



# HC Refrigerants

## Requirements & Recovery

**HOSHIZAKI**

R290 Refrigerant  
R600a Refrigerant

EPA Recommends certified training for handling R290 and R600a refrigerants.



As a world-class corporation, Hoshizaki America, Inc. is committed to developing original, energy efficient products with clear benefits for our customers. We seek natural solutions - such as hydrocarbon refrigerants in our products – for a clean and healthy environment.

### What are R290 & R600a refrigerants?

- They are hydrocarbon (**HC**) refrigerants.
- **R290**: Common name for high purity propane ( $C_3H_8$ )
- **R600a**: Common name for isobutane ( $C_4H_{10}$ )\*
- **R290/R600a** refrigerants are proven safe, not an environmental threat, and have been used in international markets for more than 10 years.
- Only refrigerant grade **R290** or **R600a** should be used.

### Why not R134a?

- Regulations ban R134a in certain uses, **effective 2019**.
- Most commercial refrigeration manufacturers are moving to **R290** as the alternative to R134a.

### R290 Service Overview

- **R290 & R600a** are **FLAMMABLE**. You **MUST** observe caution and follow proper safety practices when servicing **R290/R600a** refrigeration systems.
- Servicing refers to making repairs to the hermetically sealed system and any part of the electrical system. There is a 150 gram (5.29 ounces) charge limit of **R290/R600a** for commercial applications.
- Repair on **R290/R600a** systems **MUST** always be done in a well ventilated area.
- Because **R290/R600a** is highly flammable, a combustible gas leak detector and safety placard is required when servicing **R290/R600a** systems.

### Servicing R290/R600a vs. R134a

- Operationally very similar systems:
  - Operating pressures of **R290/R600a** systems are slightly higher than an equivalent R134a system.
- **Example:**
  - At 100°F, evaporating pressure in an **R290** system is approx. 46 psig.
  - At 100°F, evaporating pressure in an **R134a** system is 26.6 psig.
- Specialized training is not mandated, but is recommended.  
(Online Training Available) [www.rses.org](http://www.rses.org)

### R290 and R600a Parts and Requirements

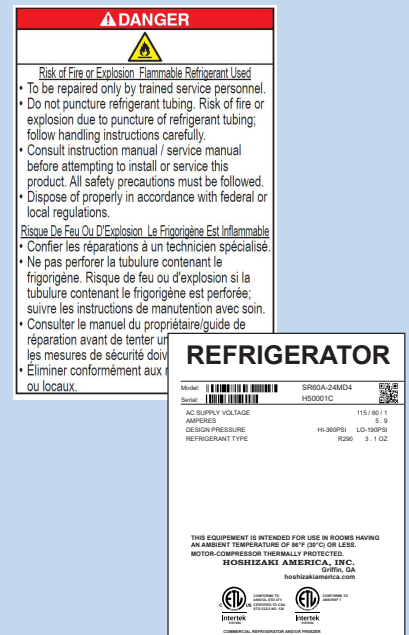
- Spark resistant/sealed electrical components are required.
  - Only like component replacement parts are to be used on **R290/R600a** systems. **NO** substitutes.
  - Avoid unapproved parts at all times.

### R290/R600a Recovery

Hoshizaki recommends recovery as outlined by RSES procedures and noted in our service manual.

- Using proper refrigerant practices, place piercing valves toward the end (crimped area) of the high and low-side process tubes, then recover the refrigerant into an approved container or device.

**Note:** Warning labels as provided by Hoshizaki.



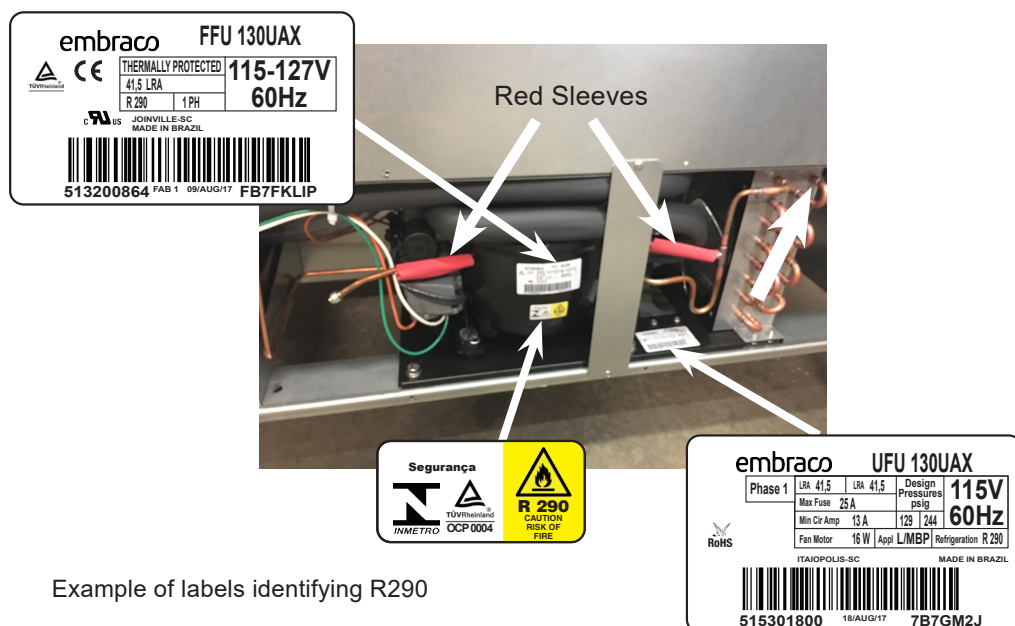
- All products containing **R290** or **R600a** must be clearly labeled.

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## Red and Blue Hoses

Standard refrigeration gauge manifold hoses may be used on **R290** and **R600a** systems.

However, the red and blue hoses are to be as short as reasonably possible.



Example of labels identifying R290

## R290/R600a Recovery

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### Red Sleeves

- Red sleeves are installed on the process tubes on **R290** and **R600a** systems. These sleeves are to remain in place. If removed for service, they must be returned to their original position.

## Training

Hoshizaki recommends servicing as outlined by RSES procedures.

- Refrigeration Service Engineering Society (RSES) offers an online course on **R290** and **R600a** refrigeration.

There is a charge for this course: [www.rses.org](http://www.rses.org)

## Read the Hoshizaki Service Manual Before Any Repair

- Before starting any refrigeration repair, post the **Danger Propane** or **Danger Isobutane** placard on the front of the appliance.
- A Combustible Gas Leak Detector **MUST** be turned on prior to starting any work and remain on and near the work area for the duration of the servicing or repair.
- Power to the appliance being serviced **MUST** be disconnected.
- Service personnel should wear appropriate Personal Protective Equipment (PPE).
- When purging the system, **ONLY Oxygen Free Dry Nitrogen** should be used.
- Replacement refrigerant **MUST** be approved **Refrigerant Grade** of the proper type.
- A fully charged and recently serviced (within past year) Carbon Dioxide or Dry Powder Fire Extinguisher **MUST** be in the work area.
- Maintain good ventilation in the area at **ALL** times and eliminate **ALL** ignition sources in the area.
- R290/R600a MUST** be removed from the system, via the **R290/R600a Recovery Process** (piercing valve), before cutting into the system with tubing cutters. Use **CAUTION** as there may be residual **R290/R600a** still in the system.
- Solder joints **MUST NOT** be heated (touched with a flame) to remove a component, such as a compressor or filter dryer, from an **R290/R600a System**.
- You **MUST** use tubing cutters to cut connections to remove a compressor or other component in an **R290/R600a System**.

## Publications:

- Hydrocarbon Refrigerants: A Study Guide for Service Technicians**, published 2012 by RSES  
ISBN-13: 978-1-61607-180-6
- Hoshizaki Service Manuals** available for all refrigeration products



Scan the QR Code to look up manuals:

