

Experts at working with timber

Timber is a natural material derived from many different species, each offering its own unique qualities in terms of durability, strength, and flexibility. These characteristics can be influenced by how the timber is sawn, processed, handled, and stored. Simply put, not all wood is suitable to be classified as timber.

At Caledonia Play, we use our expertise to design and manufacture visually appealing, high-quality products. We carefully select timber based on its natural properties to reduce future maintenance requirements.

Our aim is to enhance the natural beauty of the timber while ensuring long-term strength and durability. To protect against rot and moisture, we use galvanised metal extension feet to raise timber off the ground, preventing direct contact with ground moisture.

For larger timber sections, a heat-sealed bitumen sleeve is applied before installation into concrete, providing additional protection.

Douglas Fir is an orange-red timber known for its natural strength and durability, requiring no chemical treatment.

Our machine-rounded Norway Spruce is sourced from trusted partners in Central Europe. This slow-grown, dense timber has a reduced tendency to twist, warp, or bend.

Machine-rounded timber is approximately 50% stronger than square-sawn timber.

Redwood machine-rounded poles are quarter-sawn to minimise splitting. All sawn and dressed timbers are pressure-treated and stress-graded to C24 standards.

Robinia timber retains the natural shape and taper of the tree, creating a more organic and natural appearance in play structures.



Our Robinia Timber

Robinia timber represents a premium material choice for high-performance play structures, combining exceptional strength, durability, and longevity in outdoor environments. Classified as Durability Class 1 (EN 350)—the highest rating for natural resistance to decay, fungi, and insect attack—Robinia significantly reduces the need for chemical treatments, making it ideal for environmentally sensitive and long-term installations.

From a material science perspective, Robinia is among the densest European hardwoods, with an air-dried density of 700–800 kg/m³. Its high density directly supports superior compressive strength, bending resistance, and wear performance, critical under repeated dynamic loading in heavily used play equipment. Robinia also surpasses oak in density and hardness, offering enhanced resistance to impact, abrasion, and mechanical deformation over time.

Dimensional stability is another key attribute. Robinia naturally resists shrinkage, warping, and cracking, even under fluctuating moisture and outdoor weathering, reducing the need for extensive modification or treatment.

A notable differentiator in premium installations is the use of larger timber cross-sections. These enhanced dimensions improve structural rigidity, load-bearing capacity, and overall stability, while increasing safety margins, reducing deflection under load, and improving resilience against vandalism or accidental damage.

Robinia timber delivers superior durability, high density, and robust structural performance, making it an optimal choice for long-life, low-maintenance play equipment where safety, resilience, and environmental considerations are paramount.



Robinia (*Robinia pseudoacacia*) has a tight, dense grain and Class 1 durability, allowing direct ground contact without steel support feet. It resists rot, decay, and insects without chemical treatment.

Timber flashpoints

All timber is combustible because it's organic, but different species have widely varying fire behaviors due to density, resin content, moisture content, and natural extractives.

Hardwoods like Robinia: Dense, slow-burning, higher ignition temperature. They take longer to catch fire and burn more slowly than softwoods.

Softwoods like pine: Contain more resin and have lower density, so they ignite faster and burn more readily.

Prepared state effects: Kiln-dried timber, planed surfaces, or treated timber can significantly alter flashpoint and burning rate. Dry, thin boards ignite more easily than thick, green timber.

So while no timber is fireproof, species selection and preparation methods can meaningfully influence fire risk, which is why in some cases fire-retardant treatments are often recommended for construction or exterior uses.



Timber Species	Approx. flashpoint (°C)	Density (kg/m ³)	Relative Burn Rate	Fire Behavior Notes
Robinia (Black Locust)	380–400	800–900	Slow	Very dense hardwood; hard to ignite, burns steadily; produces little smoke.
Oak (Quercus spp.)	350–400	700–900	Slow	Dense hardwood; excellent for structural use; slow flame spread.
Beech (Fagus spp.)	300–350	720–750	Moderate	Burns evenly; can produce high heat once ignited.
Pine (Pinus spp.)	250–300	500–600	Fast	Softwood; resin-rich, ignites quickly; rapid flame spread.
Spruce (Picea spp.)	250–300	450–500	Fast	Lightweight softwood; ignites easily; flames can spread rapidly.
Douglas Fir (Pseudotsuga menziesii)	270–300	500–550	Moderate-Fast	Moderate ignition; often used in construction; slower than pine but still combustible.
Cedar (Thuja spp.)	250–280	400–500	Moderate	Aromatic oils make it combustible; slow to burn initially, but can smolder.
Ash (Fraxinus spp.)	320–350	700–750	Moderate	Dense hardwood; good structural timber; slow flame spread.

Scorched Robinia Timber – Repair Checklist

Repairing scorched timber (including Robinia) is very doable, but the method depends on how deep the burn damage goes. The key is to remove or stabilise the damaged fibres while preserving as much sound wood as possible.

Inspection

- ☐ Identify extent of scorch (light / moderate / severe)
- ☐ Check for structural integrity (no soft or crumbling timber)
- ☐ Confirm moisture content is suitable (<15% if possible)

Preparation

- ☐ Clear area of dust, debris, and contaminants
- ☐ Protect surrounding surfaces
- ☐ Ensure timber is dry before repair

Removal of Damaged Timber

- ☐ Remove all charred/blackened wood (scraper, chisel, or wire brush)
- ☐ Ensure only sound, solid timber remains
- ☐ Avoid excessive removal of unaffected material

Sanding (Sand with the grain)

- ☐ 80 grit (initial)
- ☐ 120 grit (refine)
- ☐ 180 grit (finish)
- ☐ Feather edges into surrounding surface

Filling (if required)

- ☐ Use exterior-grade epoxy or flexible wood filler
- ☐ Fill cracks, voids, or depressions fully
- ☐ Allow full cure as per manufacturer instructions
- ☐ Sand flush once cured

Finishing

- ☐ Clean all dust from surface
- ☐ Apply UV-resistant oil / stain / protective coating
- Ensure even coverage and colour blending

Final Checks

- ☐ Surface smooth and free from charred material
- ☐ Repair blends with surrounding timber
- ☐ No loose or failed filler
- ☐ Area clean and safe



Acceptance Criteria

- ☐ Timber remains structurally sound
- ☐ No residual burnt or friable material
- ☐ Finish provides weather protection
- ☐ Repair accommodates natural movement

Reject / Replace If:

- ☐ Timber is soft, brittle, or deeply cracked
- ☐ Burn penetration compromises section strength
- ☐ Repair cannot be effectively bonded

Moisture-Related Movement in Robinia

Hygroscopic nature: Robinia absorbs or releases moisture from the air depending on the relative humidity (RH).

Expansion and contraction:

- Tangential (across the grain):
Can change 6–12% depending on moisture swings.
- Radial (along growth rings):
Typically smaller, 3–6%.
- Longitudinal (along grain):
Minimal, usually less than 1%.

Environmental factors

Humidity: High RH → wood absorbs water → swelling.
Low RH → wood dries → shrinking.

Temperature: Warmer air holds more moisture → affects equilibrium moisture content (EMC).

Direct sun, wind, rain: Cause uneven drying → may lead to checking, warping, or cupping.

Practical Implications

Outdoor use: Robinia is durable and rot-resistant, but expansion/contraction can cause cracks or gaps if not accommodated.

Indoor use: Ensure proper acclimatization to indoor humidity (usually 8–12% moisture content).

Construction: Leave expansion gaps for decking, cladding, or flooring. Use fixings that allow slight movement.

Crack Management

Cracking (checks) is common in dense hardwoods like Robinia, due to drying and moisture changes.

Its density can make penetration of filler difficult. For outdoor installations, ensure filler is UV- and water-resistant to prevent cracking again. Avoid wood putty for large cracks outdoors, as Robinia expands/contracts with moisture.

Due to expansion and contraction: Small cracks (checks) are normal; they usually don't affect structural integrity.

Filling cracks: Use flexible fillers (polyurethane or epoxy) for outdoor applications to accommodate some movement.

Finishing: Oils or water-repellent coatings help stabilize moisture fluctuations, slowing expansion/contraction cycles.



Robinia Installation

Depending on the specific type and configuration of the structure, installation footprints can vary significantly. More complex or multi-component play equipment typically requires a larger ground coverage to ensure structural stability, maintain recommended safety zones, and facilitate safe user circulation. Variations in footprint are influenced by factors such as timber cross-section dimensions, structural spans, load distribution, and the integration of auxiliary safety or functional elements.

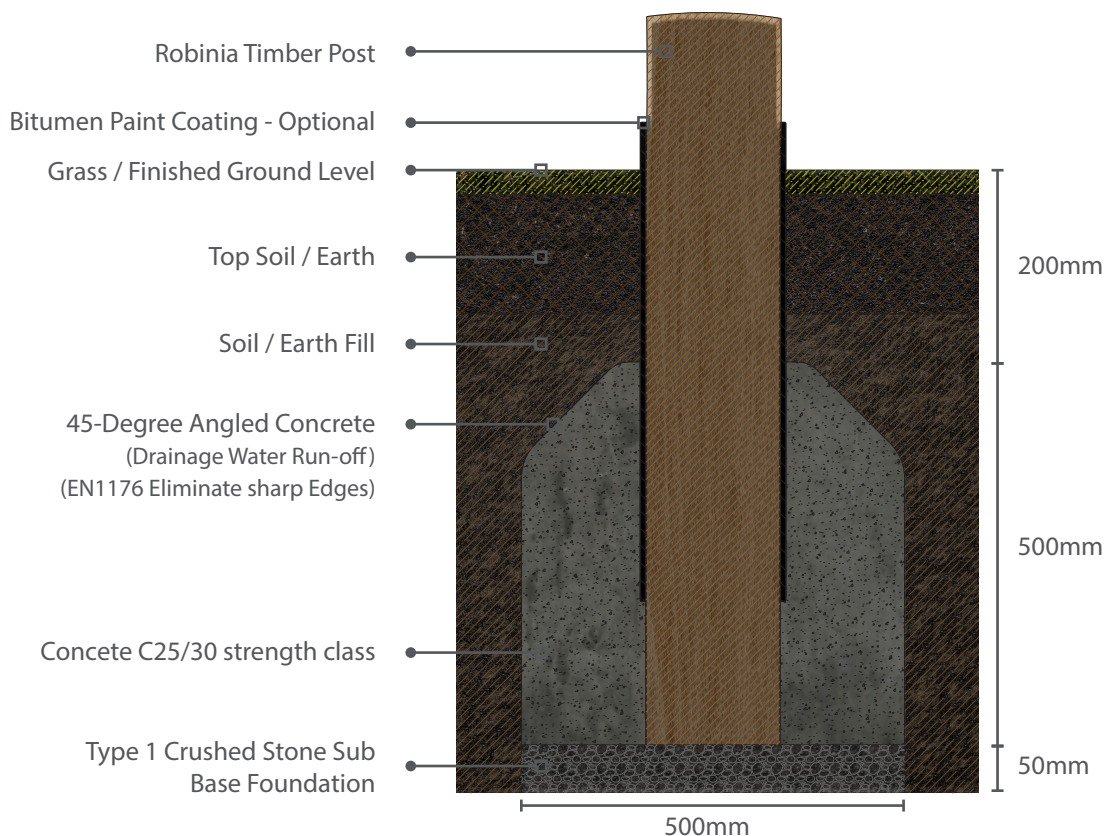
Careful site assessment and planning are therefore essential to maximize performance, safety, and long-term durability.

Overall, Robinia timber offers unmatched natural durability, exceptional density, and superior structural performance, making it an ideal choice for premium, long-lasting play equipment where safety, resilience, and minimal maintenance are paramount.

Robinia timber is typically installed without the need for steel feet or ground anchors. Timbers can be installed directly into the ground, a Bitumen paint coating can be applied prior to installation for an additional level of protection, this is optional.



Typical Robinia Installation Cross Section



Our Braided Nylon and MFP Ropes

Our braided Nylon and MFP ropes are designed for high-performance applications in demanding outdoor environments, including climbing structures, nets, and load-bearing elements. Each rope consists of six galvanised steel strands, incorporating either a fibre or steel core to optimise strength, flexibility, and fatigue resistance.

The ropes achieve a nominal tensile strength of 1,570 N/mm², ensuring reliable performance under dynamic and static loads. The polyamide outer yarn is UV-stabilised to maintain colour integrity and resist degradation from prolonged exposure to sunlight, moisture, and weathering. The fused outer coating also enhances abrasion resistance and prevents fraying, extending the service life of the rope.

Construction ensures uniform load distribution across all strands, minimising the risk of localised wear or failure. Ropes are compatible with form-closed and force-closed wood connectors, suspension bolts, and aluminium clamps, allowing secure integration into timber play structures without additional fasteners.

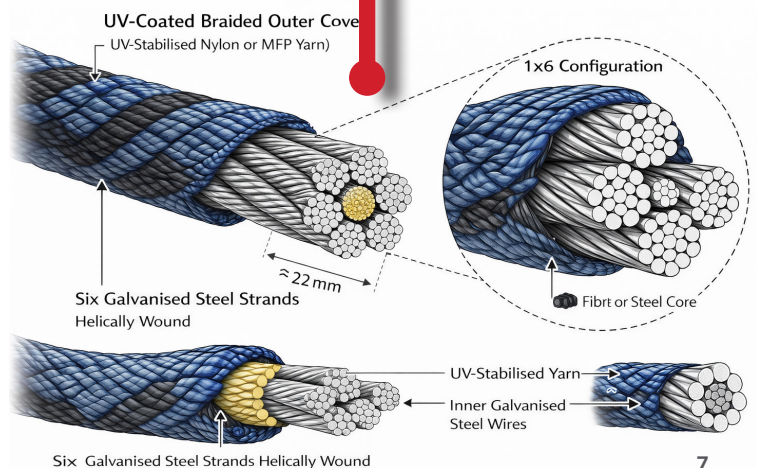
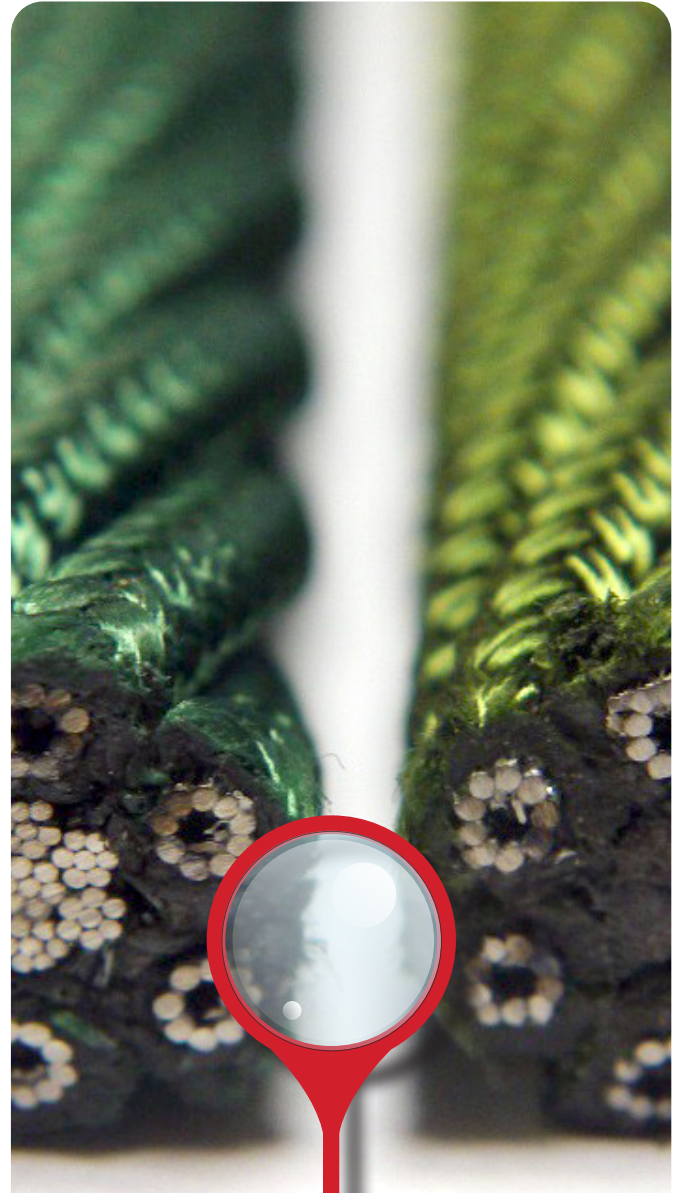
Available Diameters: 16 mm, 18 mm, 20 mm, 22 mm, 23 mm, 24 mm

This specification ensures that designers and engineers can select the appropriate rope type for the required application, balancing flexibility, elongation, and durability while meeting strict safety standards.

Property	Nylon	MFP (Multifilament Polypropylene)
Tensile Strength	1,570 N/mm ²	1,570 N/mm ²
Elongation at Break	18–25%	8–12%
Abrasion Resistance	High	Very High
UV Resistance	Very Good	Excellent
Water Absorption	Moderate	Minimal
Stiffness	Medium	Higher (less stretch)

Typical Applications

- Dynamic loads, climbing ropes
- Static load applications, nets, structures requiring minimal elongation.



Six Galvanised Steel Strands Helically Wound

Materials and Components



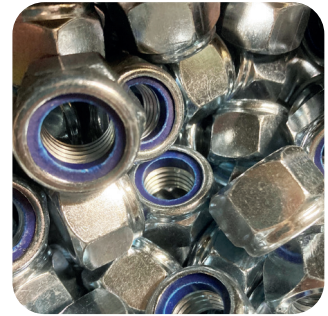
Timber

Pressure treated machine rounded timber poles and graded flat timbers ensure quality and longevity



Robinia

Acacia Robinia wood contains natural oils that protect the wood, so it needs no more treatment



Nuts

307 standard stainless steel nuts and bolts



HDPE Panels

100% recyclable High Density Polyethylene UV stable resistant to fading, weather, stain and graffiti



Bitumen Sleeves

Heat-sealed bitumen sleeves placed on timbers that come in contact with ground to prevent rot



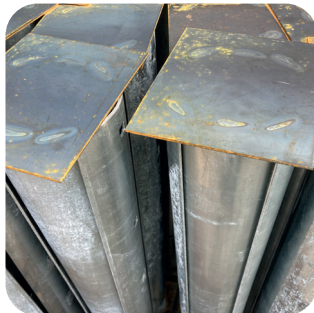
Ropes

Steel cored multi strand nylon ropes designed specifically for the playground and leisure environment



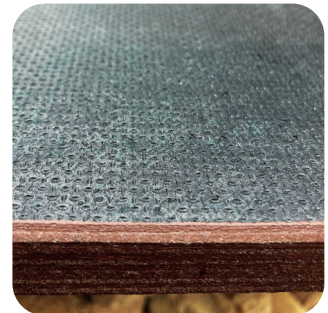
Climbing Rocks

Textured resin rock holds in a selection of shapes and colours



Steel Feet

Fitted to ensure timbers are not in contact with the ground preventing rot



Buffalo Board

Sealed birch veneers bonded with a tough, thermosetting phenolic resin with good weather resistance



Chains

galvanised steel chains
conforming to safety
standard EN 1176



Spacers

Durable plastic spacers
prevent finger and toggle
entrapment between
timber components



Steel Swing Points

316 quality stainless steel
containing molybdenum
giving improved corrosion
resistance



CALEDONIA PLAY
THE NATURAL WAY TO PLAY

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