

# THE FUTURE IS COMING. R290 IS ON ITS WAY.



## Leer is introducing R290 refrigerant as an alternative to the current refrigerant, R404a. Why?

As an industry leader in temperature-controlled storage solutions, Leer is committed to staying at the forefront of ever-changing technologies, market demand, and the world we live in. We strive to continuously adapt to these conditions so we can consistently offer our customers best-in-industry products.

Since Leer began manufacturing Ice Merchandisers in 1952, R290 will be the fourth primary refrigerant. R12 was the

go-to refrigerant from its introduction in the 1930's until the 1990s.

Since then, technology improvements and environmental awareness have driven refrigerant transitions every 10-15 years. Our last transition was in 2007. Technology and global environmental awareness have enabled the introduction of a much-improved refrigerant in 2020.

### Leer Refrigerants Through the Years

REFRIGERANT	YEARS OF USE	ODP	GWP	THERMAL CONNECTIVITY	PERFORMANCE
<b>R12</b>	Thru 1994	1.0	10,000+	0.0482	Good
<b>R134a</b>	1994 - 2007	0	1300	0.0586	Good
<b>R404a</b>	2007 - TBD	0	3900	0.0497	Good
<b>R290</b>	2020 - TBD	0	3	0.0676	Very Good

**Ozone Depletion Potential (ODP)** = The measure of the effectiveness in removing ozone, relative to standard compound (CFC-11/R11).

**Global Warming Potential (GWP)** = The measure of the ability of a gas to trap heat in the atmosphere, relative to carbon dioxide (CO<sub>2</sub>).

**Thermal Conductivity** = The ability of material to transfer heat, measured in Btu/hr-ft<sup>2</sup>-o F. Values listed are via ASHRAE. A higher value is better.

### Reason 1

R290 is a high-performance refrigerant. The superior thermodynamic properties of R290 compared to R404a and R134a allow for a reduced charge per system and lower system energy use. This is not only better for the environment but decreases operating costs as well. Many other styles of commercial refrigeration have already adapted R290, problem-free, and have seen great results.

### Reason 2

It's eco-friendly! R290 is classified as a hydrocarbon (HC) refrigerant, which is a natural, non-toxic, refrigerant and the top alternative to hydrofluorocarbon (HFC) refrigerants. R290 has an Ozone Depletion Potential (ODP) of 0 and an ultra-low Global Warming Potential (GWP) of 3. Increasingly, retailers are beginning to request or even demand environmentally friendly refrigerants.

### Reason 3

Our investigation into R290 was intensified with the government's announcement of the Significant New Alternatives Policy (SNAP), which listed R404a on their Unacceptable Refrigeration Listings. Although Federal Courts vacated the SNAP listings, the California Air Resources Board (CARB) did not, and adopted the vacated rules from SNAP, listing a phase out date of R404a on January 1, 2020.

## What is R290?

In everyday terms, R290 is referred to as refrigeration grade propane. R290 is classified as a hydrocarbon refrigerant, which is natural, non-toxic and the preferred alternative to hydrofluorocarbon refrigerants in cooler and freezer applications.

## How is R290 refrigerant different from standard propane used for heating and cooking?

R290 refrigeration grade propane has a much higher purity than standard propane. The higher moisture content of standard propane will damage a refrigeration system. Standard propane also has scent added (another impurity) that refrigeration grade materials do not.

## What are the benefits of R290?

**Efficiency:** The superior thermodynamic properties of R290 compared to R404a and R134a allow for a reduced charge per system and lower system energy use, which decreases operating costs.

**Eco-Friendly:** R290 is a natural, non-toxic, sustainable hydrocarbon (HC) refrigerant and the top alternative to hydrofluorocarbon (HFC) refrigerants. R290, has an Ozone Depletion Potential (ODP) of 0 and an ultra-low Global Warming Potential (GWP) of 3.

## What is Leer doing?

Introducing R290 refrigerant into our product offering is not a change that can be implemented overnight. The introduction requires substantial process updates, inventory and production management, and capital expenditures. Therefore, it will be a controlled rollout.

We are committed to R290 as the refrigerant of the future, due to its increased performance and eco-friendly properties, but no phase out date for R404a has been set. Any future

transition away from R404a will be driven by environmental legislation and/or market demands. We'll provide ample warning and communications if/when that time comes.

In 2020, R404a units, for all Leer products, will be available from stock and/or with standard lead times. R290 units, for select products, will be available made to order and/or with extended lead times. We'll continue to update and communicate our timeline to rollout additional sizes and products.

	R404a REFRIGERANT PLANS FOR 2020		R290 REFRIGERANT PLANS FOR 2020	
	R404a AVAILABLE	R404a LEAD TIMES	R290 AVAILABLE	R290 LEAD TIMES
<b>ICE MERCHANTISERS (MODELS 30 - 100)</b>	Yes	Stock and/or Std Lead Times	Q1 2020	Made to Order/ Ext. Lead Time
<b>ICE MERCHANTISERS (MODELS &gt; 100)</b>	Yes	Stock and/or Std Lead Times	N/A	Made to Order/ Ext. Lead Time
<b>PALLET LOAD ICE MERCHANTISERS</b>	Yes	Stock and/or Std Lead Times	N/A	Made to Order/ Ext. Lead Time
<b>TRANSPORT UNITS</b>	Yes	Stock and/or Std Lead Times	N/A	Made to Order/ Ext. Lead Time
<b>REACH-IN STORAGE FREEZERS</b>	Yes	Stock and/or Std Lead Times	N/A	Made to Order/ Ext. Lead Time



## When does this go into effect?

The first deadline will only effect products placed in service in California starting on January 1, 2020. At that time, under California state law, all products utilizing refrigerants, (not just from Leer), will no longer be allowed to contain R404a refrigerant. The exception to that rule is if the unit itself completed all manufacturing stages prior to January 1, 2020. Those R404a products, even if stored in a warehouse, will still be allowed to be placed in service on or after January 1, 2020.

There are rumors of several other states following suit with phase out dates between 2020 – 2030, but nothing has been formally implemented at this time.

## Will Leer phase out the current refrigeration, R404a?

We are simply introducing R290 as an alternative refrigeration solution. No phase out date for R404a has been set. Any future transition away from R404a will be driven by environmental legislation and/or market demands. We'll provide ample warning and communications if/when that time comes.

In 2020, R404a units will be available from stock and/or with standard lead times.

## **If your business operates in California, do you have to switch?**

Yes. As of January 1, 2020, it will be mandated by the state of California that all newly manufactured products entering the state must not contain R404a. We will have limited inventory of R404a merchandisers manufactured prior to January 1, 2020, which will legally be able to be sold into California.

## **If your business does NOT operate in California, do you have to switch?**

No. Currently, SNAP and CARB will have no immediate impact on your business requirements. Although it's likely that additional states will follow California and mandate similar requirements.

## **How does this impact units already in the field?**

It doesn't. All units currently deployed in the field are unaffected. No changes will be required. Leer will continue to supply replacement and service parts.

## **Can I retrofit my R404a unit to be compatible with R290?**

No. The Environment Protection Agency (EPA) has ruled that R290 refrigerant can only be used on new equipment.

## **Which agency approvals will an Ice Merchandiser using R290 refrigerant have?**

Merchandisers using R290 refrigerant will be DOE compliant, UL listed, and NSF certified.

## **How does this affect how my unit runs?**

When your product reaches your facility, you won't be able to tell a difference besides the 'Natural Refrigerant' sticker placed on the merchandiser. The internal components of the refrigeration system will be unique to the type of refrigerant used, but the unit itself will look and operate the same, whether its R404a or R290.

## **Is R290 flammable?**

Yes. R290 refrigerant is flammable, but the amount of refrigerant used is small. Under normal operation, the R290 refrigeration unit is a hermetically sealed system and the refrigerant does not come into contact with any ignition sources. Furthermore, Underwriters Laboratories (UL) has established test protocols that establish safety standards in the event of a refrigerant leak.

Millions of commercial and residential refrigeration products already use R290 refrigerant across the United States and throughout the world.

## **How much R290 refrigerant is used?**

The maximum amount of R290 refrigerant allowed in commercial refrigeration applications is 5.29 oz. Leer Ice Merchandisers use between 3 oz and 5.25 oz depending on the size of the unit. This is comparable to the amount of flammable material used in common everyday items, such as aerosol cans and lighters.

## **Are there any storage, handling, or transportation requirements to be aware of?**

No. There are no special considerations for the warehousing, handling or transport of ice merchandisers using R290 refrigerant.

## **How do I know if my unit contains R290 refrigerant?**

The Leer serial number tag will continue to indicate the type and amount of refrigerant used in the system. Also, various labels noting the use of flammable refrigerant will be located on the unit and product packaging.

## **What service and replacement parts will be available for the R290 systems?**

We'll offer typical service and replacement parts for R290 systems as we have for all refrigeration systems in the past.

## **Is the compressor warranty the same on R290 systems?**

Yes. There will be a 5-year compressor warranty.

## **Do you need specialized training to service R290?**

Leer will continue to recommend trained and qualified Refrigeration Technicians perform maintenance and service.

## **Where can I get the Refrigeration Technician training?**

Leer suggests the training and certification available from Refrigeration Service Engineers Society ([www.rses.org](http://www.rses.org)).

## **ANY ADDITIONAL QUESTIONS?**

For more information, please go to [leerinc.com/eco-friendly](http://leerinc.com/eco-friendly) or email [info@leerinc.com](mailto:info@leerinc.com) and we'll be happy to assist in any way possible.



**Leer, Inc.**

206 Leer Street  
New Lisbon, WI 53950

**Ice Merchandisers & Vending Machines**

1-608-562-7100

[www.leerinc.com](http://www.leerinc.com)