

Product: POLYsade®

POLYsade®

Class 1a GRP Composite
security and boundary
fencing system



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POLYmer /'pɒlɪmər/

noun CHEMISTRY

a substance which has a molecular structure built up chiefly or completely from a large number of similar units bonded together, e.g. many synthetic organic materials used as plastics or resins

paleSADE /ˌpaɪˈseɪd/

noun

a fence of stakes or railings fixed in the ground, forming an enclosure or defence.
Synonyms: fence, paling, enclosure, defence, barricade, stockade, fortification, bulwark

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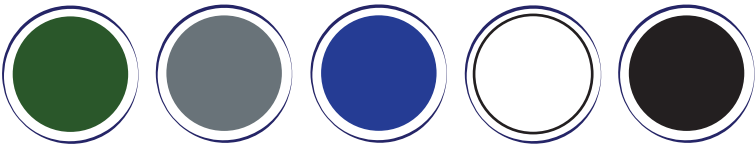
POLYsade®

POLYsade® has been developed to offer an exceptionally long life, good looks and safety from electrical touch potential: All in a Class 1A security fence.

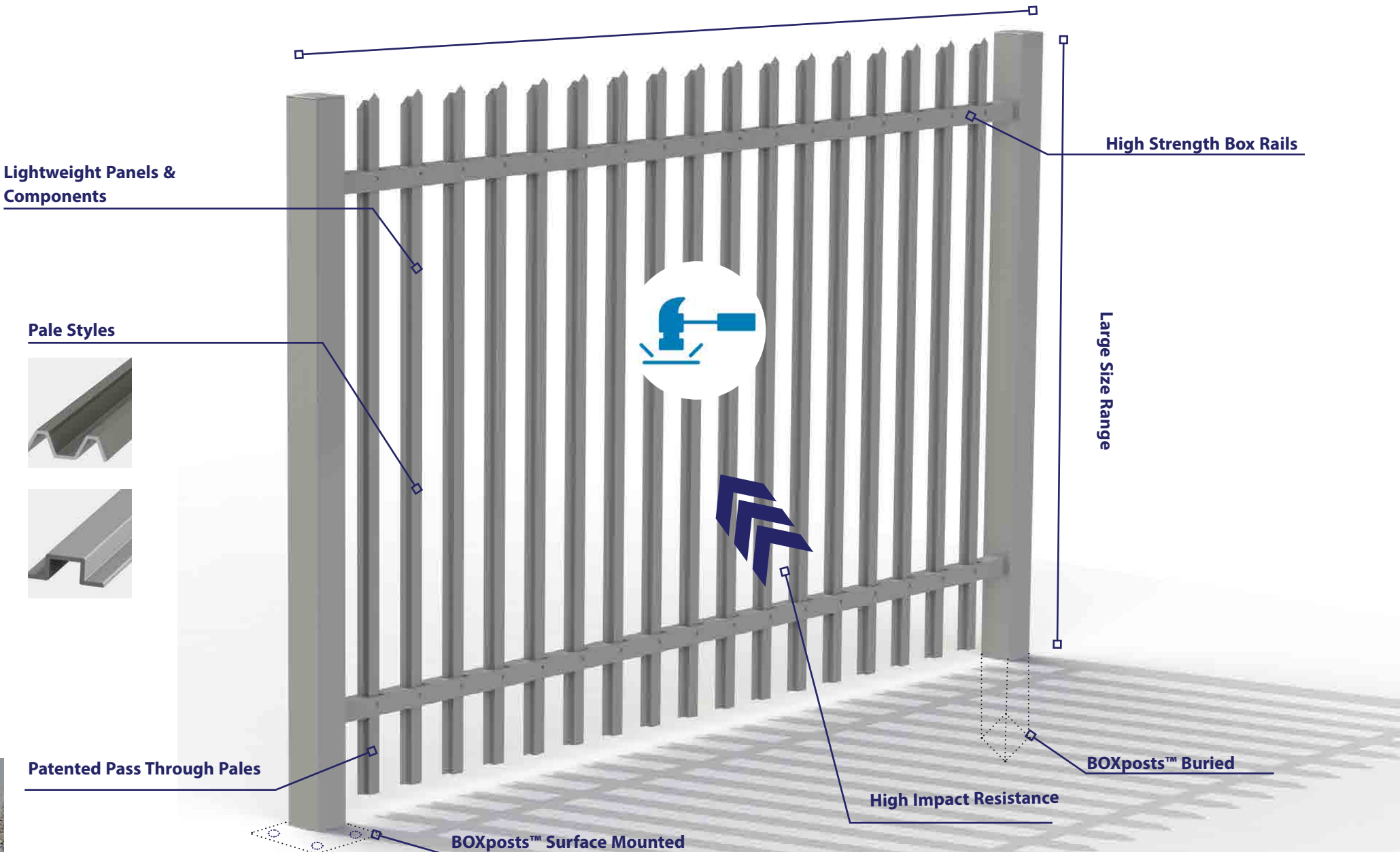
As it is equally at home providing protection to assets, a long life replacement to short lived traditional fencing or in areas where a source of electricity is present; there's no surprise it is widely adopted for use in rail and power networks.

Employing Patented design; POLYsade® delivers a level of security far superior to any other GRP fence and even higher than many steel palisade type fences.

Wide Colour Range



Various Pale Tops



Key Features



Assured

Complies with BS1722:12 2016 testing and sizing requirements. All profiles, CNC machining and assembly made in the UK.



Durable

With a design life in excess of 60 years, POLYsade® is highly impact resistant, will not rot like wood or rust like steel and will keep its' good looks long after traditional alternatives have needed to be replaced.



Secure

Patented Pass through pale to rail design means pales cannot be levered from the rail; a common way of breaching steel palisade fence; especially the case with other GRP alternatives



Non-Conductive

POLYsade® cannot conduct electricity and as such is widely approved and used in the Rail and Power sectors protecting electrical assets or providing alternatives to traditional materials where electricity is nearby.



Lightweight

Factory Pre-made panels can easily be handled by two persons. As such; they can be lifted into place and fixed within seconds: Leading to drastically reduced installation times.



Sloping Site

Due to its' unique design: Panels provide site adjustment for a 6 percent rake in either fall or raise due to a sloping site. As all products are produced in house; more challenging slopes such as rail embankments and steel walls can also be catered for through bespoke produced panels.



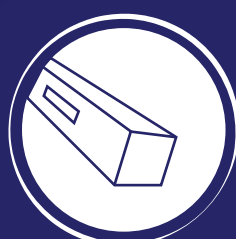
Simple Maintenance

The chances of the odd pale being damaged in its' 60 year design life is good; POLYsade® provides the ability to quickly and easily replace these on site; with PLURA holding all pale height and colour replacements in stock should they be required.



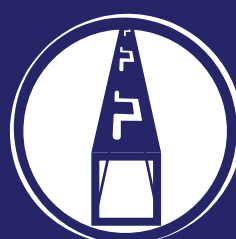
Product Approvals

Already approved by Network Rail Off Track RAMs, CrossRail and various Train Operating Companies (TOCs). In addition to UKPN amongst other Energy Companies & Roayl Mail



Posts

BOXposts™ come pre-slotted for in-line pass through, corner or end post purposes. The BOXpost™ not only provides a stronger post than traditional I-Beams but the finished product is much more attractive. Available in standard buried; with keying post-mix holes or with the QUICKfoot™ for secure, surface mount fixing to hard standings.



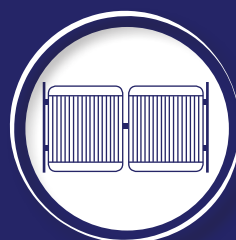
Rails

Box section rails are very strong and deliver a fence that is much stronger and not susceptible to the same creep/sag issues of standard angle rails compared to other budget GRP fences. They also mean fixings are concealed and the finished fence is much more aesthetic.



Options

As with all traditional security and boundary fences; POLYsade® can be supplied with bespoke options, including In-fill panels, Fans, Colours, Heights, Panel widths and intrusion detection.



Gates

Purpose designed pedestrian and vehicular gates with various hinge and locking options are available.



Pales

Two profiles; Top Hat or traditional 'M' are available with many topping designs including standard security 'sharp point', 'rounded' or 'soft flat' being the most popular.



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POLYsade® is a cross between a Class 1A security fence and an aesthetic boundary fence. A viable 'whole of life cost' alternative to traditional steel palisade security fencing as well as traditional painted wooden boundary fences: it offers asset owners the ability to replace these short lived traditional materials with a durable and long lasting product that also brings many other advantages.

Fence panels are factory CNC machined and then assembled into finished panels from high quality Glass Fibre re-enforced Polymer profiles which are also produced by Plura.

As all profiles used in the fence system are produced from scratch in house they can be coloured & cut to length according to customer requirements. This greatly reduces environmentally unfriendly scrap, generated when imported 6 metre profiles are cut down to size to supply alternative GRP systems.



Pultruding the Profiles



Precision CNC Machining Components



Hand Assembling The Panels

Feature Focus - Designed for efficient shipping



Bespoke reusable Stillage's

Produced by Plura; specially to make storing, shipping and moving of fence packs easy.



Lightweight Sections

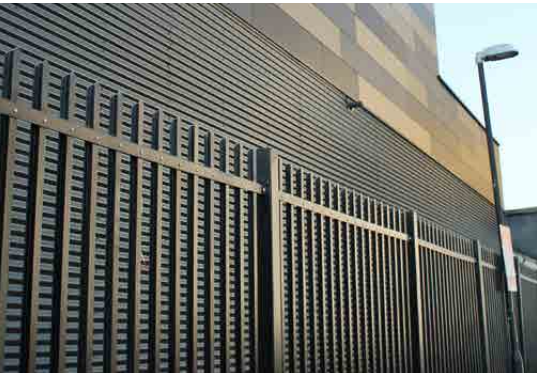
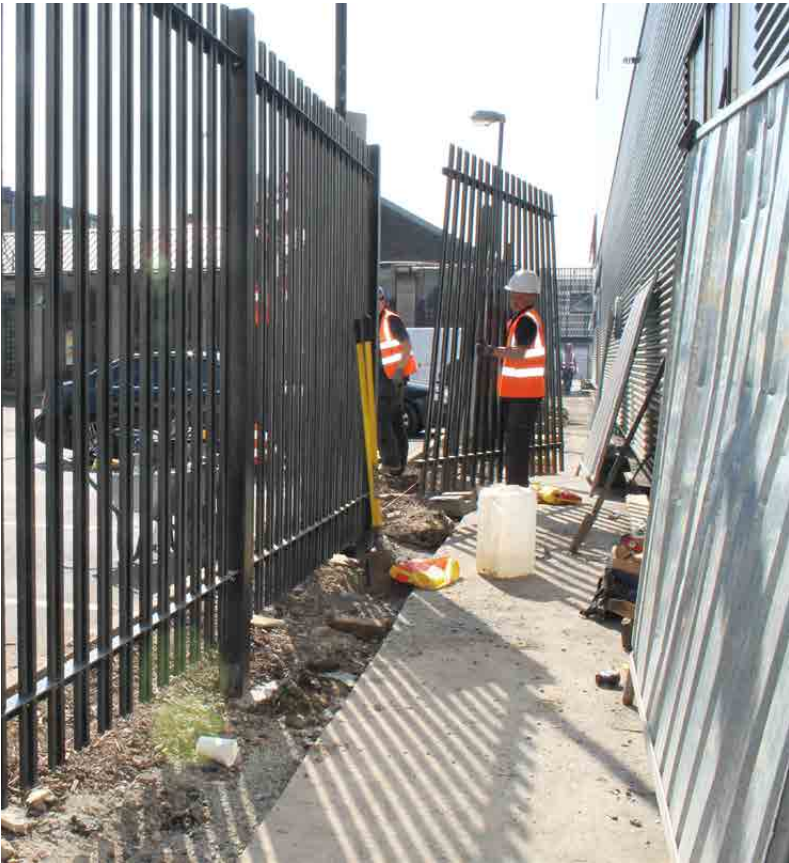
As panels are lightweight, even for the tallest fences; they can easily be lifted by one or two persons onto the fishtail fixings projecting from the posts.

Fast Installation

This in turn greatly reduces installation times when compared with traditional steel fences, which due to their heavy weight, must be installed a single pale at a time.

Secondary benefits of this; reduction of possession times and securing the site in less time.

The resultant installation has not only been installed quicker & provides better security but will far outlast traditional fences and it looks great!



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POLYsade® is the perfect combination of all the features and the installation & maintenance benefits that asset owners require when compared with other fence systems and materials.

The table below highlights this by breaking out and scoring the things asset owners and installers typically look for. POLYsade® is the **only** system that scores full points.

Material / Make Up	Y = 1 Point	N = 0 Points	? = Unknown (Given 1 Point)		
	POLYsade®	STEEL (e.g. Palisade)	WOOD (e.g. Picket)	GRP (Face Fixed)	GRP (Pass Thru & Glued)
Feature					
Non - Corrosive / Non - Rot	Y	N	N	Y	Y
Non - Conductive so requires 0 bonding	Y	N	Y	Y	Y
Full colour range: Gy, Gn, Wt, BK, Bu within 4 weeks	Y	Y	Y	N	N
Through coloured & cannot peel / chip	Y	N	N	Y	Y
Completely made in the UK	Y	?	?	?	?
Security Level 1a (Pales cannot be levered from rails)	Y	N	N	N	Y
Compliant with loadings in BS1722:12 2016	Y	Y	N	?	?
Gates, pedestrian and vehicular	Y	Y	Y	Y	Y
Equally at home as decorative or security fence	Y	N	N	N	?
Feature Points Total	9	3-4	3-4	4-6	5-8
Installation					
Average time to install each panel in minutes	5	15	15-20	15-20	5
Can be Raked for slopes	Y	Y	Y	Y	N
Available as 'Made up Panels'	Y	N	N	?	Y
Available 'Flat Packed'	Y	Y	Y	Y	N
Lightweight and therefore easy to transport to site	Y	N	?	Y	Y
Full range of accessories: Fans, Post Feet etc	Y	Y	?	?	?
Installation Points Total	6	3	2-4	3-5	3-4
Maintenance					
Virtually zero maintenance (not from damage)	Y	N	N	Y	Y
Pales easily remove & replaced if damaged	Y	Y	Y	Y	N
Spare parts readily available	Y	Y	?	Y	?
Life expectancy in years	60+	15	6-8	60+	60+
Maintenance Points Total	4	2	1-2	4	2-3
Points Total	18	8-9	6-10	11-15	10-15



Corrosion: The killer of assets

Millions of Pounds are spent every year by Rail asset owners in particular, in maintaining fencing. Mainly replacing single components, where the build up cost over time can be eye watering high!

The main reason for replacement? : Rotted/Corroded elements.



Particularly with wood where environmentally negative preservative treatments are not only being legislated against, but morally; who wants to use a product that has a bad environmental impact these days?

GRP provides the perfect 'fit it and forget it' solution to this.



Be aware of cheap imported products



Sloping Sites

The pale fixings, when combined with a little oversize tolerance in the pass-through slot; means that POLYsade® has the ability to be raked on a sloping site: A feature any fencing contractor will say is "essential" in a fencing product. Having a fixed panel that can only be used where the site is totally flat is in-practical, or requires the expensive addition of more posts; which is one of the reasons why; when POLYsade™ was designed; PLURA chose to use stainless steel fixings rather than gluing pales to rails.



Future pale removal for Maintenance.

Given the 60 plus year design life for POLYsade®; it is possible that at some point during its' life span a pale; intentionally or otherwise; may become damaged. A fixing means this is a relatively simple task; using a tungsten drill bit; the two security fixings for the pale can be drilled out within 10 minutes; the damaged pale slid out and a new pale slid into place; with new fixings applied within a couple more minutes.



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POLYsade® truly comes to its' own when the full system is taken into account and it is this breadth and depth of options and accessories that marks it out from other GRP fence products, which are simply offered as component parts or fixed rigid panels.

Gates

Gates are made using the same pass-through design, so security is not compromised at all. In both single Pedestrian and double Vehicular types; from 900mm up to 5 metre standard widths.

Hinges and Catches are provided accordingly; with all pedestains gates having Truclose, self-closing hinges as standard and vehicular gates having galvanised steel pin and eye hinges with GRP re-enforcement gussets in gate corners.

Locking is as per customer requirements; usually via padlocks.



Non-Standard Panels

In situations where the standard 2.6 metre wide panel is not a suitable width, or where a greater angle of rake is required than the standard rake in a single panel; for example; 45 degrees.

QUICKfoot™

Ideal in hard standing areas or in places where post burial is not an option.

Now in its' 5th design iteration; this fitting keeps post firmly and strongly in place; a clever internal design feature means posts cannot shear if adverse or surcharge loading is applied to the top half of the post.



Fish Plates

Spare Fishplates are available



Post Caps

Spare Post Caps are available

Steps and Ramps

Ideal for use in the rail sector; stairs and ramps can be incorporated into the fence system using the same GRP materials. These colour match perfectly with the POLYsade® fence colours.



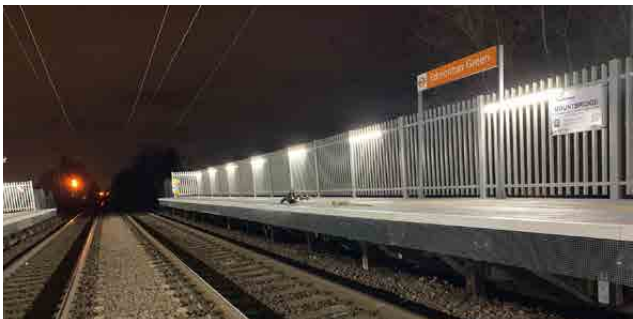
Built in Signposts

Save on the cost of seperate sign posts; with an added benefit in rail of 'de-cluttering' station platforms



Built in Lighting Posts

As with the Signposts; de-cluttering of platforms is further possible by combining our BOXposts™ with station lighting. As the post are hollow; they can aslo be provided with a panel to the rear for cable placement and access.



Specialist Posts

If the fence is to be fitted to an existing structure; such as a platform; POLYsade® posts can be provided over length & with specialist fixings.



Fans

One of the real benifits of UK production is the range of accessories seen in standard steel fences; not readily available from importers but fabricated in-house at Plura.

Anti Burrowing

As detailed in BS1722:12 2016; Pales can be extended and buried (standard 350mm). These buied pales will not rot or rust as with traditional materials.



Electric Fence Topping

PLURA work with the market leading suppliers of electrical security topping systems. POLYsade® is ideal for this use; as it is totally non-conductive and all fixings are factory cnc machined to take the wires.

Steel Post Insulating Cap

Where POLYsade® is used to break electrical continuity in an existing steel fence run and the existing steel posts will remain in situ: The POSTcap™ can be fixed over any standard steel I beam post to eliminate the danger of touch potential.



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POLYsade® is unlike any other GRP fence system available on the market. As a Premium product; it offers asset owners; many whole of life benefits, as previously detailed, over and above other GRP products.

As GRP fencing is relatively new; it is really important Designers make sure they are comparing ‘apples with apples’ when evaluating which supplier to use. All too often fence arrives on site and is not built up into panels, or even machined for fixings.

This alone can add significant cost to installers that they may not have realised they will incur. For example; just a small 50 metre run will require the drilling of circa 1,300 holes in the pales alone, not to mention the same again in the rails! Then each of these pales (circa 330) will need fixing to the rails by hand; all of this is carried out on site; not the case with POLYsade®. Even if the installation environment requires a flat pack POLYsade® to be supplied; all slots and holes are already cnc machined at our factory on one of 5 machines.

Then there is the issue of Quality Assurance; as all of this work on POLYsade® is carried out in a factory environment; the final product is assured under ISO9001.

To counter these issues; the following Commercial / Design questions should always be considered before making a choice as to the system to use:

- Does the fence come pre-assembled or is it flat pack for site assembly?
- If Flat-packed; do holes need drilling on site to fit pales to rails and rail to posts?
- Are the rails Box section or cheaper angles which are susceptible to sagging?
- How much waste will be incurred due to off cuts incurred fitting the fence?
- Is the product Quality Assured and comes with a Certificate of Conformity?
- Do all of the colours match; Pales, Rails and Posts?
- Has the supplier provided testing information to the latest standard: BS1722:12 2016?
- Is the product LPS 1175 SR2 or Class 1A Security rated?
- Can the product be raked for sloping sites?
- If used in Rail; has the product been signed off by the Off Track RAM?

Feature Focus - Product Testing

Tested in accordance with
BS1722-12:2016

Whilst BS1722 relates to steel palisade security fences; PLURA have rigorously tested POLYsade™ to the mechanical performance criteria laid out in this standard: Flexural strength of pales, Flexural strength of posts and Flexural strength of rails and Punch shear through strength of fixings to fishtails.



POLYsade® Specifying Considerations

Dimensions for General Purpose GP POLYsade® Fencing

British Standard Type Reference	Fence Height Above Ground	Dimensions					
		Posts	Rails (Horizontal)		Pales (Maximum gap between pales, face- to-view, 89mm)		
		Embedded Length ^{A)}	Length ^{B)}	Typical Connector Bolt Diameter	Oversail		Typical Bolt Diameter Pale to Rail ^{D)}
	(m)	(mm)	(m)	(mm)	Top	Bottom	(mm)
GP 11 Not Covered in BS 1722-12:2016	1.10	525	2.60	10	225	150	6
GP 12 Not covered in BS 1722-12:2016	1.20	525	2.60	10	225	150	6
GP 15	1.50	525	2.60	10	225	150	6
GP 18	1.80	525	2.60	10	225	150	6
GP 21	2.10	625	2.60	10	275	200	6
GP 24	2.40	725	2.60	10 ^{C)}	300	210	6
GP27 Not covered in BS 1722-12:2016	2.70	825	2.40 ^{E)}	10 ^{C)}	300	210	6

Dimensions for General Purpose GP POLYsade® Fencing

British Standard Type Reference	Fence Height Above Ground	Dimensions					
		Posts	Rails (Horizontal)		Pales (Maximum gap between pales, face- to-view, 89mm)		
		Embedded Length ^{A)}	Length ^{B)}	Typical Connector Bolt Diameter	Oversail		Typical Bolt Diameter Pale to Rail ^{D)}
	(m)	(mm)	(m)	(mm)	Top	Bottom	(mm)
SP 30	3.0	925	2.00	10	475	380	6
SP 36	3.6	1125	1.5	10 ^{C)}	650	550	6

Always request a
Certificate of Conformity &
Performance Specification



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POLYsade® having many uses and configurations, has a lot of potential applications. Across the next 4 pages are a collection of case studies showing POLYsade® Security Fencing in different situations. For many more please visit our website.

Royal Mail Sorting Office

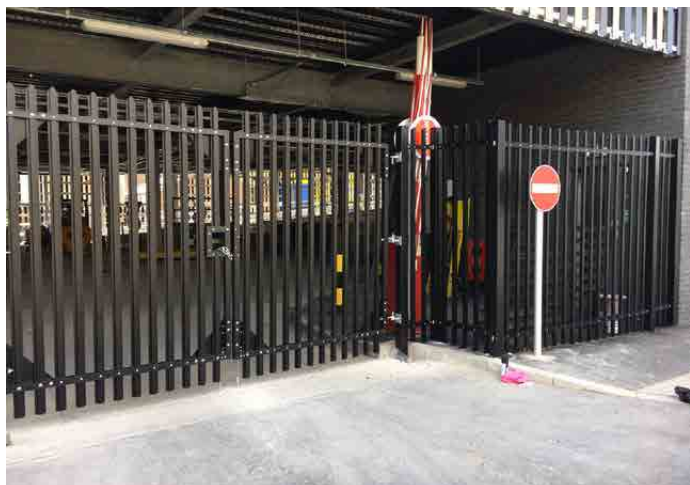
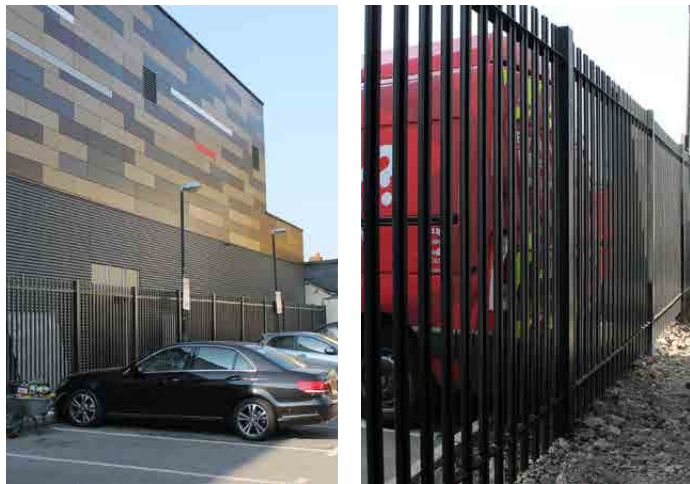
Product: POLYsade® Composite Touchsafe Security Fencing System 2.4m finished height. Iron Black

Project Owner: Royal Mail

Contractor: Volker Fitzpatrick

Project Details: New build Sorting Office in Nine Elms London

Reasons for Use: Long life of asset - Plus 60 years
Secure - no possibility to 'lever' bottoms of pails from the crossrail
Fast installation time - installed in step with the removal of hoardings



Oulton Station

Product: POLYsade® Composite Touchsafe Deliniating Fencing System 1.5metres finished height. Polar White.

Project Owner: Abelio Trains Greater Anglia

Contractor: Kier Rail

Project Details: Replacement of wooden picket station fencing as part of station improvements.

Reasons for Use: Elimination of rotting wooden fencing.



UK Power Networks

Product: POLYsade® Composite Touchsafe Security Fencing System 2.4m finished height. Holly Green

Project Owner: UK Power Networks

Contractor: Four Seasons Fencing Ltd

Project Details: New build of Low Carbon Battery storage facility

Reason For Use: Zero conductivity - No risk of shock to staff and public

Long life of asset - Plus 60 years

Very Secure - No possibility to 'lever' bottom of pails from the cross rail: the only GRP security fence approved by UKPN



Crossrail Hayes

Product: POLYsade® Composite Touchsafe Security Fencing System 2.4m finished height. Steel Grey.

Project Owner: Network Rail: Crossrail Hayes

Contractor: Carillion

Project Details: Surround to Substation providing power to overhead lines. Overhead lines, Electrical equipment and live rail line all within very close proximity.

Reason For Use: Long life of asset - plus 60 years

Fast installation time

No bonding required



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Edmonton Green

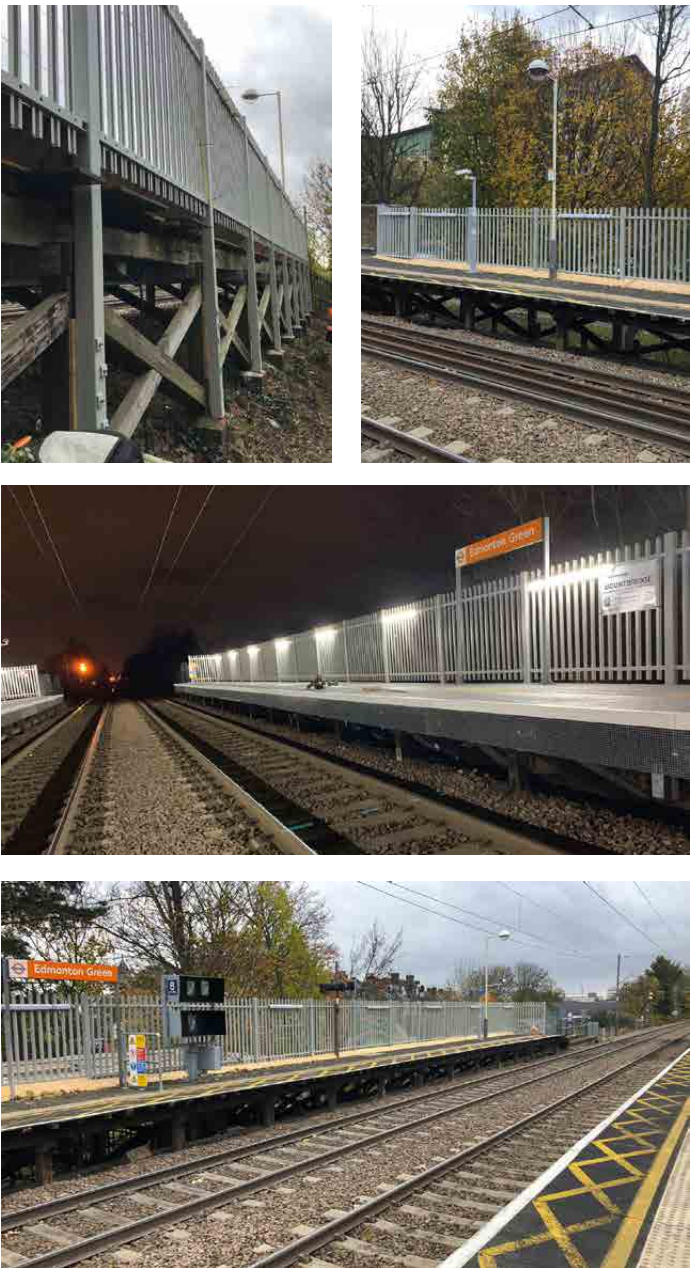
Product: POLYsade® Composite Touchsafe Security Fencing System 1.80metres finished height. Steel Grey.

Project Owner: Network Rail & Transport for London

Contractor: Cleshar & Hammond Rail

Project Details: Platform & rear fence upgrade Edmonton Green and Silver Street stations

Reasons for Use: Built in lighting & fixings to wooden trestle



Shepreth Station

Product: POLYsade® Composite Touchsafe Security Fencing System 2.4m finished height with built in sign posts. Trash Screens and End of Platform gates and steps finished in Steel Grey.

Project Owner: Network Rail: Anglia Route

Contractor: Volker Fitzpatrick & Walker Contruction Ltd

Project Details: Platform Upgrade

Reasons for Use: Non Conductivity - no risk of shock to staff and public

Long life of asset - plus 60 years

Complete System - providing the total solution for fencing, signage and access

Fast installation time



Swindon Solar Farm

Product: POLYsade® Composite Touchsafe Security Fencing System 2.4m finished height. Steel Grey.

Project Owner: British Solar Renewables

Contractor: Renewable Energy Connections connecting to SSE

Project Details: Solar farm near Swindon Wiltshire - Surround to connection point to the grid for substation overhead lines.

Reasons for Use: Gave the ability to place the fencing much closer to the earth mats

Lightweight panels - easy to manoeuvre on a remote site

Fast installation time - was erected in a day



Watford Junction Station

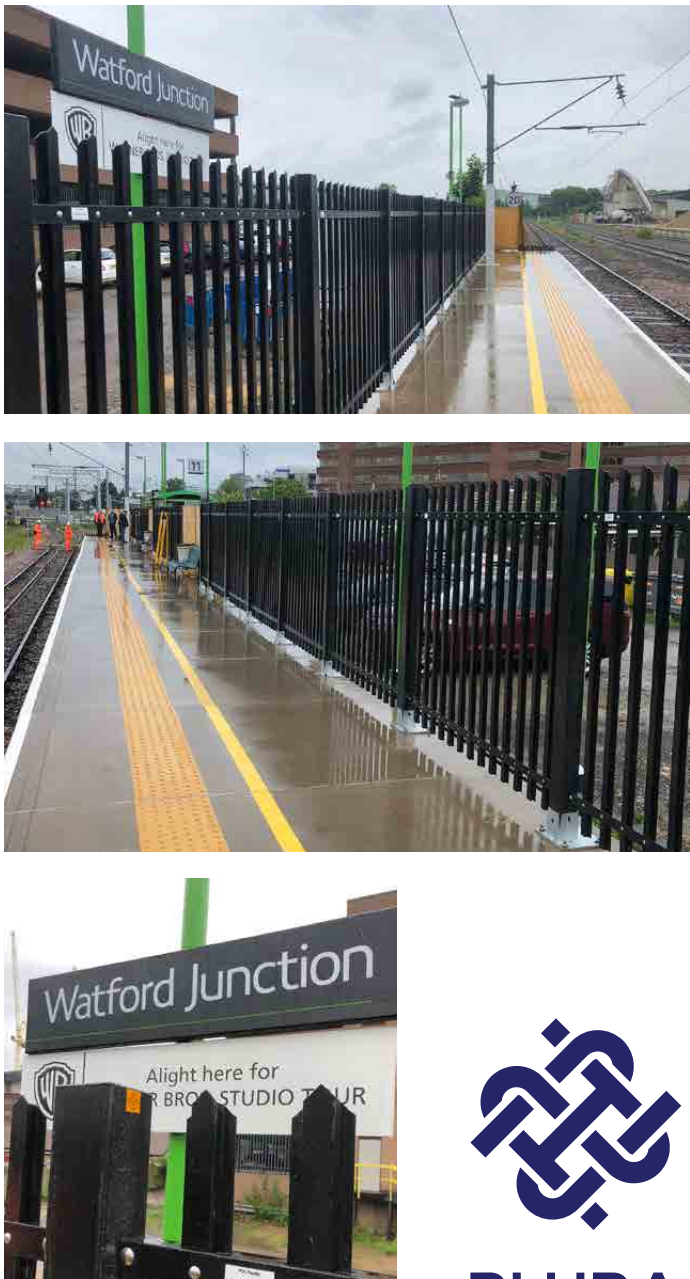
Product: POLYsade® Composite Touchsafe Security Fencing System 1.8m finished height. Iron Black.

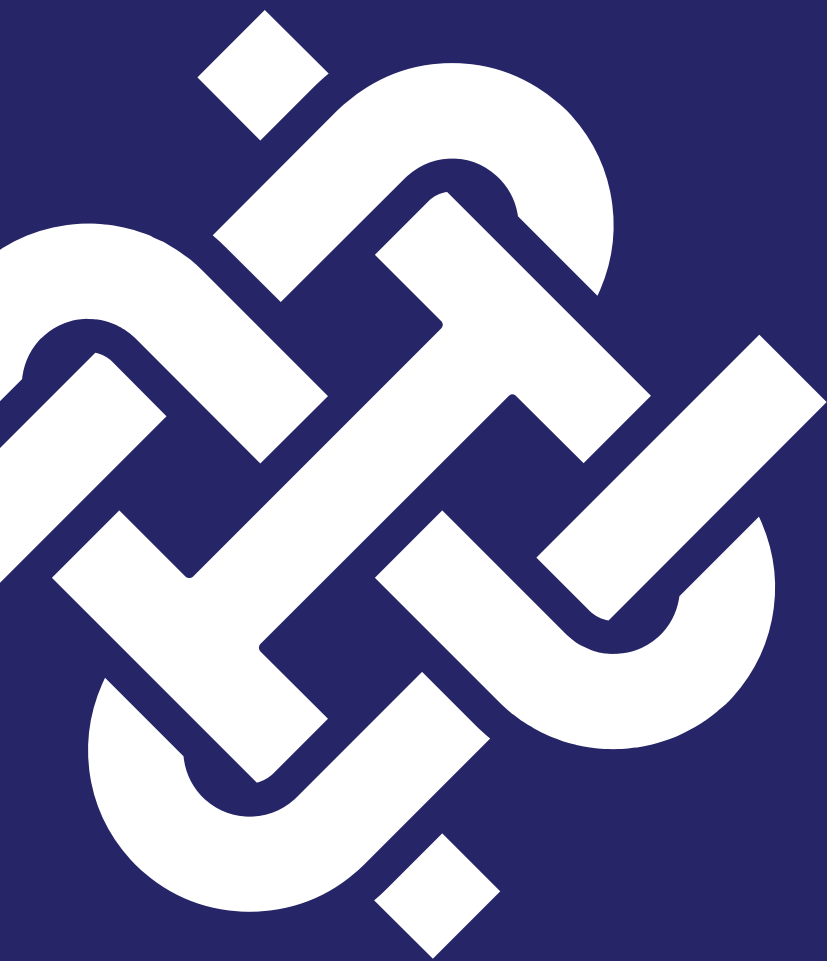
Project Owner: Network Rail

Contractor: Murphys

Project Details: Security fencing running in close proximity to track and overhead electrical cables

Reasons for Use: Zero Conductivity - No risk of touch potential and UK produced





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