



GREENER EARTH

COOLER PLANET





## *AGChem -Greener Earth Cooler Planet*

*AGChem is a firm believer that its flourishing lies in the triple bottom line -"people Planet and Profit" while cooling our planet AGChem never forgets to keep it green that's what AGChem's new tag line "Greener Earth Cooler Planet" reflects, our commitment towards sustainability into our business processes and provides guidance to go beyond markets and profits in nurturing its employees as part of the society caring for our beloved earth and building a value -based organization*

*AGChem's reputation relies mainly about delivering best product of high quality and introducing ozone friendly gases AGChem has the willingness to adopt any type of refrigerant that would help in keeping our earth both cool and green*

*In AGChem total quality management approach encompasses all our principles and processes It has transformed the way people in the organization think and manage their businesses ,As recognition of AGChem's commitment to quality in all spheres aiming to evolve into global customer focused,knowledge based organization that delivers top quality products ,competitively to its customers*





# Key Milestones

- 1993** Launched, under the name (*Egyptian Industries Development-Eidco Ltd.*) the target was to fulfill its name by developing the industry of refrigerant gases in the Egyptian market. A mission that we believe is successfully accomplished
- 1997** Took the lead of introducing the environment friendly refrigerants (HC-12a HC-22a) to the Egyptian market as an alternative to the more harmful forms R12, R22 and R502 and sponsored by - OZ technology Co. – U.S.A
- 2000** Established its main plant in Badr city with high tech machinery in packing loading and safety testing all types of refrigerant gases such as **R134a, R22 R404A, R406, R407C, and R410A....etc.** with a broad range of tank sizes ranging from 400 gm to 1000 Kg under its brand name **BTTRI GAS** to satisfy the different needs of the Egyptian market
- 2006** Started its relationship with **Honeywell Co.** – U.S.A and now **A.G. Chem** is the exclusive distributor in Egypt, **Honeywell** conceder **A.G. Chem** as their partners in Egypt
- 2008** Started its relationship with **SRF Limited** – India and now **A.G. Chem** is the exclusive distributor in Egypt for all **SRF** brands and products such as **R22 R134a** methylene chloride ,perchloroethylene and trichloroethylene
- 2010** Established its new plant in free zone area in Suez governorate with high tehcnology machinery in packing ,loading and safety testing for all types of Refrigerant gases (**R22,R134a,R414,R406,R407,R410a....etc.**) with a broad range of tank sizes ranging from 300 gm to 1000 kg under its brand name **BTTRI GAS** to satisfy the different needs of Black Africa ,North Africa and Gulf area
- 2012** Started to produce new alternative blends to **CFC 12 HCFC 22** under the name **BTTRI GAS 12 & BTTRI GAS 22** which are natural ozone friendly refrigerants  
*And this is just the beginning ...*





Since early nineties **AGChem** continues to satisfy the Egyptian market demands successfully which exceeds 20,000 tons annually, widening its customer base, getting stronger and more competitive locally and globally

In the past 20 years **AGChem** managed to expand its gross capital by more than 120% as well as its product base to include more than 36 different product in different package size from iso tanks -16 metric ton down to - can size -350 gm- under its brand name **BTTRI GAS**

**AGChem** is the sole agent of **Honeywell** a world leader in the invention manufacture and supply of environmentally safer refrigerants introducing Genetron as well as **SRF** is another leading Indian player with global position in refrigerant gases industry introducing Floron

The power of refrigeration manifests in many industries of so many different brands BMW KIA, Mercedes, GM, UnionAir, EgyptAir, PepsiCo. Nestle, whitewale and many other clients from different industries entrust **AGChem BttriGas** to be part of their product/service experience





## *What is the next move?!*

*The market is expected to grow at an annual growth rate of 5.2%, over the next five years to reach 1.6 million metric tons by 2018 globally. proactively **AGChem** would participate in this global shift*

*With the establishment of our newest plant in Suez free zone dedicated solely for exportation **AGChem** will extend its reach to cooling hot black Africa and gulf Area through setting up sales posts all across Africa and the gulf area keeping our main regional office in Egypt ,also adding up to our stores and warehouses currently available*

*Our fascination with the industry would go beyond refrigerants to spare parts our product range would include compressors ,capacitors ,contactors ,relay, fan motors ,condensers refrigeration oil ,filter driers, charging valves ,expansion valves, gas separators ,oil separators ,defrost timers ,pressure gauges ,thermostats, copper fittings and brass fittings copper coils ,copper straight pipes ,flaring tools and other refrigeration solutions which would become part of our mainstream product line*



*In support of continuously broadening our product offerings, we maintain high quality standards for our operations, products and services. This is key to our strategies concerning sustainable development and sustainable compliance*

*Our quality policy therefore emphasizes that we continuously innovate and improve our processes in the interest of our customers we will never compromise on the quality of the product within a package that carries AGChem's name*

*AGChem is the sole Agent of **Honeywell Inc.** of USA and **SRF Ltd.** Of India in Egypt under our brand name **BTTRI GAS***





### **Environment.Quality.People**

*These three basic values define how we want to conduct ourselves and our business and help us to create value for our clients, our people and our organisation along with others*

#### **Environment**

*Our purpose is to improve lives. To fulfill this goal, we must protect the environments in which we work and live. A healthy planet and a healthy community go hand in hand*

*We set high standards for our operations in the area of environmental responsibility striving for performance that does not merely comply with regulations but reduces our environmental impacts. We have a responsibility to take care of our planet and preserve its beauty, resources and strength for future generations*

#### **Quality**

*Our objective is to deliver a package that will never fail its customer*

*We maintain high quality standards for our operations, products and services. Our quality policy therefore emphasizes that we continuously innovate and improve our processes in the interest of our customers*

#### **People**

*Building productive, long-term relationships with clients and each other. The way we treat each other in achieving our objectives is just as important as what we achieve. That's why our people enjoy working in AGChem and why our clients like us and enjoy working with us. The best solutions come from working together with both colleagues and clients and this demands strong Relationships, Respect and Sharing*





*As part of **AGChem's** leading initiatives a wide range awareness campaign will be held to increase the awareness of **AGChem's** customers as well as Egyptian governmental facilities concerned with refrigerants and air conditioning ,this campaign focuses on detection of fake products and counter actions that shall be taken if one is detected*

*As a socially responsible active corporate **AGChem** has identified education ,health and natural resources management as the three focus areas for sustainable development of the community **AGChem** would be participating in establishing educational foundations & participating in international programs UNEDO UTW & other community development programs*

BTTRI GAS<sup>®</sup>  
products





**BTTRI GAS® 22** As a refrigerant operates with higher system pressures but low compressor displacement. popular in residential commercial and industrial applications



## Applications

- Residential and Commercial A/C
- Medium- and low-temperature commercial refrigeration
- food service
- supermarket display cases
- food storage and processing
- ice machines
- some transport

## Material Compatability

### Metals

**General Behavior:** Slight risk of corrosion in presence of water

**Aluminium:** Satisfactory

**Stainless Steel:** Satisfactory

### Plastics

**PTFE** Acceptable but strong rate of premeation

**PA - NYLON** Satisfactory

### Elastomers

**Buty rubber** Acceptable but important swelling

**Nitrile rubber** Non recommended

## Packing

**Cans**

**Disposable Cylinder**

**Refillable Cylinder**

**Tank**

**ISO Tank**

750g - 1Kg

13.6Kg

62Kg

900Kg

16MT





## Typical Properties

<b>Chemical Name</b>	<b>Chlorodifluoromethane</b>
<b>Chemical Formula</b>	<b>CHCLF<sub>2</sub></b>
<b>CAS Number</b>	<b>75-45-6</b>
<b>Molecular Weight</b>	<b>86.5</b>
<b>Boiling Point @1Atmos</b>	<b>-41.5</b>
<b>Critical Temperature</b>	<b>205.06</b>
<b>Critical Pressure - psia</b>	<b>723.74</b>
<b>Saturated Liquid Density @ 86°F - lb./cu.ft</b>	<b>73.1</b>
<b>Specific Heat of Liquid @ 86°F - Btu/lb.°F</b>	<b>0.31</b>
<b>Flammability &amp; Explosively. Based on ASHRAE Standard 34 with Match ignition</b>	<b>None</b>
<b>ANSI/ASHRAE Standard 34-1992 Safety Group Classification</b>	<b>A1</b>

## Specification

<b>Appearance</b>	<b>Colorless</b>
<b>Odor</b>	<b>Odorless</b>
<b>Purity</b>	<b>99.90</b>
<b>Moisture</b>	<b>0.001</b>
<b>Acidity</b>	<b>0.00001</b>
<b>Toxicity</b>	<b>Low</b>
<b>Atmospheric Lifetime</b>	<b>12.0</b>
<b>ODP</b>	<b>0.05</b>
<b>GWP</b>	<b>1,810</b>





**BTTRI GAS® 134a**, a colorless gas at room temperature, nonflammable, colorless A refrigerant to replace CFC-12 in auto air conditioning, as well as refrigeration system in residential, commercial and industrial applications. Also used as a blowing agent in rigid foam insulation BTTRI GAS® 134a is a high-purity gas liquefied under pressure On account of its properties BTTRI GAS® 134a constitutes an alternative for the fully halogenated CFC 12



## Applications

- Mobile air conditioning systems
- Retrofit of existing R-12 mobile air conditioning systems

## Material Compatability

Most common materials are suitable for use under normal conditions in a dry systems. At high temperatures use stainless steel or Inconel to resist corrosive breakdown products Avoid using alloys with more than 2% magnesium - i.e some aluminium alloys especially when moistures is present. May react violently with sodium potassium, barium and other alkali or alkaline earth metals. Flexible hoses or gaskets should not contain natural rubber as rapid withdrawals of gas/liquid can extract compounding ingredients and it also suffers from excessive swelling

## Packing

Cans	750g - 1Kg
Disposable Cylinder	10Kg
Refillable Cylinder	50Kg
Tank	825Kg
ISO Tank	16MT





## Typical Properties

<b>Chemical Name</b>	<b>1,1,1,2-Tetrafluoroethane</b>
<b>Chemical Formula</b>	<b>CF<sub>3</sub>—CH<sub>2</sub>F</b>
<b>CAS Number</b>	<b>811—97—2</b>
<b>Molecular Weight</b>	<b>102.0</b>
<b>Boiling Point at 1.01325 Bar</b>	<b>-26.3</b>
<b>Freezing Point at 1.01325 Bar</b>	<b>-101.0</b>
<b>Critical Temperature</b>	<b>101.1</b>
<b>Critical Pressure</b>	<b>40.6</b>
<b>Density of the Liquid at -15°C</b>	<b>1.343</b>
<b>Density of the Liquid at 30°C</b>	<b>1.188</b>
<b>Latent Heat of Vaporization at -15°C</b>	<b>206.8</b>
<b>Specific Heat of Saturated Liquid at 30°C</b>	<b>1.440</b>
<b>Specific Heat of Saturated Vapour at 30°C</b>	<b>1.104</b>
<b>Specific Heat Ratio at 1.01325 Bar and 30°C</b>	<b>1.115®</b>
<b>Flammability</b>	<b>Non Flammable</b>

## Specification

<b>Appearance</b>	<b>Colorless Gas</b>
<b>Odour</b>	<b>Faintly ethereal</b>
<b>Chemically</b>	<b>Free from acid</b>
<b>Acidity</b>	<b>Non explosive</b>
<b>Explosive</b>	<b>Non irritating</b>
<b>Irritation</b>	<b>Non Corrosive</b>
<b>Corrosion</b>	<b>99.9%</b>
<b>Purity</b>	<b>10ppm</b>
<b>Water Contents</b>	<b>1ppm</b>
<b>Acid Contents as - HCL</b>	<b>15ppm</b>
<b>Non Volatile Residue</b>	<b>Low</b>
<b>Toxicity</b>	<b>14</b>
<b>Atmospheric Lifetime</b>	<b>0</b>
<b>ODP</b>	<b>1.115</b>
<b>GWP</b>	<b>1,430</b>





**BTTRI GAS® 404A** is A long- term, non-ozone-depleting replacement for R-502 in low- and medium-temperature commercial refrigeration systems



## Applications

- Commercial refrigeration equipment
- New and existing R-502 equipment

## Material Compatability

Most common materials are suitable for use under normal conditions in a dry systems. At high temperatures use stainless steel or Inconel to resist corrosive breakdown products Avoid using alloys with more than 2% magnesium - i.e some aluminium alloys especially when moistures is present. May react violently with sodium potassium, barium and other alkali or alkaline earth metals. Flexible hoses or gaskets should not contain natural rubber as rapid withdrawals of gas/liquid can extract compounding ingredients and it also suffers from excessive swelling

## Packing

Cans	750g - 1Kg
Disposable Cylinder	10Kg
Refillable Cylinder	60Kg
Tank	725Kg
ISO Tank	16MT





## Typical Properties

<b>Chemical Name</b>	<b>Pentafluoroethane\Trifluoroethane Tetrafluoroethane</b>
<b>Chemical Formula</b>	<b>CHF<sub>2</sub>CF<sub>3</sub>/CH<sub>3</sub>CF<sub>3</sub>/CF<sub>3</sub>CH<sub>2</sub>F</b>
<b>ASHRAE Number</b>	<b>R404A</b>
<b>Molecular Weight</b>	<b>97.6</b>
<b>Boiling Point @1Atmos</b>	<b>-51.8</b>
<b>Freezing Point @1Atmos</b>	<b>-</b>
<b>Critical Temperature</b>	<b>162.3</b>
<b>Critical Pressure - psia</b>	<b>535.0</b>
<b>Saturated Liquid Density @ 86°F - lb./cu.ft</b>	<b>63.7</b>
<b>Specific Heat of Liquid @ 86°F - Btu/lb.°F</b>	<b>0.37</b>
<b>Specific Heat of Vapour - Btu/lb.°F</b>	<b>0.21</b>
<b>Specific Heat Ratio of Vapor@86°F</b>	<b>1.12</b>
<b>-1Atmos. (k=Cp/Cv)</b>	
<b>Flammability &amp; Explosively. - Based on</b>	<b>None ®</b>
<b>ASHRAE Standard 34 with Match ignition</b>	

## Specification

<b>Appearance</b>	<b>Colorless</b>
<b>Odor</b>	<b>Odorless</b>
<b>Purity</b>	<b>99.9</b>
<b>Moisture</b>	<b>10PPM</b>
<b>Acidity</b>	<b>1PPM</b>
<b>Toxicity</b>	<b>Low</b>
<b>Atmospheric Lifetime</b>	<b>40.36</b>
<b>ODP</b>	<b>0</b>
<b>GWP</b>	<b>3,922</b>





**BTTRI GAS® 406A** is A long- term, non-ozone-depleting replacement for R-502 in low and medium-temperature commercial refrigeration systems



## Applications

- Commercial Air-conditioning
- Auto/Mobile Air-conditioning

## Packing

<b>Cans</b>	<b>400g - 1Kg</b>
<b>Disposable Cylinder</b>	<b>13.6Kg</b>
<b>Refillable Cylinder</b>	<b>60Kg</b>
<b>Tank</b>	<b>900Kg</b>
<b>ISO Tank</b>	<b>16MT</b>

## Precautions in use

Wear safety goggles, use plastic protective gloves, wear overalls and safety shoes when handling cylinders





## Typical Properties

<b>Chemical Name</b>	<i>mixed refrigerant</i>
<b>Chemical Formula</b>	<b>HCFC-22/HCFC-142b /R-600a</b>
<b>ASHRAE Number</b>	<b>R 406A</b>
<b>Molecular Weight</b>	<b>GHG</b>
<b>Boiling Point @1Atmos</b>	<b>94.44</b>
<b>Freezing Point @1Atmos</b>	<b>-34.4</b>
<b>Critical Temperature</b>	<b>-</b>
<b>Critical Pressure - psia</b>	<b>105.3</b>
<b>Saturated Liquid Density @ 30°C g/cm<sup>3</sup></b>	<b>4.61</b>
<b>Specific Heat of Liquid @ 86°F - Btu/lb.°F</b>	<b>-</b>
<b>Specific Heat of Liquid @ 30 °C ,KJ/Kg.°C</b>	<b>-</b>
<b>Flammability &amp; Explosively. Based on ASHRAE Standard 34 with Match ignition</b>	<b>None</b>

## Specification

<b>Appearance</b>	<b>Colorless</b>
<b>Odor</b>	<b>Odorless</b>
<b>Purity</b>	<b>99.9</b>
<b>Moisture</b>	<b>10PPM</b>
<b>Acidity</b>	<b>1PPM</b>
<b>Toxicity</b>	<b>none</b>
<b>Atmospheric Lifetime</b>	<b>14.419</b>
<b>ODP</b>	<b>0.0562</b>
<b>GWP</b>	<b>1,943</b>





**BTTRI GAS® 407C** A long- term, non-ozone-depleting replacement for HCFC-22 in various air -conditioning applications, as well as in positive displacement refrigeration systems. It is a ternary blend of HFC-32/HFC-125/HFC-134a



## Applications

- new or existing residential and commercial air-conditioners
- new or existing residential and - commercial heat pumps
- Existing medium-temperature applications

## Material Compatability

Most common materials are suitable for use under normal conditions in a dry systems. At high temperatures use stainless steel or Inconel to resist corrosive breakdown products Avoid using alloys with more than 2% magnesium - i.e some aluminium alloys especially when moistures is present. May react violently with sodium potassium, barium and other alkali or alkaline earth metals. Flexible hoses or gaskets should not contain natural rubber as rapid withdrawls of gas/liquid can extract compounding ingredients and it also suffers from excessive swelling

## Packing

Cans	750g - 1Kg
Disposable Cylinder	10Kg
Refillable Cylinder	50Kg
Tank	825Kg
ISO Tank	16MT





## Typical Properties

<b>Chemical Name</b>	<b>Pentafluoroethane\Trifluoroethane Tetrafluoroethane</b>
<b>Chemical Formula</b>	<b>CHF<sub>2</sub>CF<sub>3</sub>/CH<sub>3</sub>CF<sub>3</sub>/CF<sub>3</sub>CH<sub>2</sub>F</b>
<b>ASHRAE Number</b>	<b>R404A</b>
<b>Molecular Weight</b>	<b>97.6</b>
<b>Boiling Point @1Atmos</b>	<b>-51.8</b>
<b>Freezing Point @1Atmos</b>	<b>-</b>
<b>Critical Temperature</b>	<b>162.3</b>
<b>Critical Pressure - psia</b>	<b>535.0</b>
<b>Saturated Liquid Density @ 86°F - lb./cu.ft</b>	<b>63.7</b>
<b>Specific Heat of Liquid @ 86°F - Btu/lb.°F</b>	<b>0.37</b>
<b>Specific Heat of Vapour - Btu/lb.°F</b>	<b>0.21</b>
<b>Specific Heat Ratio of Vapor@86°F</b>	<b>1.12</b>
<b>-1Atmos. (k=Cp/Cv)</b>	
<b>Flammability &amp; Explosively. - Based on</b>	<b>None<sup>®</sup></b>
<b>ASHRAE Standard 34 with Match ignition</b>	
<b>ANSI/ASHRAE Standard 34-1992 Safety Group</b>	<b>A1/A1</b>
<b>Classification</b>	

## Specification

<b>Appearance</b>	<b>Colorless</b>
<b>Odor</b>	<b>Odorless</b>
<b>Purity</b>	<b>99.9</b>
<b>Moisture</b>	<b>10PPM</b>
<b>Acidity</b>	<b>1PPM</b>
<b>Toxicity</b>	<b>Low</b>
<b>Atmospheric Lifetime</b>	<b>40.36</b>
<b>ODP</b>	<b>0</b>
<b>GWP</b>	<b>3,922</b>





**BTTRI GAS® 410A or AZ-20** is an azeotropic mixture of HFC-32 and HFC-125. It has been designed to replace HCFC-22 in air conditioning and refrigeration applications



## Applications

- New residential and commercial air conditioning and heat pumps

## Material Compatability

Most common materials are suitable for use under normal conditions in a dry systems. At high temperatures use stainless steel or Inconel to resist corrosive breakdown products. Avoid using alloys with more than 2% magnesium - i.e some aluminium alloys especially when moistures is present. May react violently with sodium potassium, barium and other alkali or alkaline earth metals. Flexible hoses or gaskets should not contain natural rubber as rapid withdrawls of gas/liquid can extract compounding ingredients and it also suffers from excessive swelling

## Packing

**Cans**

**750g - 1Kg**

**Disposable Cylinder**

**10Kg**

**Refillable Cylinder**

**50Kg**

**Tank**

**725Kg**

**ISO Tank**

**16MT**





## Typical Properties

<b>Chemical Name</b>	<b>Azeotropic Mixture</b>
<b>Chemical Formula</b>	<b>CH<sub>2</sub>F<sub>2</sub>/CHF<sub>2</sub>CF<sub>3</sub></b>
<b>CAS Number</b>	<b>48794-89-89</b>
<b>Molecular Weight</b>	<b>72.6</b>
<b>Boiling Point @1Atmos</b>	<b>-62.9</b>
<b>Freezing Point @1Atmos</b>	<b>-</b>
<b>Critical Temperature</b>	<b>163</b>
<b>Critical Pressure - psia</b>	<b>720</b>
<b>Saturated Liquid Density @ 86°F - lb./cu.ft</b>	<b>64.8</b>
<b>Specific Heat of Liquid @ 86°F - Btu/lb.°F</b>	<b>0.41</b>
<b>Specific Heat of Vapour - Btu/lb.°F</b>	<b>0.21</b>
<b>Specific Heat Ratio of Vapor@86°F -1Atmos.(k=Cp/Cv</b>	<b>1.17</b>
<b>Flammability &amp; Explosively. - Based on ASHRAE Standard 34 with Match ignition</b>	<b>None</b>
<b>ANSI/ASHRAE Standard 34-1992 Safety Group Classification</b>	<b>A1/A1</b>

## Specification

<b>Appearance</b>	<b>Colorless</b>
<b>Odor</b>	<b>Odorless</b>
<b>Purity</b>	<b>99.9</b>
<b>Moisture</b>	<b>10PPM</b>
<b>Acidity</b>	<b>1PPM</b>
<b>Toxicity</b>	<b>Low</b>
<b>Atmospheric Lifetime</b>	<b>16.95</b>
<b>ODP</b>	<b>0</b>
<b>GWP</b>	<b>2,088</b>





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