BIG RIVER

STRUCTURAL TIMBER · FRAMING GUIDE

MGP10 vs MGP12

Choosing the right structural pine for your build — features, benefits, applications and how to specify with confidence.

Machine Graded Pine is the backbone of Australian residential framing, and Big River supplies both grades in treated and untreated options from locations right across the country. MGP10 and MGP12 look near-identical on the rack but behave differently under load. This guide explains what separates them, where each earns its place, and how to get the specification right the first time.

RANGE	STANDARDS	SUPPORT
MGP10 & MGP12 pine, plus LVL & I-joists	AS/NZS 1748, AS 1720, AS 1684 span tables	Grade & span advice at your local branch

1 · What is Machine Graded Pine?

MGP stands for **Machine Graded Pine** — seasoned (kiln-dried) plantation softwood, most commonly radiata, slash and Caribbean pine. Every length is fed through a machine stress grader that flexes the board and measures its deflection under a known force. That gives the timber's **stiffness** (Modulus of Elasticity, or MOE), which is correlated to strength before each piece is sorted and grade-stamped.

Grading is carried out to **AS/NZS 1748**, and the structural design properties for each grade are published in **AS 1720.1**. The number in the grade is the headline: it is the minimum stiffness threshold. MGP10 clears about 10,000 MPa and MGP12 about 12,000 MPa — the higher the number, the stiffer and stronger the board. Big River supplies both grades kiln-dried and termite-resistant, in H2, H3 and H4 treated options as well as untreated.

> **MGP is not the same as F-grade.** F-grades are anchored to bending strength alone and are often applied visually. MGP grades carry a full set of design properties — bending, tension, shear, compression and stiffness. MGP may be substituted where a compatible F-grade is specified (e.g. MGP10 for F7), but the reverse is never permitted: don't drop F-grade material into a slot the engineer specified as MGP.

How the grade is decided

- **Stiffness (MOE)** — measured directly by the grader; graded on the average, because how far a member sags is what governs serviceability.
- **Strength** — bending, tension and compression capacities are set conservatively on a fifth-percentile basis, so at least 95% of pieces exceed the rated value.
- **Consistency** — sensors, calibration checks, moisture monitoring and auditing keep every stamped grade reliable, batch after batch.

2 · The Two Grades at a Glance

MGP10 The residential default		MGP12 The higher-performance grade	
Stiffness (E)	**10,000 MPa**	Stiffness (E)	**12,700 MPa**
Bending (f'b)	**17 MPa**	Bending (f'b)	**28 MPa**
Tension (f't)	**7.7 MPa**	Tension (f't)	**12 MPa**
Compression (f'c)	**18 MPa**	Compression (f'c)	**24 MPa**
Shear (f's)	**2.6 MPa**	Shear (f's)	**3.0 MPa**
Nearest F-grade	≈ **F7**	Nearest F-grade	≈ **F8**

Characteristic design values from AS 1720.1 (seasoned MGP). MGP12's grade threshold is 12,000 MPa; its codified design stiffness is 12,700 MPa. Values are indicative of the grade — actual member capacity also depends on size, spacing, load and the modification factors applied by the designer.

3 · MGP10 — Features, Benefits & Applications

MGP10 is the most widely specified structural pine grade in Australian housing, and the grade most of Big River's everyday framing is built around. It's the cost-effective baseline — reliable, stocked deep, and comfortably strong enough for standard spans and spacings.

Features

- Minimum stiffness of about 10,000 MPa — the entry point of the MGP scale.
- Seasoned, kiln-dried plantation pine with a clean, uniform, machine-graded appearance.
- Full range of common framing sizes (70–190 mm depths in 35/45 mm thicknesses).
- Available kiln-dried and termite-resistant in H2, H3 and H4 treatment levels, or untreated.

Benefits

- **Economy** — the most cost-effective structural grade where the design doesn't demand extra stiffness.
- **Availability** — stocked across Big River's national network, so lead times and substitutions are rarely an issue.
- **Design support** — AS 1684 span tables are built around MGP10, making it quick to size and certify.
- **Workability** — light and easy to cut, nail and fix by hand on site.

Typical applications

- Wall framing — studs, plates and noggings in load-bearing and non-load-bearing walls.
- Roof framing — rafters, ceiling joists, battens and general roof members at standard spans.
- Roof trusses and floor joists and bearers within span-table limits.
- General light-load framing, subframes and everyday residential carpentry.

4 · MGP12 — Features, Benefits & Applications

MGP12 is the step up. With roughly 27% more stiffness and markedly higher bending strength than MGP10, it lets a member span further, carry more, or be sized down for the same job. It costs more and stock depth varies, so specify it where the performance genuinely earns its keep.

Features

- Minimum stiffness of about 12,000 MPa (design MOE 12,700 MPa) — noticeably stiffer than MGP10.
- Higher characteristic bending, tension and compression capacities across the board.
- Same species and seasoned pine base as MGP10 — the difference is structural, not visual.
- Available in the same sizes and treatment levels; talk to your branch on current stock.

Benefits

- **Longer spans** — greater stiffness means less deflection, so members reach further before hitting serviceability limits.
- **Higher loads** — better suited to concentrated or heavier loads such as floor systems and supporting members.
- **Design flexibility** — can allow a shallower or thinner section for the same span, freeing up ceiling height or reducing member count.
- **Tighter deflection** — useful where bounce needs to be controlled, such as stiffer floors.

Typical applications

- Floor joists and bearers on longer spans or heavier floor loads.
- Rafters and roof members where span or load exceeds comfortable MGP10 limits.

- Lintels and supporting members within engineered or span-table provisions.
- Anywhere an engineer specifies the higher grade to control deflection or reduce member size.

> **When to step up to LVL.** Where sawn pine can't achieve the span or load — long-span bearers, ridge and header beams, heavily loaded lintels — engineered LVL is the next move. Big River supplies LVL and I-joists (including Wesbeam e-beam and e-joist, and StraightFrame LVL10) for exactly these situations. Ask your branch about matching an LVL solution to your span table.

5 · Key Differences Explained

The two grades share a species, a look and a treatment range. What separates them is measured performance. The table shows the characteristic design values side by side, with the practical uplift MGP12 delivers.

Property	MGP10	MGP12	Uplift	Why it matters
Stiffness — MOE (E)	10,000 MPa	12,700 MPa	+27%	Controls deflection & span
Bending strength (f'b)	17 MPa	28 MPa	+65%	Resistance to snapping under load
Tension parallel (f't)	7.7 MPa	12 MPa	+56%	Bottom chords, ties
Compression parallel (f'c)	18 MPa	24 MPa	+33%	Studs & posts under axial load
Shear (f's)	2.6 MPa	3.0 MPa	+15%	Near supports & notches
Modulus of rigidity (G)	670 MPa	850 MPa	+27%	Shear stiffness of the section
Nearest F-grade	≈ F7	≈ F8	—	Substitution reference only

Characteristic values per AS 1720.1 for seasoned MGP. Uplift figures compare grade-to-grade capacities, not finished member capacities.

Reading the numbers

Stiffness is usually the deciding factor in housing. Most framing is limited by how far it deflects (serviceability) long before it's at risk of breaking, so MGP12's 27% stiffness advantage is what lets it span further or bounce less. The bigger jump in bending strength matters most for heavily loaded members. In practice, the AS 1684 span tables or your engineer will translate these values into allowable spans for a given size, spacing and load — which is where the grade choice becomes concrete. Your local Big River team can help you read the tables for your job.

6 · Key Selection Criteria

Grade is only one of several decisions when specifying structural pine. Work through these together rather than in isolation.

Criterion	What to look for
Structural demand (span & load)	Start here. Check the AS 1684 span tables or the engineer's design for member, size, spacing and load. If MGP10 spans it comfortably, there's rarely a reason to pay for MGP12; if it's marginal, MGP12 (or a deeper section) closes the gap.
Deflection & serviceability	For floors especially, stiffness governs bounce and feel. Where a springy floor is a risk, MGP12's higher MOE is often the cleaner fix than upsizing.
The specification is binding	If the engineer, span table or certifier calls up a grade, match it. You may substitute MGP up for a compatible F-grade, but never substitute down or swap an MGP call-out for F-grade.
Durability & treatment (H-class)	Grade and durability are separate. Match the hazard level to exposure — H2 for protected internal framing, H3 for above-ground external (deck bearers, pergola beams), H4 for higher exposure. Verify against AS 1604 and the NCC. Big River supplies H2, H3 and H4 treated pine.
Size & availability	MGP10 is stocked deep in all common sizes; MGP12 stock varies by region. Confirm availability and lead time with your branch before designing around it.

Criterion	What to look for
Cost & overall economy	MGP12 costs more per length, but if it lets you use fewer or shallower members the total can be competitive. Weigh material cost against labour, member count and headroom.
Grade stamp & compliance	Only use timber that is clearly and legibly grade-stamped — it's your evidence of compliance for certification. Reject unmarked or illegibly marked structural timber.
Moisture & storage on site	Keep seasoned pine dry, stacked and ventilated. Poor storage causes movement, warping and checking that can compromise otherwise sound structural timber.

7 · Summary Comparison

The main points at a glance. Use this as a quick reference, not a substitute for the span tables or the engineer's design.

Aspect	MGP10	MGP12
Positioning	Residential default / baseline grade	Higher-performance upgrade grade
Stiffness (MOE)	~10,000 MPa	~12,700 MPa (+27%)
Bending strength (f'b)	17 MPa	28 MPa (+65%)
Relative strength	Strong enough for standard framing	Stronger & stiffer across the board
Best for	Walls, roof framing, trusses, standard joists	Longer-span joists/bearers, heavier loads, tighter deflection
Spans	Standard spans per AS 1684	Longer spans or shallower sections for same span
Cost	Lower — most economical	Higher per length
Availability	Stocked deep, all common sizes	Varies by region — check your branch
Treatment	Untreated, H2, H3, H4	Untreated, H2, H3, H4
Nearest F-grade	≈ F7	≈ F8
Substitution rule	MGP may replace compatible F-grade; F-grade must NOT replace an MGP call-out	As per MGP10 — always match or exceed the specified grade

Bottom line: Use MGP10 as your default for standard residential framing — it's cheaper, stocked everywhere, and strong enough for most walls, roofs and joists. Reach for MGP12 when you need to span further, carry more, control deflection or size a member down. When sawn pine won't reach, step up to LVL. And whenever a grade is specified, match or exceed it — never substitute down.

Talk to Big River

Our branch teams help with grade selection, span-table references and treatment specification — and can price your job fast.

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