HYDROCARBON (HC) REFRIGERANT GAS - NATURAL ORGANIC COMPOUND

Environmental- Friendly
Non-Ozone Depleting & Non- Global Warming
UN-Montreal Protocol & Kyoto Protocol Compliance
Environmental Friendly Refrigerant Gas
(non-ozone depleting & non-global warming substance)

Energy Savings Up To 30%

Split Unit Air-Conditioner

WCPU/ACPU

HydroCarbon Refrigerant Gas
HC-12a®, HC-22a® & HC-502a®
(Applicable For)

Chiller

Car Air-Conditioner

Refrigerators

ENER-SAVE SDN. BHD.

Southeast Asia Authorised Representative

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**INTRO**

**HydroCarbon Refrigerant** is a blend of environmentally safe fluid designed as a **direct retrofit and replacement refrigerant option** for replacing CFC/HCFC/HFC refrigerant in commercial air conditioning and refrigeration system.

**HC Refrigerant Type**

- **HC-12a** is designed as a drop-in replacement for ozone-depleting CFC R12 and global-warming HFC R134a refrigerant.
- **HC-22a** is designed as a drop-in replacement for ozone-depleting HCFC R22 refrigerant and global-warming HFC R407c, R410a & R411a refrigerant.
- **HC-502a** is designed as a drop-in replacement for ozone-depleting CFC R502, R404a, R408a & R507a refrigerant.
Operation: HC-22a possesses similar volumetric refrigerating effects to R22 refrigerants. HC-12a possesses similar volumetric refrigerating effects to R134-a. Operates at lower head pressures and offers improved cooling properties and performance.
FEATURES

- Highly efficient
- Non-ozone depleting
- Non-corrosive
- Non-toxic
- Non-global warming
- Molecule Lighter
- Energy Saving up to 30%
- Environmental Friendly
- Enhance Life and Performance of A/C System
<table>
<thead>
<tr>
<th>Product</th>
<th>HC12a</th>
<th>HC22a</th>
<th>HC502a</th>
<th>R22</th>
<th>R502</th>
<th>R12</th>
<th>R134-a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Type</td>
<td>HC</td>
<td>HC</td>
<td>HC</td>
<td>HCFC</td>
<td>CFC+ HCFC</td>
<td>CFC</td>
<td>HFC</td>
</tr>
<tr>
<td>Global Warming Potential</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>1,800</td>
<td>1,600</td>
<td>10,600</td>
<td>1,600</td>
</tr>
<tr>
<td>Potential (CO₂ = 1, 100 years basis)</td>
<td></td>
<td></td>
<td></td>
<td>1,600</td>
<td>1,600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ozone Depleting Potential</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.032</td>
<td>0.5</td>
<td>0.9</td>
<td>0</td>
</tr>
<tr>
<td>Atmospheric Life</td>
<td>&lt; 1 year</td>
<td>&lt; 1 year</td>
<td>&lt; 1 year</td>
<td>12 years</td>
<td>16 years</td>
<td>130 years</td>
<td>16 years</td>
</tr>
<tr>
<td>Oils</td>
<td>Both</td>
<td>Both</td>
<td>Both</td>
<td>Mineral</td>
<td>Synthetic</td>
<td>Mineral</td>
<td>Synthetic</td>
</tr>
<tr>
<td>Leak Detection</td>
<td>Hydro- carbon</td>
<td>Hydro- carbon</td>
<td>Hydro- carbon</td>
<td>Halide</td>
<td>Halide</td>
<td>Halide</td>
<td>Halide</td>
</tr>
<tr>
<td>Efficiency btu/lb, Absorb more heat</td>
<td>177</td>
<td>186</td>
<td>191</td>
<td>101</td>
<td>74.6</td>
<td>71</td>
<td>93</td>
</tr>
<tr>
<td>Autoignition (F)</td>
<td>1385</td>
<td>800</td>
<td>800</td>
<td>n/a</td>
<td>1385</td>
<td>n/a</td>
<td>1385</td>
</tr>
<tr>
<td>Refrigerant Mass Charge Size (R12= 100%)</td>
<td>35% - 40%</td>
<td>40%</td>
<td>40%</td>
<td>100%</td>
<td>90%</td>
<td>100%</td>
<td>90%</td>
</tr>
<tr>
<td>Toxic Thermal Decomposition</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>Phosgene Gas</td>
<td>Hydro Fluoride Gas</td>
<td>Phosgene Gas</td>
<td>Hydro Fluoride Gas</td>
</tr>
</tbody>
</table>
COMPATIBILITY

Compatibility: Compatible with most common refrigeration materials and lubricants including metal components, mineral and synthetic oil (Ester and PAG) lubricants, seals, gaskets, hoses, compressor, and O-rings.
ENVIRONMENT

Environment: 100% natural organic refrigerant, non-ozone depleting, non-global warming. Full compliance with the UN Montreal Protocol, Kyoto Protocol & ISO 14001

Non-Ozone Depleting  Non-Global Warming
CERTIFICATE OF ANALYSIS

NORTHICUTT, Inc.

Certificate of Analysis

Product Name: HC-12a®
DOT Shipping Information
Petroleum gases, liquefied, Class 2, UN1975.
Non Corrosive

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>WEIGHT %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrocarbon Refrigerant</td>
<td>99.01</td>
</tr>
<tr>
<td>Other Hydrocarbons</td>
<td>0.99</td>
</tr>
</tbody>
</table>

Moisture Content (PPM/W):
- Total Sulphur (PPM/W): < 5
- Residue (PPM/W): Pass
- Odor: Pass
- Specific Gravity: 0.535

I certify that all chemical substances in this shipment comply with all applicable rules and regulations under TSCA and that I am not offering a chemical substance for entry in violation of TSCA or any applicable rule or order thereunder. Additionally, our product is non-ozone depleting and non-global warming. The speciality gases used in the production of HC-12a® are produced by the ISO 9001:2000 registered facility Diversified in Channahon, IL, U.S.A., certificate number A5410.

Very Truly Yours,

Bill O. Johnston, Jr.
President

5/11/2006
TESTIMONY

~ HCFC R22

Power: 22,118Wh

~ HC-22a

Power: 15,805Wh
HC REFRIGERANT GAS USERS

1. JB Cocoa Sdn Bhd - Since year 2009
2. Kualiti Alam Sdn Bhd - since year 2009
3. SDP Manufacturing Sdn Bhd - since year 2009
4. YKK (M) Sdn Bhd - since year 2009
5. Kraft Foods Manufacturing Sdn Bhd - since year 2010
6. Rikevita (M) Sdn Bhd - since year 2010
7. Siegwerk Malaysia Sdn Bhd - since year 2010
8. EE Guan Construction Sdn Bhd - Since 2009
10. Sinar TM Sdn Bhd - Since 2009
11. DGR Packing & Supply Sdn Bhd - Since 2009
13. RPI IT E Centre - Since 2008
14. JCY HDD Technology Sdn Bhd - Since 2008 (Carrier Chiller 200tons)
15. Suntec Alarm System & Automation - Since 2009
16. Yuan Rong Sdn Bhd - Since 2010
17. RadaTech Corporation Sdn Bhd - Since 2010
18. Network Food Industries Sdn Bhd - Since 2011 and more
END OF SLIDES

THANK YOU!
More Detail: http://hcrefrigerant.ener-save.biz
ENER-SAVE SDN BHD
Tel: 07-557 2669