Aluminium Single Glazed Windows: Keep or Replace Depends on the Room

The same aluminium single glazed window can be sensible in a garage and expensive in a living room. The real test is whether the space is conditioned.

The room decides the answer

The debate around aluminium single glazing usually gets framed as a battle between old and new. That misses the real point. A single glazed aluminium window is not automatically a mistake, and it is not automatically acceptable. Its value depends on whether the room behind it is meant to hold a temperature.

A window in a detached garage has a simple job: admit light, maybe allow a breeze, and stay out of the way. A window in a bedroom, living room, or home office has a different job: it sits inside a sealed thermal envelope and becomes part of the heating or cooling system. Once that happens, the same pane of glass stops being neutral. It either helps the room stay comfortable or it drains energy every hour the system is running.

That distinction is the core issue hidden inside most replacement decisions. The best window for a storage shed can be the wrong window for a family room. The best window for a family room can be unnecessary overkill for a workshop that is opened and closed all day.

What a conditioned room is really doing

A conditioned space is one where the indoor temperature is deliberately managed. That can mean ducted heating, a split-system air conditioner, hydronic heating, or even a room that depends on passive design and sealed construction to stay within a comfortable range.

The important part is not the equipment itself. It is the expectation. If the room is supposed to stay warm in winter and cool in summer, then every window becomes part of the load the system has to fight.

That is why a single glazed frame in a garage and the same frame in a bedroom do not belong in the same conversation. In the garage, the air can drift a few degrees without anyone paying for it. In the bedroom, that drift shows up as higher energy use, colder surfaces, and more frequent heater or air-conditioner cycling.

Unconditioned spaces are different. A shed, detached workshop, carport enclosure, or storage room usually has no meaningful temperature target. You still want daylight, ventilation, and

weather resistance, but you are not buying insulation performance because there is no conditioning system to protect. In those spaces, single glazed windows can be entirely reasonable.

Why the same pane can be cheap in one room and expensive in another

The economic difference comes from operating hours, not just purchase price.
A single glazed aluminium window costs less up front because the product is simpler: one pane, one frame, no sealed cavity. That saving is real. But the saving only stays real if the window sits in a space where thermal performance does not matter much.
Take a common example: a 1.8 metre by 2 metre window, which gives you 3.6 square metres of glazing. On a day when the indoor-outdoor temperature difference is 15°C, a single glazed aluminium unit with a U-value around 6.7 W/m²K can lose roughly 362 watts of heat continuously through the glass area alone. A double glazed alternative closer to 3.5 W/m²K would lose about 189 watts under the same conditions.
That is a difference of about 173 watts per window.
Stretch that across 10 hours of winter heating and you are looking at roughly 1.7 kilowatt-hours saved for just one opening. Multiply that across several windows in a living area, and the annual energy penalty becomes hard to ignore. The exact dollar figure depends on your tariff, heating system, and climate, but the direction of the cost is not in doubt.
In a garage or shed, the same heat loss exists physically, but it never turns into a bill because the room is not being actively conditioned. That is the cleanest way to separate sensible single glazing from wasteful single glazing: if no one is paying to maintain the indoor temperature, the thermal loss is mostly irrelevant. If the temperature matters every day, the loss becomes part of your operating cost.

Condensation is the visible warning sign

When a conditioned room contains single glazed aluminium, condensation is often the first sign that the window no longer matches the job.
Condensation forms when moist indoor air meets a surface cold enough to drop below the dew point. Single glazing gets cold quickly, and aluminium frames get colder still because metal conducts heat so efficiently. The result is moisture on the glass, moisture on the frame, and sometimes moisture on the sill or surrounding finishes.
That is not just a cosmetic issue. Repeated condensation can stain plaster, damage paint, swell timber reveals, and encourage mould in the corners around the frame. It also tells you something important about the room itself: the window is colder than the air the room is trying to maintain.

In an unconditioned space, condensation may still occur on humid mornings, but the consequences are usually minor. The shed gets wiped down. The workshop dries out. The garage does not need a mold-resistant interior finish because nobody expects it to behave like a bedroom.
In a conditioned room, persistent condensation is a sign that the window is doing harm in the exact place where comfort matters most. It is one of the clearest reasons to replace rather than keep.

The decision rule that actually holds up

Most homeowners get better results by asking one blunt question first: does this room need stable comfort most of the time?
If the answer is no, single glazing is often fine.
If the answer is yes, the case for replacement gets much stronger.
A practical way to sort the openings in a house looks like this:

- Keep single glazed aluminium windows in detached garages, sheds, workshops, storage rooms, and other unconditioned spaces.
- Keep them in seasonal rooms, enclosed patios, or other areas used lightly and not expected to perform like main living zones.
- Replace them in bedrooms, living rooms, kitchens, and home offices that are heated or cooled regularly.
- Replace them sooner if condensation, draughts, or noise intrusion are already affecting comfort.
- Keep the frame only if it is structurally sound and the room can genuinely live with the thermal performance.

That rule is more reliable than chasing the newest product on the market. It also keeps you from spending money where it will never pay back. A perfectly good single glazed window in a storage space is not a problem to solve. A leaky, condensation-prone window in a family room is.

Climate matters, but occupancy matters more

Australia’s climate zones can make the issue feel different, but they do not change the underlying logic.
In mild coastal regions, the penalty of single glazing is easier to overlook in lightly used spaces. In hotter inland areas, west-facing windows can overload a room in the afternoon. In colder southern climates, winter heat loss becomes obvious the moment the heater starts working harder than it should.

Even so, climate alone does not decide the answer. A single glazed window in a shed in Ballarat may still be perfectly acceptable if the space is unconditioned. A single glazed window in a sunny living room in Perth can be a genuine energy drain even though the climate is milder than many inland areas. Occupancy and temperature targets matter more than geography by itself.

That is why the wrong question keeps causing bad decisions. People ask whether single glazing is good or bad in general. The better question is whether the room has a thermal job to do.

If it does, the window becomes part of the energy system.

If it does not, the window is mostly a light source with a frame around it.

What that means before you replace anything

The smartest window decisions are rarely all-or-nothing. The windows in a house do not have to be treated as one group. A home can have a garage that keeps its original single glazed units, a shed that gets the cheapest practical replacement, and a living room that justifies a proper upgrade.

That targeted approach matters because window replacement is expensive enough without spending on performance that no one will ever use. The money belongs where the room asks for it most.

A single glazed aluminium window is not inherently outdated. It is simply a tool with a narrow range of jobs. Use it where comfort is not being actively managed, and it can make perfect sense. Use it where heating or cooling runs regularly, and the same tool becomes a recurring loss.

That is the real keep-or-replace test: not how modern the frame looks, but whether the room behind it has to hold the line on temperature every day.

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