioration of laminate
Alcohol (Ethanol)	No effect/deterioration of laminate
Aromatic (Toluene)	No effect/deterioration of laminate
Chlorinated (Dichloroethane)	No effect/deterioration of laminate
Petrol	No effect/deterioration of laminate
Diesel	No effect/deterioration of laminate

1.4 EXPOSURE TO REFLECTED & DIRECT HEAT FROM BUNSEN BURNER

A sample of the Laminate was placed under the base of a lit Bunsen Burner that was placed under a tripod that had been covered with a ceramic mat. Exposure was continued for two hours.

This situation is very common in laboratories and should test the Laminate's resistance to reflected heat. A further sample of Laminate was placed directly into the flame of the Bunsen and held there for 5-30 seconds. Upon completion of these tests the samples were removed and examined.

There were no signs of deterioration of the Laminate as a consequence of reflected heat. The sample that was placed directly into the flame for 5 seconds bubbled at the surface but did not penetrate the coating. The sample that was held in the flame for 10 second showed the beginnings of charring on the bubbles that formed. Damage to surface was evident but not to the extent that would require replacement. The sample that was held in the flame for 30 seconds showed total destruction of the surface and would need replacement.

1.5 SUMMARY

The DUROPAL Laminate showed excellent resistance to chemical spillages. The only Reagents that significantly deteriorate the Laminate were concentrated Sulphuric Acid and Nitric Acid. This was fully expected as no polymer based Laminate can withstand these acids. Sulphuric and Nitric Acid, whether diluted or concentrated, attack the polymer structure that forms the backbone of the Laminate and destroys that structure. This effect would occur in all Laminates that are chemically similar to this one.

No other Reagents, whether diluted or concentrated, caused any serious defects in the Laminate. The results of any application, however of concentrated Acids such as Nitric and Sulphuric are very dependent on residence time and should be avoided if possible.

Organic solvents did not effect the Laminate and an excellent resistance to these types of Reagents was found. The heat resistance tests performed on the Laminate showed no signs of deterioration from reflected heat after two hours. The direct exposure to naked flame was found to char the Laminate with the extent of damage very dependent on residence time in the flame. As a general guide, flames or ignited solvents that are extinguished or removed in less than 30 seconds (ie immediately) will not cause the surface to have to be replaced.

HOW TO SPECIFY

When specifying Duropal Laminate for chemical resistant applications, specifications should be stated as follows;
 "Duropal Chemical Resistant Postform Grade High Pressure Decorative Laminate (HPDL)
 (Sheet Size 4100 x 1300mm x 0.8mm Colour....., Reference No.....)
 As the choice is from all 128 colours the specification is made easy.