

Duralite™

Product Def.

Thermosetting polyester resin containing curing agents, ultra violet inhibitors, colour brighteners and reinforcing glass fibres, producing embedded signs in rigid sheet form, from 1 – 5mm thick.



pryorsign

t 01709 700 408
f 01709 532 745
e sales@pryorsign.com
w www.pryorsign.com

Unit 3a, Denby Way, Hellaby,
Rotherham, South Yorkshire S66 8HR.
Registered in England No. 3794781
Registered Office: Brunel Industrial Estate, Blyth Road, Doncaster DN11 8LA.
A Division of Allsigns International Ltd.



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Technical Specification

1

Thermal movement:	Coefficient of heat expansion
mm per °C:	18 x 10 ⁻⁶
Tensile strength:	20,000 psi
Compression strength:	20,000 psi
Flexible strength:	30,000 psi
Impact strength:	15 lbs/inch – notched
Barcol hardness:	70
Modulus of elasticity:	20,000 psi
Dielectric strength:	350 volts per 1/1000 inch

2

Moisture pick-up – water absorption – 24 hours at 20°C = 0.3%

3

Biological resistance to attack by micro-organisms, fungi, vermin, insects and mildew

Dimensions of Duralite Signs

The maximum size of panel that can be made in one piece is 3500 x 1220mm. Large signs in 'Duralite' can be made by piecing together or butting end to end. A noteworthy point is that the coefficient of linear expansion of 'Duralite' is one third that of acrylic, thus helping to avoid the unsightly gaps at join lines (large signs).

Weight of Duralite

Thickness:	0.8mm	1mm	1.5mm	2.0mm	3.0mm
Grammes/square metre:	937g	1,250g	1,875g	2,500g	3,750g

The fact that 'Duralite' is five times stronger than its equivalent weight of acrylic sheet means that signs can be made much thinner than acrylic. This eases the problem of lifting heavy signs into position. To compare, acrylic sheet used for larger signs, i.e. 6mm thick, weighs 6,800 grammes per square metre, when it could be replaced by 3mm thick 'Duralite' at 3,750 grammes.

Chemical Resistance

This is one of 'Duralites' strong points. The results of actual immersion in the various chemicals are listed in Table 1. This is a drastic treatment as the worst condition that might apply is exposure to chemical fumes. The results shown below are from actual tests in Pryorsign's laboratory.

Table 1

Chemical	Immersion Time	Effect on Duralite
Perchloric acid:	24 hours	No effect
Hydrochloric acid:	12 hours	No effect
Acetic acid:	24 hours	No effect
Benzene:	24 hours	No effect
Acetone:	1 hour	No effect
Toluene:	24 hours	No effect
Glycerol:	24 hours	No effect
Naptha:	24 hours	No effect
Methylated spirit:	24 hours	No effect
Butoxyethanol:	24 hours	No effect
Tritolyl Phosphate:	24 hours	No effect
Sodium Chromate:	24 hours	No effect
Ammonium Persulphate: (10%)	24 hours	No effect
Oxalic acid:	24 hours	No effect
Dimethyl Glyoxime:	24 hours	No effect
Acid Ferric Chloride:	24 hours	No effect
High active detergent:	24 hours	No effect

Another plus point for 'Duralite' is its resistance to the solvents that may be required to clean off the graffiti. Table 2 opposite lists most of the available sign materials, together with their resistance to a range of chemicals/solvents.

Table 2 [Resistance of Sign Materials to Chemicals/Solvents]

	Acetone	Benzene	Naptha	Toluene	Genklene	Iso Pro	Mek
Duralite	No action	No action	No action	No action	No action	No action	No action
Enamel on aluminium	Enamel attacked	No action	No action	No action	No action	Print attacked	Enamel attacked
Printed vinyl	Surface attacked (print removed)	Slight action	Slight action	Print attacked	Print attacked	No action	Surface attacked (print removed)
GRP gel coat	No action	No action	No action	No action	No action	No action	No action
Print on rigid vinyl	Surface attacked (print removed)	Slight action	Print attacked	Print attacked	Print attacked	No action	Surface attacked (print removed)
Acrylic	No action	No action	No action	No action	No action	No action	No action
Polycarbonate	Stained (softened)	Attacked	Attacked (softened)	Attacked (softened)	No action	No action	Attacked (softened)

Colour Fastness

'Duralite' signs are suitable for both exterior and interior siting. Signs exposed to sunlight are protected by a special ultra violet inhibitor which is part of the polyester mix. Additional protection is afforded by an ultra violet absorbent layer of glass and polyester resin which overlays the actual sign sheet.

Warranty

Issued as a separate document on request.

Weathering

Rain, seawater and extremes of temperature – present no problems to 'Duralite,' which maintains its physical properties within a range of temperature from -20°C to 80°C. In contrast, acrylic and PVC signs are thermoplastic, i.e. they soften when heated and are very brittle at lower temperatures.

Colour Range

All inks used in the manufacture of 'Duralite' have been specially tested for permeability of the resin mixture and their compatibility with the resin. Most colours can be accurately matched.

Fire Resistance

Unlike acrylic or other thermoplastics like PVC, polystyrene and polyethylene, 'Duralite' does not melt even when heated to the point of flammability. Fire retardant polyester is not normally necessary in signage. However, this could be used if required, on a large batch of signs by prior arrangement. Regular 'Duralite' signage will pass the stubbed cigarette test without any damage to the surface.

Customer Help Notes

Cleaning

'Duralite' surfaces are easily cleaned using a simple soap and hot water solution, using light pressure and with a soft cloth. Care should be taken not to rub in the foreign matter during this process, as this can remove the natural gloss.

Light Scratches

Light scratches and scuffs may be buffed out with a recommended wax polish,* as directed by the manufacturers instructions and Health & Safety data sheets. Please note that very deep scratches should be cleaned, dried and carefully painted in with transparent polyurethane lacquer.*

Graffiti

Aerosols, lacquer, felt tip and crayon marks can be treated with a recommended graffiti remover,* used as directed by the manufacturer's label and Health & Safety data sheets.

Machining

'Duralite' can be machined by all the usual methods of sawing, shearing, drilling, punching and sanding. Cutting tools must be kept sharp and for extensive machining, tungsten carbide cutters are ideal. As 'Duralite' is a thermosetting resin, the generation of heat in cutting does not soften the resin. In comparison, great care has to be exercised when cutting thermoplastic materials such as acrylic, to avoid the generation of heat, thus distorting the sign.

Sign Message

This is always sub-surface and 'Duralite' signs do not readily scratch to the extent that the message is obliterated. If scratched, a white mark appears, which can be made less obvious by an application of our recommended polish (details on request).

Vandal Resistance

'Duralites' resistance to a range of chemicals (see earlier section) and solvents permits the removal of graffiti such as paint, crayon, felt tip pens or any other writing medium. We would recommend however, that graffiti is removed using our recommended cleaner (details on request).

'Duralite' does not shatter when struck by a wide variety of missiles, from bullets to house bricks. A bullet will, of course, penetrate the sign but only a small area around the hole is damaged. Thrown bricks may leave an impact mark but are then likely to bounce off 'Duralite'.

'Duralite' provides a signage material, which is exceedingly difficult for vandals to destroy.

*These products can all be ordered from AllSigns International Ltd.