

## India

**Underweight** (no change)**Highlighted Companies****SRF Limited****REDUCE, TP Rs1540, Rs2265 close**

SRF trades at 20x P/E, the bluest of blue-sky EPS. In the medium term, cyclical headwinds in the films and HFC businesses will lead to earnings disappointment.

**Gujarat Fluorochemicals Ltd****REDUCE, TP Rs1946, Rs3031 close**

Extraordinary earnings kicker of HFC-125 will not last for long. Even PVDF will face cyclical headwinds in the near term. LiPF6 is still some time away, but the collapse of its spreads has reduced the option. Earnings disappointment is on the cards. Retain high-conviction REDUCE rating on the stock.

**Summary Valuation Metrics**

| P/E (x)                     | Mar22-A | Mar23-F | Mar24-F |
|-----------------------------|---------|---------|---------|
| SRF Limited                 | 35.55   | 42.08   | 36.42   |
| Gujarat Fluorochemicals Ltd | 55.78   | 54.07   | 42.76   |

| P/BV (x)                    | Mar22-A | Mar23-F | Mar24-F |
|-----------------------------|---------|---------|---------|
| SRF Limited                 | 7.84    | 6.7     | 5.73    |
| Gujarat Fluorochemicals Ltd | 7.69    | 6.73    | 5.82    |

| Dividend Yield              | Mar22-A | Mar23-F | Mar24-F |
|-----------------------------|---------|---------|---------|
| SRF Limited                 | 0.25%   | 0.21%   | 0.21%   |
| Gujarat Fluorochemicals Ltd | 0%      | 0%      | 0%      |

# Chemicals - Overall

## R-125 & R-134A bull run is closer to its end

- In our view, investors' bullishness in R-125 and R-134A is futile when these refrigerants can be replaced by better refrigerants (that are far better in terms of global warming potential, but energy consumption is high).
- Ideal refrigerants have a higher critical temperature and pressure, lower specific heat, and higher latent heat. R-32 meets most of the criteria. R-32 even scores higher than R-134A on most of the thermodynamic criteria.
- Starting 2024F, USA will reduce HFC consumption, in terms of emission potential, by 93mt of CO<sub>2</sub> and new cars will also have to do away with R-134A-based refrigerants. Sell SRF & Gujarat Fluorochemicals or GFL.

**For R-125 and R-134A refrigerants the game is over - sell GFL, SRF**

R-125 was one of the major reasons behind the great performance by SRF and GFL in the last few quarters. However, R-125 has one of the highest global-warming potentials. Our analysis indicates that in CY22, USA-based companies may have used 16% of the HFC quota by importing R-125, the highest in the last five years. Similarly, they used 37% of their CO<sub>2</sub> quota in CY17 by importing R-134A. In a nutshell, extrapolating the current high prices by assuming that demand will remain for a long time is fraught with risk. R-125 and even R-134A are easily replaceable with better and more efficient refrigerants. One such refrigerant which comes to our notice is R-32. Please note that we haven't seen any ferocious explosion in spreads over raw material of R-32 like that in R-125 (spreads over raw material were 9x in the last seven-to-eight months and for R-134A they became 2x). These spreads will collapse in the coming period as the HFC-based CO<sub>2</sub> quota will fall by 33% starting CY24F, and new cars will not be allowed to use R-134A. Sell SRF and GFL.

**High GWP R-125 and R-134A doesn't make sense for US businesses**

There are different parameters to consider for replacing R-125 with either R-32 or R-134A. However, broadly considering that R-125 as well as R-134A will start at a super-cooled stage, approximately 1kg of R-125 can replace 0.90kg of R-134A. R-134A may need lower power as well compared to R-125. However, for ideal replacement, R-32 is much more suited compared to R-125. Ideally, 0.6kg of R-32 can replace 1kg of R-125. All thermodynamic calculations are from <http://www.ethermo.us>. Please note that energy consumption can differ if one replaces R-125 and R-134A with R-32 but given the general trend of paying higher prices for green services, economics takes a back seat.

**REDUCE SRF and GFL as refrigerant business profits can evaporate**

We reiterate REDUCE rating on Gujarat Fluorochemicals or GFL and SRF. All their recent explosive growth in chemical segment EBIT is courtesy R-125 and R-134A, which we feel is unsustainable.

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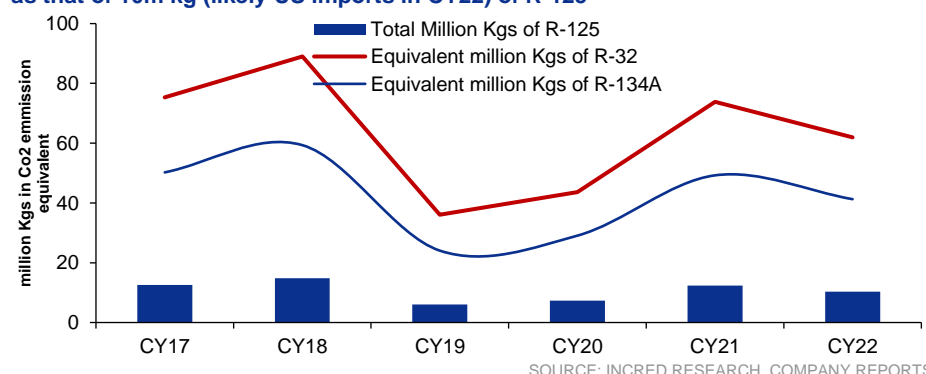
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**Figure 1: 62m kg of R-32 or 41.3m kg of R-134A will have the same CO<sub>2</sub> equivalence as that of 10m kg (likely US imports in CY22) of R-125**



## R-125 & R-134A bull run is closer to its end

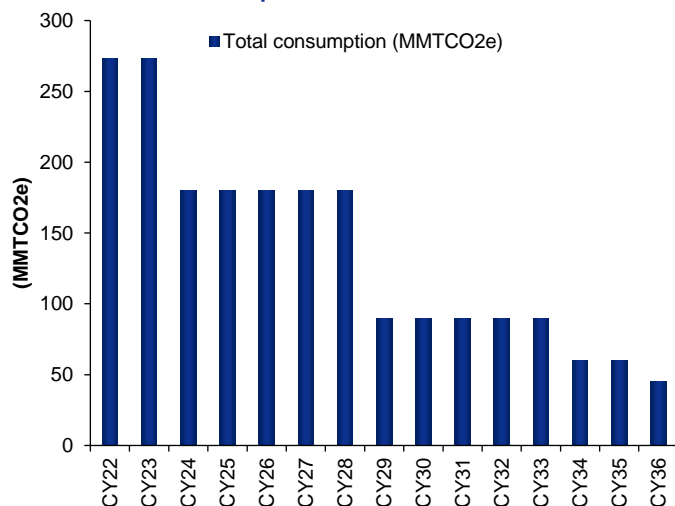
Refrigerants' bull run is closer to its end. AIM Act in USA has created a temporary supply chain problem, but we feel things will smoothen out soon and the prices of HFC-125 and HFC-134A will fall. Please note that HFC-134A has more chance of a steady price than HFC-125. The HFC-125 bubble has burst.

### For R-125 and R-134A the game is over - REDUCE GFL and SRF

R-125 was one of the major reasons behind the great performance by SRF and GFL in the last few quarters. In fact, GFL sold R-125 for the first time in export markets during 1HFY23. However, R-125 has one of the highest global warming potentials. Our analysis indicates that in CY22, USA consumers may have used 16% of the HFC quota only in R-125 - the highest in the last five years.

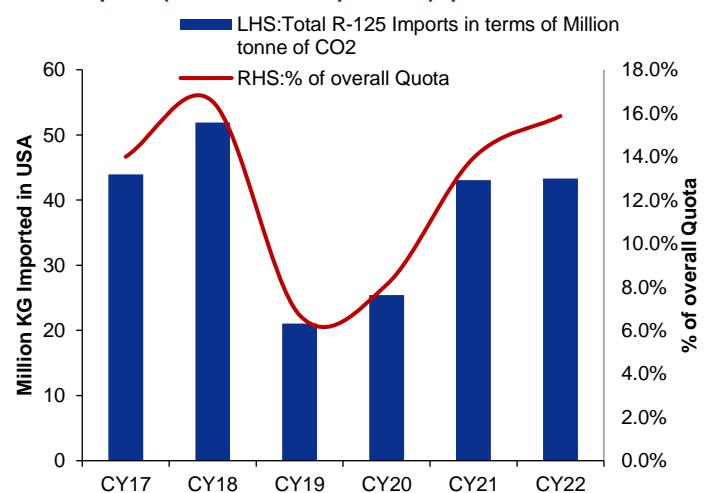
### USA used 16% of the HFC consumption quota for CY22 only in R-125 imports, a very high number for a minor refrigerant ➤

**Figure 2: EPA assigns overall consumption quota for HFCs in terms of mmt of CO2 equivalent**



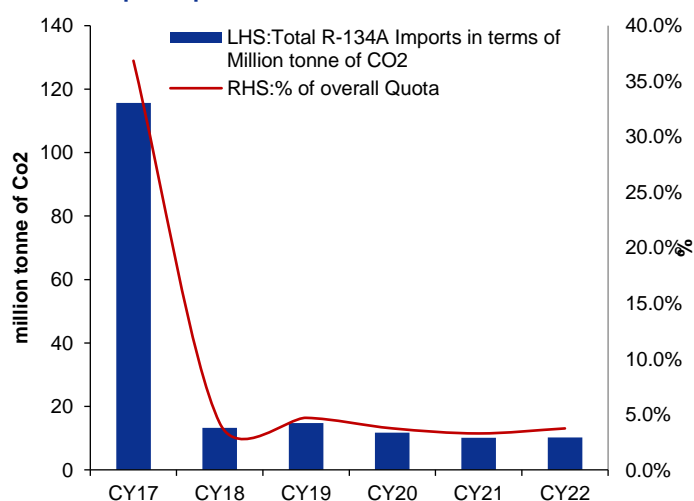
SOURCE: INCRED RESEARCH, COMPANY REPORTS

**Figure 3: R-125 now accounts for 16% of the overall consumption (in terms CO2 equivalent) quota of HFC**



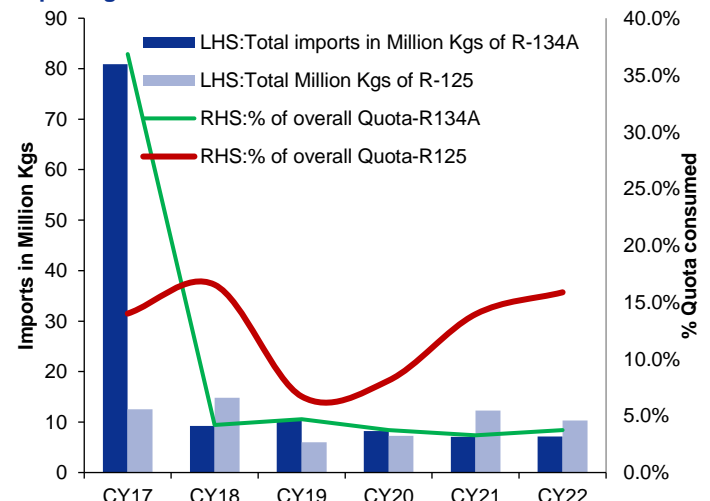
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**Figure 4: In CY22F, R-134A imports will account for only 3.7% of consumption quota**



SOURCE: INCRED RESEARCH, COMPANY REPORTS

**Figure 5: The stark difference between the quota usage by importing R-134A and R-32 is shown below**



SOURCE: INCRED RESEARCH, COMPANY REPORTS

## Can R-125 be replaced by other refrigerants? Yes, it can be done ➤

R-125 is not directly used in refrigerant applications but it is used as a mixture in multiple blends. There are multiple research papers which show that R-32 can replace R-125 in these blends. These changes may not be energy-efficient but are much more environment friendly than using R-125. Attached is the link of one such study ([Link](#)).

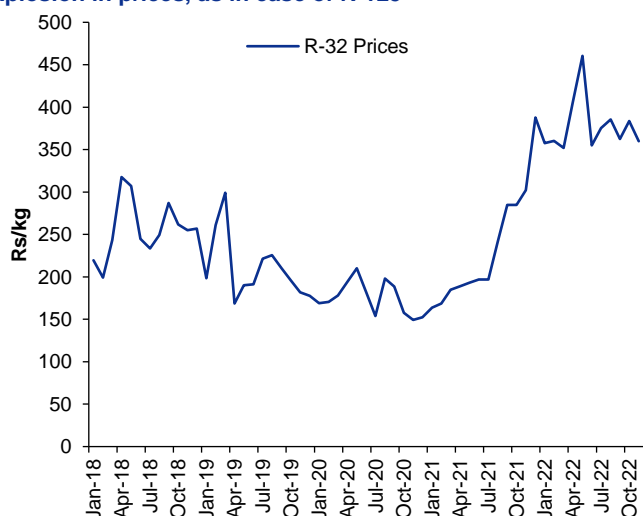
**Figure 6: R-125 is used as a blend in multiple refrigerants (the attached picture image has been taken from a Honeywell leaflet); in most places, R-125 can be replaced by R-32**

| ASHRAE #   | Trade Name   | Manufacturer                           | Replaces                         | Type <sup>(b) (e)</sup>          | Typical Lubricant <sup>(a)</sup> | Applications               | Comments   | GWP* |
|--|--|--|----------------------------------|----------------------------------|----------------------------------|----------------------------|--|------|
| <b>R-404A</b><br>125/143a/134a<br>(44%/52%/4%)       | Genetron® 404A<br>Suva® HP62<br>Forane® 404A               | Honeywell<br>DuPont<br>Arkema          | R-502<br>R-22<br>HP-80<br>R-408A | Blend<br>HFC                     | Synthetic (POE, PVE)             | New Equipment<br>Retrofits | Most widely used low and medium temperature replacement.   | 3922 |
| <b>R-507</b><br>125/143a<br>(50%/50%)                | Genetron® AZ-50®<br>Suva® 507                              | Honeywell<br>DuPont                    | R-502<br>R-22<br>HP-80<br>R-408A | Azeotrope<br>HFC                 | Synthetic (POE, PVE)             | New Equipment<br>Retrofits | Slightly higher pressures and efficiency than R 404A. Best choice for systems with flooded evaporators.  | 3985 |
| <b>R-422D</b><br>125/134a/600a<br>(65.1%/31.5%/3.4%) | Genetron® 422D<br>Isceon MO 29                             | Honeywell<br>DuPont                    | R-22                             | Blend<br>HFC/HC Blend            | Mineral Oil<br>POE               | New Equipment<br>Retrofits | Lower capacity<br>Use of POE will enhance oil return, if required.   | 2729 |
| <b>R-407C</b><br>32/125/134a<br>(23%/25%/52%)        | Genetron® 407C<br>Suva® 9000<br>Forane® 407C               | Honeywell<br>DuPont<br>Arkema          | R-22                             | Blend<br>HFC                     | Synthetic (POE, PVE)             | New Equipment<br>Retrofits | Reasonable performance match to R-22 in medium temperature refrigeration. Lower capacity in low temperature refrigeration system. Best A/C retrofit. | 1744 |
| <b>R-407F</b><br>32/125/134a<br>(30%/30%/40%)        | Genetron®<br>Performax™ LT                                 | Honeywell                              | R-22                             | Blend<br>HFC                     | Synthetic (POE, PVE)             | New Equipment<br>Retrofits | Best performance match and highest efficiency to R-22. In most cases one POE oil change is sufficient.   | 1824 |
| <b>R-134a</b>  | Genetron® 134a<br>Suva® 134a<br>Forane® 134a<br>Klea® 134a | Honeywell<br>DuPont<br>Arkema<br>INEOS | R-12                             | Single<br>Component<br>Fluid HFC | Synthetic (POE, PVE)             | New Equipment              | Performs well in small hermetic systems.   | 1430 |

SOURCE: INCRED RESEARCH, COMPANY REPORTS

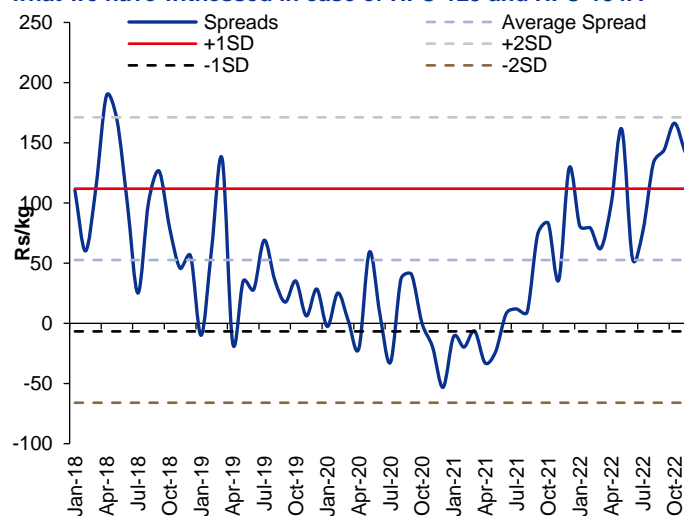
## R-32 spreads have gone up but they are nowhere near the explosive levels witnessed in R-125 and R-134A ➤

**Figure 7: R-32 prices have increased but there has been no explosion in prices, as in case of R-125**



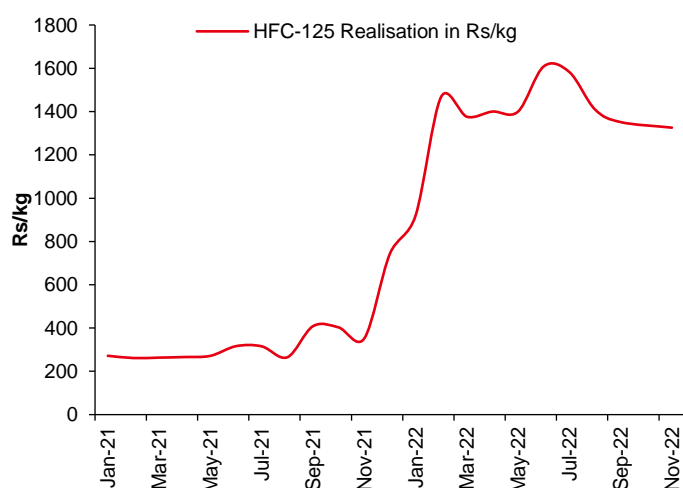
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**Figure 8: Its spreads have gone up, but again much less than what we have witnessed in case of HFC-125 and HFC-134A**



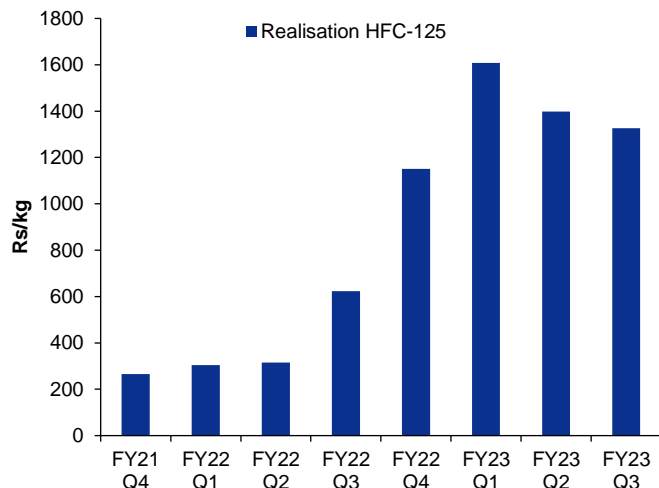
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**Figure 9: HFC-125 prices increased by 8x...**



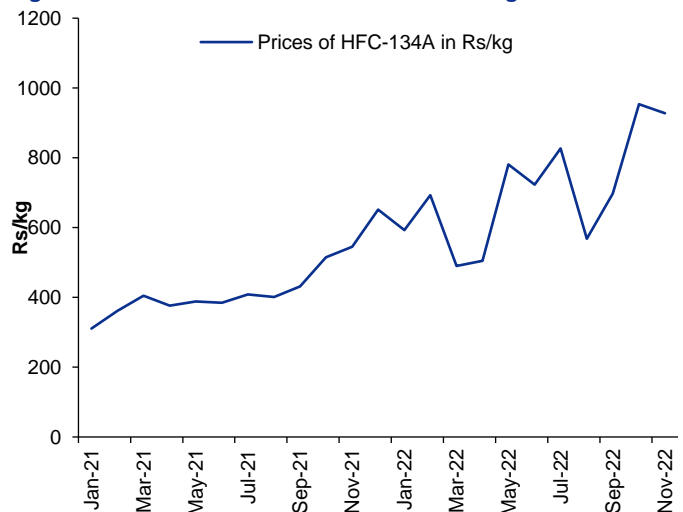
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**Figure 10: ...and its spreads rose by 9x over raw material**



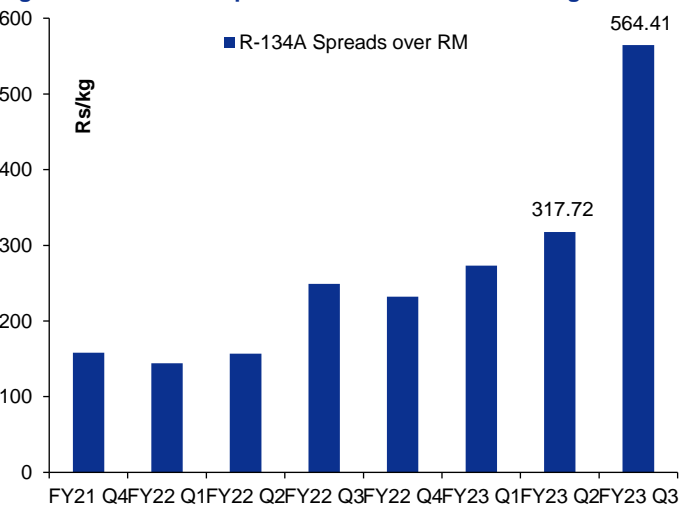
SOURCE: INCRED RESEARCH, COMPANY REPORTS

**Figure 11: Prices of HFC-134A have been rising...**



SOURCE: INCRED RESEARCH, COMPANY REPORTS

**Figure 12: ...and its spreads are also near all-time highs**



SOURCE: INCRED RESEARCH, COMPANY REPORTS

### What are the normal requirements of a refrigerant? ➤

- The refrigerant should have a **low boiling point** and a low freezing point.
- It must have **low specific heat** and **high latent heat**. High specific heat decreases the refrigerating effect per kg of refrigerant and high latent heat at low temperature increases the refrigerating effect per kg of refrigerant.
- It must have **high critical pressure and temperature** to avoid large power requirement.
- The pressure required to be maintained in the evaporator and condenser should be low enough to reduce the material cost and must be positive to avoid leakage of air into the system.
- It should have a low specific volume to reduce the size of the compressor.
- It must have high thermal conductivity to reduce the area of heat transfer in evaporator and condenser.
- It should be non-flammable, non-explosive, non-toxic and non-corrosive.
- It should not have any bad effects on the stored material or food when any leak develops in the system.
- It must have high miscibility with lubricating oil, and it should not react properly with lubricating oil in the temperature range of the system.
- It should give a high COP in the working temperature range. This is necessary to reduce the running cost of the system.

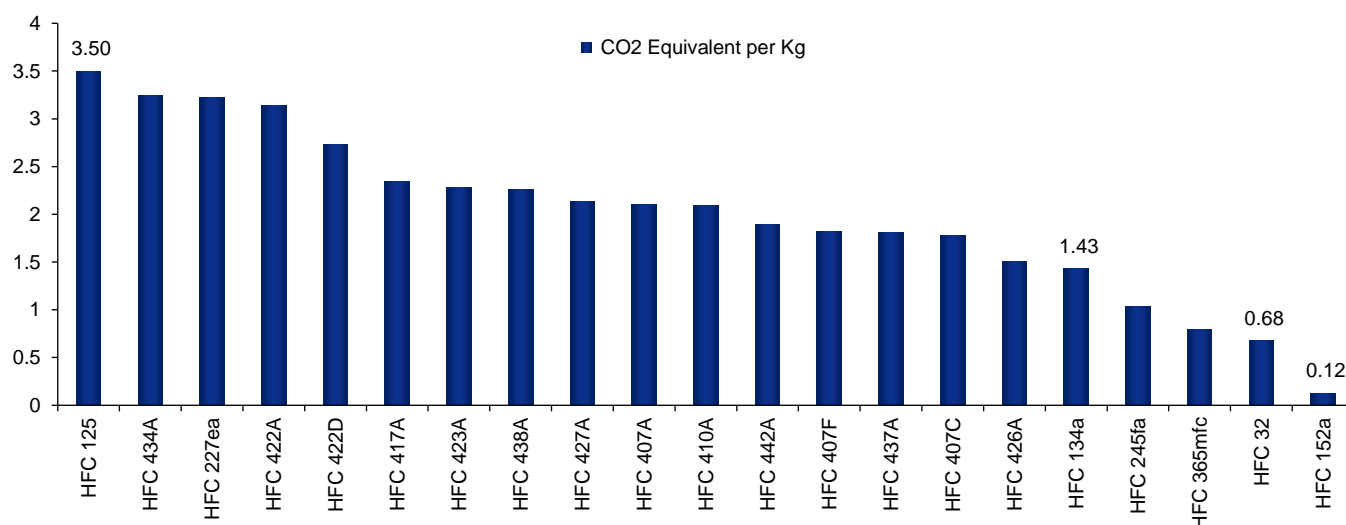
## American businesses will be senseless if they keep using highly polluting HFC-125 ➤

There are many different parameters to consider replacing R-125 with either R-32 or R134A. However, broadly speaking:

- R-125 as well as R-134A will start at a super-cooled stage and approximately 1 kg of R-125 can replace 0.90kg of R-134A. R-1334A may need lower power as well compared to R-125.
- However, for ideal replacement, R-32 is much more suited compared to R-125. Ideally 0.6kg of R-32 can replace 1kg of R-125.

All thermodynamic calculations are [from http://www.ethermo.us/](http://www.ethermo.us/)

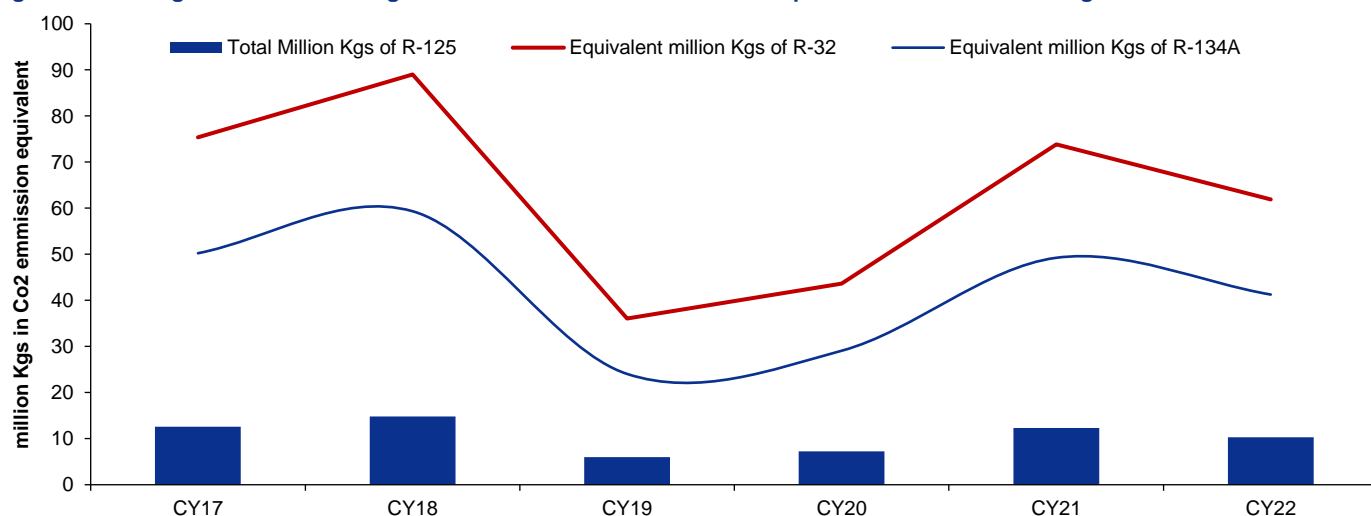
**Figure 13: For the same quota usage of CO<sub>2</sub>, HFC-32 can fulfill 6x refrigeration requirement than HFC-125 and 4x compared to HFC-134A**



SOURCE: INCRED RESEARCH, COMPANY REPORTS

## Adjusting for specific heat and latent heat of vaporization, USA can import 6x more R-32 and 4x more 134A compared to R-125 by using the same quota of CO<sub>2</sub> emission ➤

**Figure 14: 62m kg of R-32 or 41.3m kg of R-134A will have the same CO<sub>2</sub> equivalence as that of 10m kg of R-125**



SOURCE: INCRED RESEARCH, COMPANY REPORTS

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