A2L Refrigerant Quick Guide

R-454B and R-32: what's different, what's the same, and how to stay safe

1. What "A2L" Means

- **A =** lower toxicity (same as R-410A).
- **2L =** mildly flammable. Hard to ignite and slow to burn, but it CAN burn. Treat it with respect.
- **Why the change:** The EPA's AIM Act phases down high-GWP refrigerants, so new residential and light commercial AC and heat pump equipment is moving from R-410A to A2Ls.

2. The Two You'll See Most

	R-454B	R-32
Found in	Carrier/Bryant, Trane, Lennox, others	Daikin, Goodman, many ductless brands
Pressures	Close to R-410A, a bit lower	A bit higher than R-410A, hotter discharge
Type	Blend with small glide. Charge as liquid	Single component

3. Cylinders and Tools

- **Cylinders:** Red band at the top and LEFT-HAND threads on the valve. You'll need an adapter for your hoses.
- **Recovery:** Use a recovery machine rated for A2Ls and a recovery cylinder marked for flammable refrigerant. Never mix A2L with R-410A in one tank.
- **Tools:** Vacuum pump and recovery machine rated for A2L use, a leak detector that senses A2Ls, and a manifold with the right P/T charts (most digital ones have them).

4. Safety on the Job

- **No ignition sources:** No open flames, sparks or smoking near the work area. Ventilate enclosed spaces.
- **Before brazing:** Recover the charge, evacuate, purge with dry nitrogen, then braze with nitrogen flowing. Never put a torch on a charged system.
- **Leak sensors:** Many indoor units have a refrigerant sensor that runs the blower to dilute a leak. Never bypass or disable it. Wire it exactly as the install manual shows.
- **Charge limits:** How much refrigerant a system can hold depends on room size. Follow the nameplate and install manual for minimum floor area.
- **Joints:** Use only the joints the manufacturer approves. Some flare connections aren't allowed indoors.
- **Keep an extinguisher:** Have a dry-chemical or CO2 extinguisher handy when working on A2L systems.

5. What Doesn't Change

- **Good work is good work:** Proper airflow, a clean nitrogen braze, a deep vacuum, and charging by superheat/subcooling to the manufacturer's numbers.
- **Don't mix or retrofit:** Don't put an A2L into an R-410A system. R-410A equipment is still serviced with R-410A.
- **EPA 608:** Section 608 certification still applies. Get A2L-specific training before your first install.

A2Ls aren't scary. They just leave no room for shortcuts. The techs who already do it right will have the easiest time.

Always follow the equipment manufacturer's instructions and local codes. This guide is a field reference, not a substitute for them.