



HFC-134a Duster Pricing Rides The “Perfect Storm”

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Duster, also called “canned air”, “compressed air”, and “dusting gas”, has experienced a great deal of price volatility in 2011, and could potentially get worse before it stabilizes. The paper attempts to explain the market forces behind this volatility.

Aerosol duster is used to provide a pressurized blast, knocking loose dust and dirt. Think of it as a portable replacement for an air compressor line. This can be used to blow out cookie crumbs from a computer keyboard, clear out computer fan vents, and even open up tight apertures in a surface mount stencil.

Aerosol dusters most commonly contain one of two refrigerant/propellants:

- HFC-134a – Most common for industrial applications because it is non-flammable.
- HFC-152a – Most commonly available duster in consumer retail because it is less expensive than HFC-134a, with the trade-off of having a flash point and a higher potential of igniting.

The “Perfect Storm” – Supply & Demand in Action

Starting mid-2010 and continuing through 2011, HFC-134a has experienced supply shortages and cost increases that seem to escalate month-by-month. HFC-134a has had volatility in the past, but nothing like this. What happened? A combination of forces intersected in 2010 to create the “perfect storm”:

- Automotive market rebounds in US and Europe, booms in Asia
- Foam blowing industry moves to HFC-134a
- Supply of raw material feedstock unable to keep up

These factors combine to create market pressures on both supply (supply of feedstock) and demand (automotive and foam blowing). The decrease in supply and increase in demand naturally drives up price until the situation stabilizes.

Automotive Market Rebounds

Aerosol duster makes up a very small part of the overall HFC-134a market. The vast majority is used in automotive air conditioning, both for new vehicles and a/c recharging. The U.S. Environmental Protection Agency (EPA) estimates 79% of HFC’s are used in Refrigeration/AC, 11% for foam blowing (*more on that below*), and only 5% for aerosols including dusters¹. Significant changes in demand for the automotive sector impacts overall supply.

The following are stats per Ernst & Young²:

- Global automotive production in 2010 estimated to have grown 23% over 2009
- North American estimated to have grown 38%
- Asia contributing 50% of total global production, 22% growth
- Europe estimated to have grown 22%

Foam Blowing Industry Moves to HFC-134a

Foam blowing is a process that involves using a chemical (blowing agent) to propel liquid plastic resin. The blowing agent has high volatility and quickly changes to vapor, creating pockets and expanding the volume of the resin. In the past, the most common foam blowing agents were ozone depleting CFC’s³. The US Clean Air Act of 1993 set of schedule of the phase-out of the CFC’s, and the later phase-out of the replacement HCFC’s.

In the first decade of 2000, millions of pounds of HCFC-142b were used for foam blowing. In 2007, the EPA found that HCFC-142b was an unacceptable replacement and devised a phase-out schedule that fully eliminated HCFC-142b from the foam blowing market by January 1, 2010⁴.

Once HCFC-142b was fully banned, the replacement blowing agent of choice became HFC-134a. This pulled millions of pounds of HFC-134a away from traditional markets (a/c and aerosol) to these new applications.

Supply of Feedstock Unable to Keep Up

Supply of HFC-134a is being hindered by availability of two key chemicals used as feedstock in the manufacturing process: trichloroethylene and hydrofluoric acid. There are different market forces driving the scarcity, but all roads lead back to China:

- Trichloroethylene – Capacity to make Trichloroethylene has been stretched thin because of high demand of tetrachloroethylene, which is made in the same facilities. Tetrachloroethylene is largely used in metal degreasing and cleaning, which is largely driven by the exploding Asian middle class demand for automobiles and appliances⁵.
- Hydrofluoric Acid – Chemical suppliers had moved the manufacturing of fluorite, a key component in the production of hydrofluoric acid, to China in the past decade. China has since been limiting export of fluorite to feed domestic industries key to China’s building boom: aluminum, iron & steel, and cement & glass⁶.

Is Relief in Sight?

Relief from the supply and demand pressures driving HFC-134a is not expected to come in 2011. The most likely event to change the equation will be the move of the automobile market to HFO-1234yf or other “greener” alternatives. HFO-1234yf is a refrigerant with much lower global warming impact than HFC-134a. In July, 2010, GM announced plans to move Chevrolet, Buick, GMC, and Cadillac models to HFO-1234yf⁷. If others follow, millions of pounds of HFC-134a would open, potentially bringing prices back down.

HFC-134a availability and pricing has been affected by a wide array of market forces, many of which are driven by the explosive growth of the Chinese economy. In the short-term, those of us in the aerosol business have no choice but to ride out this “perfect storm”.

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Techspray is a formulator and manufacturer of precision cleaners for industrial and electronic applications. More information of Techspray’s alternative cleaners, such as G3, can be found at www.techspray.com.

Sources:

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- ³ EPA, “Foam Blowing Agents”, August 2010, <http://www.epa.gov/ozone/snap/foams/index.html>
- ⁴ EPA, “Listing of Ozone Depleting Substitutes in Foam Blowing Fact Sheet”, August 2010, <http://www.epa.gov/ozone/snap/foams/FinalNPRMfactsheet.html>
- ⁵ Entrepreneur Magazine, “Great Market Shortage of Trichloroethylene and Tetrachloroethylene”, July 2005, <http://www.entrepreneur.com/tradejournals/article/135119716.html>
- ⁶ Research In China, “China Fluorite Industry Report, 2010”, January 2011
- ⁷ GM, “GM First to Market Greenhouse Gas-Friendly Air Conditioning Refrigerant in U.S. ”, July 2010, http://media.gm.com/content/media/us/en/news/news_detail.brand_gm.html/content/Pages/news/us/en/2010/July/0723_refrigerant