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PETG TRANSLUCENT

Tinted, light-transmitting PETG for lampshades, signs and glass-like objects — clearer than any PLA can be, with PETG's heat and toughness, and the most heat-tolerant material in this series.

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3 · How it is printed

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5 · Compared with other brands

PETG Translucent is PETG coloured with transparent dyes instead of opaque pigments. Because PETG does not crystallise as it cools, it is naturally glass-clear in bulk; printed, it comes out somewhere between frosted and nearly transparent depending on how it is printed, and always clearer than a translucent PLA. It brings the rest of PETG with it: a softening point around 70 °C that makes it safe around LED and even some warm light sources, toughness that survives handling, and tolerance of damp and sunlight. It is the material for backlit lettering, lamp bodies, light guides, display stands and anything that should glow when lit from behind. It needs drying more than most — moisture shows up as bubbles that scatter light — and it prints best slowly, with the fan off.

FEELS LIKE

Glassy, smooth, tough

Like a coloured acrylic sheet, but it flexes rather than cracks

THE EFFECT

Frosted to near-clear

Standard settings give an even frosted glow; the clarity recipe approaches glass

HEAT

Highest in the series

HDT 74 °C at light load, Vicat 79 °C — tolerates warm light fittings

STRENGTH

Tough, not stiff

37 kJ/m² impact; the lowest stiffness of the PETGs

COLOUR RANGE

8 tints

Gray, Light Blue, Olive, Brown, Teal, Orange, Purple, Pink — no plain clear

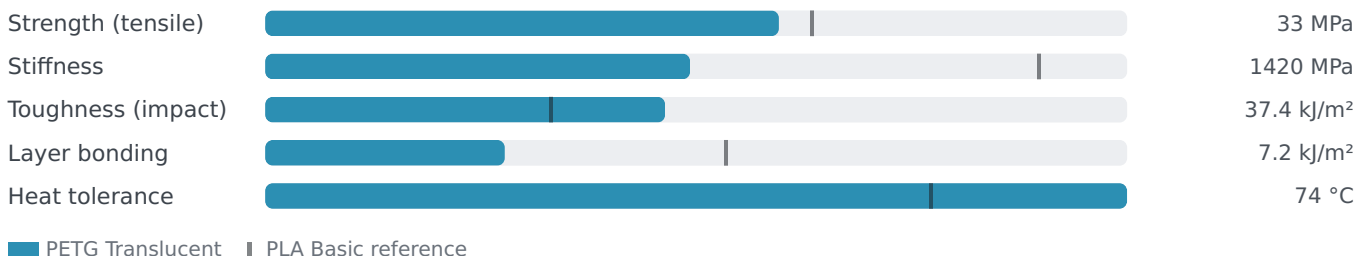
EASE OF PRINTING

Moderate

Must be dry; slow, hot and unfanned for clarity; glue on the bed

Where it sits in the range

Each bar shows this material against the strongest value found anywhere in this series of guides, PLA and PETG together (bar full = best in the series). The dark tick marks plain PLA Basic, the material most people know, so you can see at a glance where this one gives up or gains something. Values come from the manufacturer's own datasheets, measured on test bars printed flat (X-Y).



Good for

- Backlit lettering, logos and signage with LED strips behind them

Not the right choice for

- Water-clear optical parts — even the best FFF print is hazy compared with cast acrylic

- Lamp bodies, shades and diffusers where a warm bulb rules out PLA
- Light pipes, indicator windows and see-through panels
- Vases, bowls and display pieces with a glass-like depth
- Outdoor light fittings and garden lanterns

- Halogen and incandescent fittings in direct contact; 70 °C is the limit
- Fast printing; clarity and speed pull in opposite directions
- Food and drink containers; no certification
- Parts loaded across their layers — Z toughness is the lowest of the PETGs

Why PETG is clearer than PLA, and how to get the most from it

PLA is semi-crystalline: as it cools, ordered regions form that scatter light, which is why even undyed PLA is milky. PETG's glycol modification prevents that ordering, so the solid polymer stays optically uniform — the manufacturer's PolyLite counterpart, for instance, publishes 90 % light transmission for the bulk material. What clouds a print is not the plastic but the structure: every boundary between two extruded lines and every trapped air gap bends light. The manufacturer's clarity recipe attacks exactly that. Dry the filament for at least eight hours so no steam bubbles form; use a 0.8 mm nozzle to lay fewer, fatter lines; print 0.1 mm layers at 0.5 mm line width with a single wall, zero top and bottom layers and 100 % straight-line infill in one direction so the lines fuse into sheets; run the nozzle hot for better flow and fusion; switch all fans off so lines cool slowly into each other; and polish the surface afterwards. The manufacturer adds that complex geometry defeats the recipe even with perfect settings. Independent testing found the same settings also raise layer strength by about a third, because the fused lines leave fewer voids.

2 · Living with a PETG Translucent print

A PETG Translucent print is one of the more robust objects in this series: it takes knocks, tolerates warmth and damp, and its only real enemies are strong solvents and scratches.

Heat	Softens from about 70 °C (glass transition 70 °C, Vicat 79 °C, HDT 74 °C at light load). LED fittings are trivially safe; a warm compact fluorescent is fine with ventilation; halogen and incandescent bulbs in contact are not.
Sunlight	Outdoor tolerant; transparent dyes fade faster than opaque pigments, so expect gradual colour loss over years in direct sun.
Water and damp	Insoluble; suitable for outdoor lanterns, bathroom fittings and vases.
Chemicals	Resists oils and greases; strong acids, alkalis and some solvents cloud or craze it. Clean with isopropyl alcohol; never acetone.
Food	No food-contact certification. Not for drinking vessels.
Scratches	Softer than acrylic; scratches show as white lines. A plastic polish restores them.
Load over time	The least stiff PETG here; a long unsupported panel will bow slightly over time when warm.
End of life	General waste or 3D-print recycling; not bottle recycling.

Looks and feel

With standard settings: an evenly frosted, coloured translucency like sea glass, glowing when back-lit. With the clarity recipe: a tinted, nearly transparent object

Care

- Wipe with a soft damp cloth; isopropyl alcohol for fingerprints

with faint parallel lines, like a piece of ribbed glass. Colours are saturated in thick sections and pale in thin walls. No plain clear is offered; Gray is the most neutral.

- Keep hot bulbs at a distance; LED only in enclosed shades
- Polish scratches with plastic polish or 2000-grit wet paper followed by compound
- A clear gloss varnish or a brief pass with a heat gun visibly increases transparency by smoothing the surface
- Use clear epoxy or a UV-cure adhesive for visible joints; superglue clouds

Why this rather than PLA Translucent

PLA Translucent is stronger and stiffer on paper but softens at 54 °C and can never be more than frosted. PETG Translucent is clearer, tougher, tolerates twenty degrees more heat and handles outdoors. For anything lit by more than an LED, or used outside, PETG is the right one.

What PETG actually is

PETG is the plastic of the clear drinks bottle, adapted for printing. The base polymer is PET — polyethylene terephthalate — and the G stands for glycol, a second building block added to the chain so that the material no longer crystallises when it cools. That one change gives PETG its character: it stays clear or evenly tinted instead of going milky, it is noticeably tougher than PLA and yields before it breaks, and it has no true melting point, only a softening range. Its glass transition sits around 65–80 °C, some ten to twenty degrees above PLA, which is enough to survive a parked car, hot tap water and most sunny windowsills.

The same chemistry brings three habits every PETG user learns. It is hygroscopic: a spool left open for a day or two absorbs enough moisture to string and bubble, so drying is part of the routine rather than a fix. Its melt is sticky, which is why it strings between towers and why it bonds so well to a smooth print bed that it can pull chips out of the surface — glue on the plate acts as a release layer, not an adhesive. And it dislikes strong cooling: fan speeds that suit PLA weaken PETG's layer bonds. PET is one of the most recycled plastics in the world, but a printed PETG part is not accepted in household bottle recycling; it goes to general waste or a dedicated 3D-print recycling stream. Every PETG in this series is the same polymer with a different additive package, flow modifier, colourant or fibre, and each guide explains what that change does.

3 · How it is printed

Two sets of settings apply: the manufacturer's standard window for a frosted result, and the clarity recipe for maximum transparency. PETG Translucent runs a little hotter than the other PETGs and is limited to 220 mm/s; for clarity, forget the speed limit entirely.

Manufacturer print window

Nozzle temperature	230–270 °C (store guidance 230–260 °C; specimens at 255 °C)
Bed temperature	65–75 °C
Build plates	Engineering Plate, High-Temperature / Smooth PEI, Textured PEI; the Cool Plate is not recommended
Bed adhesive	Glue stick or liquid glue required — release layer on smooth plates
Chamber	35–50 °C

Print speed	Up to 220 mm/s; far slower for clarity
Part cooling fan	0–60 % for normal prints; off for clarity
Retraction	0.8–1.4 mm at 30–60 mm/s
Max overhang without support	About 70°
Max unsupported bridge	About 30 mm
Support material	Support for PETG

Hardware and compatibility

Nozzle sizes	0.2, 0.4, 0.6 and 0.8 mm; 0.8 mm for clarity work
Nozzle material	Any; hardened steel not required
Abrasive	No
Automatic material systems	AMS and AMS lite listed as compatible; RFID profiles
Spool identification	RFID tag
Format	Spool and spool-free refill

Moisture, drying and storage

Moisture is the enemy of clarity: water absorbed by the filament boils in the nozzle and leaves microbubbles that turn a clear wall milky. The manufacturer states the filament must be dried before use.

Forced-air oven or filament dryer	65 °C for 8 hours (at least 8 hours before clarity work)
Heated print bed method	75–85 °C for 12 hours, covered
AMS 2 Pro / AMS HT	Not stated on the V1.0 sheet; 65 °C for 8 hours is the manufacturer's PETG Basic figure
Storage	Sealed with desiccant, below 20 % relative humidity
Annealing	Not recommended

Tips that make a visible difference

- Clarity recipe: dry ≥ 8 h · 0.8 mm nozzle · 0.1 mm layers · 0.5 mm line width · 1 wall · 0 top and 0 bottom layers · 100 % rectilinear infill at one angle · nozzle at the hot end of the range · flow slightly above 100 % · all fans off · slow, constant speed · polish afterwards
- For a lampshade, vase mode with a 0.6–0.8 mm nozzle gives an even single wall and the best light transmission per gram
- Fewer walls, more light: one wall glows, three walls diffuse
- Keep the outer-wall speed constant; speed changes show as bands of differing haze
- Glue on the bed is a release layer for PETG — without it the part can lift chips from a smooth plate

Known problems and their fixes

Milky, bubbly walls

Moisture. Dry at 65 °C for 8 hours and print promptly; store with desiccant.

Haze despite dry filament

Too many line boundaries. Larger nozzle, single wall, zero top/bottom, higher temperature, fans off. Accept that FFF is never fully clear.

Stringing between features

Moisture or too hot. Dry first; then 5–10 °C lower and slightly more retraction.

Part tore the smooth plate

Over-adhesion without glue. Glue every time, 60–65 °C bed, cool fully before removal.

Weak layers

Too much cooling. Fan below 40 %, door closed, chamber warm, nozzle hotter.

4 · The numbers — technical datasheet

Figures are from the PETG Translucent Technical Data Sheet V1.0 (specimens printed at 255 °C / 70 °C bed / 150 mm/s, 100 % infill, annealed 65 °C for 8 hours). Melt flow was measured at 230 °C.

Physical and thermal properties

Property	Test method	Value
Density	ISO 1183	1.25 g/cm ³
Melt flow index (230 °C, 2.16 kg)	ISO 1133	11.7 ± 1.5 g/10 min
Melting temperature	DSC, 10 °C/min	228 °C (reported; PETG is essentially amorphous)
Glass transition temperature	DSC, 10 °C/min	70 °C
Vicat softening temperature	ISO 306	79 °C
Heat deflection temperature, 0.45 MPa	ISO 75	74 °C
Heat deflection temperature, 1.8 MPa	ISO 75	68 °C
Saturated water absorption (25 °C, 55 % RH)	—	0.30 %
Light transmittance	—	not published

Mechanical properties

Property	Test method	X-Y (flat)	Z (across layers)
Young's modulus	ISO 527	1420 ± 160 MPa	1230 ± 140 MPa
Tensile strength	ISO 527	33 ± 4 MPa	29 ± 3 MPa
Elongation at break	ISO 527	8.2 ± 1.3 %	5.2 ± 0.9 %
Bending modulus	ISO 178	1610 ± 130 MPa	1520 ± 110 MPa
Bending strength	ISO 178	68 ± 3 MPa	55 ± 4 MPa
Charpy impact, unnotched	ISO 179	37.4 ± 3.3 kJ/m ²	7.2 ± 1.8 kJ/m ²
Charpy impact, notched	ISO 179	8.6 ± 2.1 kJ/m ²	not published

What the mechanical numbers mean in practice

PETG Translucent is the softest-sprung PETG here — a modulus of 1420 MPa, about half that of the 2026 PETG Basic — and the toughest in the flat plane at 37.4 kJ/m² unnotched. Tensile strength of 33 MPa is

ordinary, but Z retention is excellent at 88 %, so a translucent panel is nearly as strong across its layers as along them in a slow pull. Z impact toughness, however, is only 7.2 kJ/m², the lowest of the PETGs: a sharp blow across the layers is where it fails. Thermally it leads the entire series — Tg 70 °C, Vicat 79 °C, HDT 74 °C at light load — which is what makes it usable near light sources that would collapse PLA.

Product format

Diameter	1.75 mm (tolerance not stated on the datasheet; ± 0.03 mm is the manufacturer's standard)
Net weight	1 kg
Spool	ABS, 200 × 67 mm, rated to 70 °C; spool-free refill also offered
Colours	8: Translucent Gray, Light Blue, Olive, Brown, Teal, Orange, Purple, Pink
Identification	RFID tag
Datasheet version	V1.0

Safety, certifications and chemical resistance

- Declared composition PETG with transparent dyes; odourless, no skin hazard listed
- Flammable; combustion products water and carbon oxides
- RoHS and REACH compliance stated across the filament line
- No food-contact certification; no emissions or light-transmittance data published
- Resistant to most oils and greases; not to strong acids, alkalis or some organic solvents
- Marketing claims of water, UV and temperature resistance are not supported by published test data

5 · Compared with Polymaker and SUNLU

Translucent PETG is offered by all three brands, and Polymaker's is the only one that publishes a light-transmission figure. Polymaker's legacy translucent line is being run down in favour of its new PETG, which includes a clear.

Polymaker

PolyLite Translucent PETG (legacy, finite stock) ·
Polymaker PETG in Clear

PolyLite Translucent shares the PolyLite PETG datasheet: 90 % light transmission for the bulk material, the highest heat resistance of any plain PETG here (Tg 81 °C, HDT 75 °C), strong in a pull but very brittle at a notch. Three tints plus clear; stock is finite. The new Polymaker PETG offers a genuine clear at 300 mm/s with much better layer strength. Polymaker states that its materials carry no FDA certification and that no printed part can inherit one.

Light transmission (PolyLite)	90 %
Tensile X-Y / Z (PolyLite)	50.8 / 42.8 MPa
Charpy notched X-Y (PolyLite)	2.6 kJ/m ²
Tg / HDT 1.8 MPa (PolyLite)	81 / 75 °C
Nozzle / bed	230–260 °C / 70–80 °C
Fan	off to 20 %
Speed (PolyLite)	50–100 mm/s
Spool	cardboard, 1 kg

SUNLU

SUNLU PETG Transparent

SUNLU's transparent PETG shares the standard PETG datasheet row — 48 MPa tensile, Tg 79 °C, HDT 70 °C — and comes in seven tints with no transmission figure and no clarity guidance. Tight ± 0.02 mm tolerance, sold from 250 g to 5 kg, and the cheapest of the three.

Tensile	48 $\pm$ 10 MPa
Flexural strength	70 $\pm$ 10 MPa
Izod notched	3 $\pm$ 1 kJ/m ²
Tg / HDT	79.4 / 70 $\pm$ 5 °C
Nozzle / bed	240–260 °C / 60–70 °C
Tints	7
Diameter	1.75 $\pm$ 0.02 mm
Formats	0.25–5 kg

Reading cross-brand numbers fairly

Manufacturer datasheets are produced by different labs on different printers, and two numbers are comparable only when the test standard, specimen orientation and impact method match. Charpy and Izod impact results are not interchangeable; notched and unnotched results differ by a factor of three or more; and Polymaker publishes Z-direction data where SUNLU publishes none. Treat cross-brand figures as an indication of class, not a ranking. Where a brand's marketing claim is not backed by its own datasheet, this guide says so.

Bottom line. Bambu's PETG Translucent is the toughest of the three and the only one with a published clarity procedure and RFID presets, but offers no plain clear. Polymaker's PolyLite is clearer and more heat-tolerant on paper and its new PETG adds a true clear; SUNLU is the budget choice. For maximum transparency, all three respond to the same recipe: dry, big nozzle, one wall, fans off, slow.

How to read the datasheet

X-Y vs Z

A 3D print is a stack of layers. X-Y describes a test bar printed lying flat, where the load runs along the extruded lines. Z describes a bar printed standing up, where the load tries to pull the layers apart. Z values are always lower, and the ratio between them tells you how well the layers have fused. Real parts fail along layer lines far more often than through them.

Tensile strength (MPa)

The stress at which a bar pulled from both ends breaks. Megapascals are newtons per square millimetre: a 10 mm × 10 mm cross-section of a 35 MPa material holds roughly 3.5 kN, about 350 kg, before it snaps in a slow pull.

Young's modulus (MPa)	Stiffness — how much force it takes to stretch the material by a given amount. Higher means more rigid. It says nothing about strength: a stiff material can still be brittle.
Elongation at break (%)	How far the bar stretched before it broke, as a percentage of its original length. Low values (under 5 %) mean the material snaps with little warning; higher values mean it yields and bends first.
Bending (flexural) strength and modulus	The same two ideas measured by pressing down on the middle of a bar supported at both ends — closer to how brackets, clips and shelves are actually loaded.
Charpy impact (kJ/m²)	A pendulum hammer strikes the bar; the energy it absorbs before breaking is divided by the fracture area. This is the best single indicator of toughness — resistance to drops and knocks. Unnotched bars measure the bulk material; notched bars have a small cut that concentrates stress and give much lower numbers. Never compare a notched figure with an unnotched one, or a Charpy figure with an Izod one (a different test geometry).
Glass transition, T_g (°C)	The temperature at which the polymer's chains gain enough mobility for it to change from glassy and rigid to leathery and soft. Above T _g a loaded part will slowly creep and deform. For PLA and PETG this is the single most important thermal number.
Heat deflection temperature, HDT (°C)	The temperature at which a bar under a fixed bending load sags by a set amount. Quoted at 0.45 MPa (light load) and 1.8 MPa (heavy load); the light-load figure is always the higher of the two. Practical rule: keep loaded parts well below the 0.45 MPa figure.
Vicat softening point (°C)	The temperature at which a needle under load penetrates 1 mm into the material. Another measure of when the surface stops being hard.
Melting temperature, T_m (°C)	Where the crystalline regions melt, measured by DSC (a calorimeter). Printing happens well above T _m so the polymer flows freely.
Melt flow index, MFI (g/10 min)	How much molten material flows through a standard die in ten minutes under a fixed weight (210 °C for PLA; PETG sheets use 210–250 °C, so compare only at equal temperature). Higher means runnier and easier to push at speed; lower means more viscous, which is why some variants have lower speed limits.
Water absorption (%)	How much moisture the filament takes up from air at 55 % relative humidity. Absorbed water boils in the nozzle, causing pops, bubbles, stringing and rough surfaces — hence the drying recommendations.
Density (g/cm³)	Mass per volume. A 1 kg spool of a 1.31 g/cm ³ material contains about 5 % less printable length than a 1 kg spool at 1.24 g/cm ³ — heavier fillers cost you metres.
Annealing	Baking a finished print at a temperature just above T _g to let it crystallise further. It can raise heat resistance and stiffness but usually shrinks and sometimes warps the part.

Data notes and sources

Where sources disagree

- Nozzle window: datasheet 230–270 °C; store page 230–260 °C.
- Build plates: the datasheet lists Engineering, High-Temperature and Textured PEI; one regional store page returned an inverted list and is disregarded.

- The clarity recipe on the manufacturer's wiki carries no speed figure; the commonly quoted 15–20 mm/s comes from independent testing (CNC Kitchen), not from the manufacturer.
- Light transmittance is not published for this product; the 90 % figure in the cross-brand section is Polymaker's for its PolyLite PETG.
- AMS 2 Pro / AMS HT drying figures are absent from the V1.0 sheet; the PETG Basic V3.0 value is quoted as the manufacturer's PETG guidance.

Sources

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- SUNLU, filament parameter table — <https://www.sunlu.com/wiki/43>

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