DuPont™ Dymel®

AEROSOL PROPELLANTS

United States Environmental Fact Sheet

Stratospheric Ozone Protection

- In 1978, the U.S. Environmental Protection Agency (EPA), the Food and Drug Administration and the Consumer Products Safety Commission jointly banned the use of fully halogenated chlorofluorocarbons (CFCs) as propellants in nonessential aerosol products. This action is commonly referred to as the "aerosol ban". However, the continued use of CFCs as propellants in certain "essential" (EPA) and "medical" (FDA) products was permitted.
  - The EPA "Essential Use Exemptions" are listed in 40 CFR § 762.58; medical products permitted to use CFC propellants are listed in 21 CFR § 2.125 (e).
  - Under the regulations, a propellant was defined as expelling a substance different from itself from the container. A product consisting only of a single CFC, e.g., CFR-12 in a duster or boat horn, was not covered by the regulations and was not controlled.
  - If a CFC performed a function outside the container related to the use of the product, the EPA classified it as an active ingredient, not a propellant. CFCs had limited use in tire inflators as active ingredients, e.g., they inflated a tire. **Dymel® A, Dymel® 22, Dymel® 142b and Dymel® 152a were not controlled under these regulations.**

- In 1990, amendments to the Clean Air Act were enacted into law which further restricted the use of both CFCs and HCFCs in aerosol products. Medical products were not controlled by the amendments.

CFCs

- The amendments mandated that the EPA, by November 15, 1992, prohibit the sale or distribution of nonessential products emitting Class I substances (CFCs, carbon tetrachloride, Halons, and 1,1,1-trichlorethane) to the atmosphere. At a minimum, CFC-propelled plastic party streamers and noise horns; CFC-containing cleaning fluids for noncommercial electronic and photographic equipment and other consumer products emitting Class I substances were prohibited. The use of CFCs in all nonessential aerosol products was also prohibited and in effect, the term "essential" in the 1978 "aerosol ban" was revised to reduce essential uses.
- The final rule issued January 15, 1993 (58 FR 4768) prohibited the use of CFCs in essentially all aerosol products. It listed (1) those products that qualify for an essential use exemption, i.e., those that may continue to use CFCs and (2) provided sell-through provisions for those products that were prohibited. In part, the list of essential products contains: selected medical products and commercial lubricants, coatings or cleaning fluids containing CFC-11 or CFC-113 for (1) electrical or electronic equipment, (2) aircraft maintenance, or (3) mold release agents for plastic or elastomeric parts.

DuPont discontinued sale of CFCs for nonessential aerosol uses on May 30, 1992. **DuPont discontinued production of all CFCs in the developed countries, i.e., Europe and Japan, at the end of 1994. At the request of the Clinton Administration, DuPont is exercising its United States CFC production rights in 1995.**

HCFCs

- Effective January 1, 1994, it is unlawful to sell or distribute, or offer for sale or distribution, any aerosol product or other pressurized dispenser which contains a Class II (HCFC) substance. Products found to be "essential" by the EPA Administrator-(1) because of flammability or worker safety concerns and (2) for which the only available alternative to the use of a Class II substance in the product is the use of a Class II substance in the product is the use of a Class I substance which legally could be substituted for such Class II substance – are exempted from this provision of the amendments. The word "legally" effectively limits the products eligible for "essential" exemption to those aerosol products and pressurized dispensers exempted from the Class I Nonessential Products Ban. **DuPont discontinued sale of HCFCs for aerosol applications beyond December 31, 1993, except for use in those "essential" products listed by the EPA Administrator.**

HFCs

- Aerosol uses of hydrofluorocarbons (HFCs) are not controlled directly by the Clean Air Act Amendments. However, see "Safe Alternatives" just below.

Safe Alternatives

- **Under the Clean Air Act Amendments of 1990 (CAAA), any replacement for a Class I or Class II substance must be designated as a "safe alternative" in that use by the EPA Administrator. The EPA was mandated to issue a list of safe alternatives by November 15, 1992. The final rule issued March 18, 1994. Although the CAAA refer to "safe" alternatives policy, the EPA uses the term Significant New Alternatives Policy or Program (SNAP). Dymel® A, Dymel® 152a and Dymel® 134a have been approved by the EPA under SNAP.**

Labeling

- Effective May 15, 1993, any product containing a CFC or HCFC must bear a conspicuous warning label to advise the purchaser that the product contains a substance(s) that depletes the ozone layer. The regulations are lengthy and specific. The reader is referred to them (58 FR 8136) for details.

Volatile Organic Compounds

- California, New York and other states are actively pursuing a policy to reduce Volatile Organic Compound (VOC) emissions from consumer products including aerosol products.
  - HCFCs, e.g., 124, 141b, Dymel® 22, Dymel® 142b and HFCs, e.g., 134a, Dymel® 152a are not VOC under the U.S. EPA definition of VOC. However, they may be VOC under one or more State Implementation Plan. Dymel® A is a VOC.
  - Provisions in the California VOC regulations prohibit the use of any chemical with an Ozone Depletion Potential greater than 0.00 to meet the regulations. Accordingly, HCFCs cannot be used to reduce VOC in these consumer products.
  - Although Dymel® A is a VOC, Dymel® A/water mixtures can be used in aerosol formulations to reduce their VOC content. Water is not a VOC. **Dymel® 152a and Dymel® A/water mixtures can be used to meet state VOC regulatory requirements consistent with the state's definition of VOC.** Because of its Global Warming Potential (see below), DuPont will not promote or sell HFC-134a for the purpose of meeting VOC regulations.

Global Warming Potential: The Greenhouse Effect

- The Greenhouse Effect is the possible increase in global average temperature resulting from absorption of a part of the infrared radiation reflected from the earth's surface by pollutant trace gases in the atmosphere. At this time, there are no controls or regulations limiting emissions of "greenhouse gases" in any aerosol application.
  - DuPont has adopted a policy that aerosol propellants having a large relative potential to contribute to global warming should not be sold for high-volume aerosol applications, e.g., personal products or for "frivolous" products. This policy does not apply to pharmaceutical or medical products or to certain industrial aerosol products in which the use of a nonflammable propellant is essential.
    Dymel® 134a falls under the policy; Dymel® A and Dymel® 152a do not.
    Dymel® 22, Dymel® 142b and other HCFCs are greenhouse gases. However, their use in aerosol products is already controlled under the HCFC regulations and DuPont policy stated on page 2.

Summary

- Dymel® 152 and Dymel® A can be used in all aerosol applications including those to replace a hydrocarbon propellant. If a Class I and Class II substance is being replaced, the provisions of the EPA's Significant New Alternatives Program must be met.

- Except for a few medical and commercial products, the use of CFCs was prohibited on February 16, 1993 in selected nonessential products and the use of CFCs in the remaining nonessential product categories was prohibited on January 17, 1994.

- DuPont will cease manufacture of all CFCs in the developed countries, i.e., Europe and Japan, beyond December 31, 1994. DuPont will exercise its U.S. CFC production rights in 1995.

- Dymel® 22, Dymel® 142b, and other HCFCs were permitted in nearly all aerosol products until January 1, 1994. After that, they can only be used in "essential" products. They cannot be used in aerosol products to meet California regulations to limit their VOC content. DuPont will not sell HCFCs for aerosol applications beyond December 31, 1993 except for "essential" product uses.

- DuPont will not sell HFCs with large global warming potentials for propellant use in high-volume aerosol products, e.g., personal products or for "frivolous" products. We will sell them for use in commercial aerosol products, e.g., products used in the workplace which previously contained a nonflammable CFC or HCFC, and for use in pharmaceutical and medical products.

dupont.com/dymel

Caution: Do not use in medical applications involving permanent implantation in the human body, or contact with internal body fluids or tissues. For other medical applications, see "DuPont Medical Caution Statement," H-50102.
This information is based on data believed to be reliable, but DuPont makes no warranties, express or implied, as to its accuracy and assumes no liability arising out of its use. The data listed herein falls within the normal range of product properties but should not be used to establish specification limits or used alone as the basis of design. Because DuPont cannot anticipate or control the many different conditions under which this information and/or product may be used, it does not guarantee the usefulness of the information or the suitability of its products in any given application. Users should conduct their own tests to determine the appropriateness of the product for their particular purposes.

DUPONT®

The miracles of science™

E-64725-3 08/07