

	Refrigerant Shift HCFC-123 to HFC-134a (2)	
MARKETING GUIDE	Supersedes: Nothing	160.00-MG2 (805)

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INTRODUCTION

Since YORK International transitioned out of HCFC-123 for new chiller production in November 2004, market share of HFC chillers (including YORK HFC chillers) has been increasing. This is an update on current refrigerant trends (a follow-up to the Refrigerant Shift Marketing Guide released in May 2005, FORM 160.00-MG1.), intending to give you up to date information on current refrigerant developments and to address some of Trane's recent misleading marketing claims.

HCFC-123 REPLACEMENT APPROVED

1. EPA has just approved HFC-245fa as an alternative refrigerant to HCFC-123 under the SNAP program. This is in recognition of the planned phase-out of HCFC-123. Montreal Protocol defines HCFC-123 as a *transitional* refrigerant (to replace CFC-11). It is an ODS (Ozone Depleting Substance) on the list to be phased out in efforts to protect the environment.
2. Honeywell (producer of HFC-245fa) stated: "This means that the HVAC industry has a viable, available, affordable and efficient alternative for long-term use that is not subject to phase-out regulation".
3. Commercial HFC-245fa chiller products are not currently offered by any chiller manufacturer. However, current production of HFC-245fa is already many times that of HCFC-123.

HCFC-123 MARKET SHARE

4. Based on the current refrigerant-shift trend, our anticipation for 2005 & 2006 is an HCFC-123 global market share less than 20% (centrifugals only), driven by two factors. 1. YORK no longer offers new HCFC-123 chillers, 2. Trane making more HFC-134a units globally in response to the market demand. HFC-134a centrifugal chiller demand and market share continue to grow globally.

REFRIGERANT PRODUCTION

5. In a recent Trane presentation, it was alleged that by 2020 when the HCFC production has been reduced to 0.5% of cap, there is still more than adequate HCFC-123 for chillers. The author assumed entire HCFC production in 2020 would be HCFC-123, and neglected to point out that the 0.5% production capacity could be almost all for HCFC-22 to support the very large population of existing HCFC-22 equipment. HCFC-123 production as a refrigerant is currently less than 1% of all refrigerants produced globally.
6. Trane indicated HCFC-123 is a feedstock to another refrigerant. This is true. But, production for use as a feedstock neither results in the necessary refrigerant quality required for chiller applications nor gives it the legal right to be used separately as a refrigerant. Additionally, the decision on halting HCFC-123 production refrigerant prior to the mandated deadlines will ultimately be to the discretion of the single US producer – DuPont. YORK believes it is in the *customer's*

best interest to avoid this unnecessary risk when investing in capital equipment with a 30-year expected life.

ENERGY EFFICIENCY

7. Trane claimed in its publications that Trane's HCFC-123 centrifugal chillers are up to 18% more efficient than the next best (HFC-134a) chillers in the market. This exaggeration is inaccurate for both full load and part load. Trane's advertised full load efficiency for many claims has been based on one-of-a-kind SCF (Series Counterflow) applied chillers (not a single chiller and not certified by ARI). The theoretical-cycle efficiency advantage for HCFC-123 over HFC-134a (about 4%-5%) could result in higher design full load efficiency for an HCFC-123 chiller. However, full load at design conditions accounts for only 1% of chiller total operating hours. IPLV is the true benchmark for chiller energy efficiency and includes the 1% of operating hours spent at full load design conditions plus the 99% of operating hours spent at off-design conditions. With HCFC-123 theoretical cycle efficiency partially offset by its heat-transfer disadvantage, HFC-134a IPLVs can exceed those of HCFC-123 in many applications (especially operating with variable-speed drives).

ENVIRONMENT AND CLIMATE

8. Trane recently quoted an obsolete United Nations Environment Program (UNEP) assessment report suggesting possible retention of HCFC-123 as a refrigerant. That report, compiled by the Refrigeration and AC/Heat Pump Technical Options Committee, dated 2002, and was not endorsed by the UNEP Technology and Economic Assessment Panel. Numerous subsequent reports (in 2003, 2004 and 2005) have not propagated this opinion.
9. In fact, during the recent release (Mid-2005) of the latest UNEP IPCC/TEAP Special Report on Refrigerants, the UNEP Executive Director and the accompanied press release have the following to say:

“There can be no trade-offs between saving the ozone layer and minimizing climate change,” said UNEP Executive Director Klaus Toepfer. “This report demonstrates that it is in our power to maintain the Montreal Protocol’s momentum while achieving the Kyoto Protocol targets.”

"HCFCs were successful in meeting the early CFC phase out goals but are generally considered undesirable for most new equipment because they do have some ozone depleting potential; they will eventually be phased out under the Montreal Protocol."

10. Trane's publications insinuate possible bans on HFCs, citing regulations in Austria, Denmark and Switzerland. The fact is that HFCs are now the mainstream refrigerants used throughout the world, with growing demand and with no phase-out schedule. Even the European Commission has submitted a proposal suggesting continued use of HFCs for HVAC applications with recommended containment and control (responsible handling and destruction procedures applicable for any refrigerant). The unilateral actions by Denmark, Austria and Switzerland are being challenged legally. On the other hand, HCFC-123 is on the Montreal Protocol phase-out list and has already been phased out in the European Union.
11. Trane's recent presentations also listed various safety ratings for HCFC-123. The fact is that HCFC-123 is rated B1 toxicity. Refrigerant Concentration Limit (RCL) for HCFC-123 is 5.5 times lower (more toxic) than HFC-134a. This means less than 1/5 of HCFC-123 is allowed to be leaked into the environment compared with that of HFC-134a.

12. United Nation Environment Program's (UNEP) Environmental Effects Assessment Panel (EEAP) cited abnormal liver function tests in workers associated with the switch of CFC11 to HCFC123 in its 2004 report presented at the Montreal Protocol MOP16 meeting. Similar assessment was also reported in the Industry Hygiene Association Journal (2003, 64: 68-79).

Please help the industry and the environment by switching to HFC-134a centrifugal chillers.