

Air Purifier Comparison Chart

Filter types compared: what they catch, what they miss, and what to buy

FILTER TYPE	REMOVES	DOESN'T REMOVE	BEST FOR	WATCH OUT FOR
True HEPA (H13)	99.97% of particles $\geq 0.3\mu\text{m}$: dust, pollen, mold spores, pet dander	VOCs, gases, odors, viruses smaller than $0.3\mu\text{m}$	Allergies, asthma, general air quality	Must replace filters every 6–12 months; genuine HEPA only
HEPA-type / HEPA-like	~85–95% of particles (lower efficiency)	Smaller particles, gases, VOCs	Budget option for light dust	Marketing term – not true HEPA. Avoid for serious concerns.
Activated Carbon	VOCs, gases, odors, formaldehyde, smoke	Particles, dust, mold spores, allergens	Chemical sensitivities, off-gassing, smoke	Carbon saturates and needs regular replacement; weight indicates capacity
UV-C	Some bacteria and viruses with sufficient exposure time	Particles, allergens, mold, chemicals	Add-on germicidal layer (not standalone)	Can produce ozone; effectiveness depends on exposure time. Low value alone.
Ionizer	Some airborne particles (charges them to stick to surfaces)	Gases, VOCs; doesn't truly remove particles from air	Very little – mostly marketing	Produces ozone, a lung irritant. Avoid for children's rooms.
PCO (Photocatalytic Oxidation)	Some VOCs and gases broken into CO_2 and H_2O	Particles, allergens, most biological contaminants	Specific VOC concerns in new construction	Newer technology with limited independent testing; can create harmful byproducts

What to Look For When Buying

- True HEPA (H13 or H14) — not "HEPA-type" or "HEPA-like"
- Activated carbon filter included (ideally 2+ lbs of carbon)
- CADR rating appropriate for room size (2/3 of room sq ft minimum)
- No ozone emissions — check for CARB certification
- Sealed system (air can't bypass the filter)
- Noise level < 50 dB on medium for bedroom use
- Replacement filter cost and availability (check before buying)

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