

A2L

The new refrigerant class you never heard of...

Hillphoenix®

YES

The search for more efficient refrigerants with lower toxicity that are more environmentally friendly, has been on for several years now. Natural refrigerants like CO₂ and R290 (should either use the numbers or the names, but not both ie. R744 and R290 or CO₂ and Propane) are gaining in popularity because of their benefits. Hillphoenix® has become a major provider of equipment that utilize these natural refrigerants.

In the meantime, the clock has continued ticking for companies with a significant stake in industrial refrigeration equipment. As of 2023, the clock has struck. The popular, ever-present R410-a is to be phased out in favor of A2L refrigerants according to the American Innovation and Manufacturing Act (AIM) passed by Congress.

So what is A2L?

“A2L” references the ISO 817 standards for Refrigerants — Designation and Safety Classification. The A = non-toxic. The 2 = flammable. The L = low burning velocity. A2L refrigerants (and there are many of them) are less toxic and less flammable when compared to other classes of refrigerants — like R410-a and R134a.

It's all about the GWP.

The main benefit of A2L refrigerants is their extremely low Global Warning Potential (GWP) levels. As an example, R1234yf has up to 99% less GWP than R410-a and R134a. R32 is rated at 66% less.

Companies are beginning to look at A2Ls for their ultra-low GWP levels. They offer an attractive hedge against tightening regulations and, because their physical properties resemble more familiar HFC refrigerants, installers will find them easier to work with.

Are A2Ls in your future?

The short answer will be a conditional Yes for many. A2Ls have the potential for broad applicability in commercial refrigeration systems and equipment. Because of that, many component manufacturers are currently hard at work developing A2L-qualified equipment for self-contained units, remote condensing units and distributed racks/packs.

As the refrigerant transition accelerates in the next few years, lower-GWP A2L refrigerants will become increasingly viable alternatives to high-GWP HFCs. But until then, we know you will have questions. And you know, Hillphoenix will have the answers...

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FAQs

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Q: What A2L refrigerants are currently recognized, listed, and available for use in North America?

A: None. Currently, no recognized listed A2Ls are available today for commercial refrigeration, as the respective regulatory agencies still need to approve them.

Q: Do A2L refrigerants contain PFAS chemicals? What are the concerns around PFAS?

A: Yes, A2L refrigerants contain PFAS chemicals. There have been proposed restrictions on the use PFAS chemicals as PFAS has been alleged to cause long term health problems. A few states, such as Maine, are proposing banning the use of chemicals that contain PFAS and the EPA is evaluating this issue as well, with no definitive ruling. Dover Food Retail will keep abreast with the regulations regarding PFAS and will continue to keep our stakeholders informed of any new developments.

Q: Will I be able to use a single A2L refrigerant for my entire store?

A: Yes, once the appropriate A2L refrigerants have been approved. However, due to current releasable charge limits, it may require several smaller, individual systems in order to meet the releasable charge limits.

Q: Are there any charge amount limitations with A2Ls?

A: Yes, and they vary according to application for each specific A2L refrigerant according to its lower flammability limit, which will dictate the charge restriction.

FAQs

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Q Are there any application limitations with A2Ls?

A: Yes. Charge limitations based on the lower flammability limit of the A2L refrigerant will preclude some applications from using a specific A2L refrigerant. Additionally, the thermophysical properties of the new refrigerant blends may require additional consideration in order to overcome certain characteristics (i.e., high glides, some A2Ls are not appropriate for both LT and MT applications, etc.).

Q: Is there a difference in performance between an A2L refrigerant and a conventional synthetic refrigerant?

A: Yes, and they vary according to application. The specific A2L refrigerant may perform better or worse than a traditional HFC refrigerant used in the same application - similar to the differences between R22, R404A, and R448A.

Q: Can an A2L refrigerant be retrofitted into an existing conventional synthetic refrigerant system?

A: It may be possible to retrofit an A2L refrigerant into certain systems, but it may come with significant technical and compliance challenges, the extent of which is unclear according to current codes and standards.

FAQs

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Q: Are there any additional safety measures required for A2L refrigerants vs. conventional A1 refrigerants?

A: Yes. New mitigation features such as leak detection and ventilation may be required as defined by UL 60335-2-89 and ASHRAE Standard 15. We recommend a thorough review of these standards for what may be required for your application.

Q: How do A2L refrigerant costs compare to conventional synthetic refrigerant costs?

A: A2L refrigerants for commercial refrigeration are not widely available at present. As such, a meaningful cost comparison cannot be provided.

Q: Are A2L refrigerants currently readily available in installation and service quantities?

A: No. There are not currently recognized listed A2L refrigerants that are approved for use in commercial refrigeration allowed to be used today, as the respective regulatory agencies have yet to approve them. We anticipate approval for certain A2Ls to occur by Q3 2023, and availability is expected to grow from that point.

FAQs

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Q: Do component manufacturers currently offer A2L-specific rated components?

A: A2L-compatible components are not commercially available at this time. Manufacturers are currently developing and qualifying components in an effort to support the proposed regulations limiting allowable refrigerant GWPs.

Q: Do A2L refrigerants require the use of electronic expansion valves in cases and unit coolers?

A: EEVs offer improved efficiency with all refrigerants; however, TXVs (thermostatic expansion valves) can be used and are undergoing qualification for use with A2Ls.

Today, food retailers and foodservice operators are evaluating all refrigerant options that will help them to meet their operational goals and regulatory targets. Moving forward, the EPA and CARB will continue to require the use of lower-GWP refrigerants. And emerging A2L alternatives will play an expanding role.

Depend on Hillphoenix for clear information and guidance regarding all of the alternatives to high GWP HFC refrigerants. We are committed to offering the latest in low GWP refrigeration systems whether they're Natural or A2L solutions.

When you are ready, reach out and let us know how we can help.

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