

DuPont™ Vertrel®

Specialty Fluid



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Aircraft Wheel Component Cleaning

DuPont™ Vertrel® MCA is a proprietary azeotrope of Vertrel® XF hydrofluorocarbon and trans-1,2-dichloroethylene. It has zero ozone-depletion potential and is ideally suited for cleaning aircraft wheels and components.

Aircraft Wheel Cleaning

Aircraft wheel and brake assemblies undergo high mechanical and thermal stresses. During aircraft landing, kinetic energy is first transformed into heat from the braking system while sustaining the mechanical stress of the aircraft and its cargo. The brake heat pack assembly transfers thermal load to surrounding elements, including the wheel, tire, and brake components. While in flight, the wheel assemblies are subjected to extreme cold at high altitude. Cleaning and subsequent lubrication of these parts is critical to safe operation. Due to the potential for generating ice crystals, entrapment of moisture in the wheel assemblies is a primary concern. Vertrel® MCA has been used successfully in the cleaning of the wheel assemblies as part of a continual preventive maintenance program to maintain highly reliable operation.

Items Cleaned Include:

- Wheel bearings
- Bearing seals
- Heat shields
- Retaining pins and rings
- Bushings
- Valves

Components Cleaned with Vapor Degreaser

The cleaning process for component parts uses a standard two sump vapor degreaser. The process consists of boil sump immersion, followed by a spray, followed by a rinse sump immersion then drying. The process removes contaminants from intricate, irregular and hard to access locations. The initial immersion in the boil sump removes the majority of the soil. Spraying with pure solvent vapor distillate further removes contaminants from component surfaces. Components are then immersion rinsed using ultrasonic energy to remove fine

particulate. After removal from the rinse sump, the parts are held in the vapor zone. There, the parts equilibrate to the temperature of the solvent vapor, condensation ceases, and the parts are clean, dry and safe to handle.

Typical Material Surfaces

- Aluminum
- Steel
- Seals
- Gaskets

Soils and Contaminants

- Lubricants
- Hydrocarbon oils
- Particulate matter
- Grease
- Water contaminants
- Krytox®

Major Advantages of Vertrel MCA

- Low residue
- Excellent solvent penetration
- Fast and thorough drying
- Solvent can be recycled
- Chemically stable solvent
- Environmentally preferred
- Low in toxicity

Disadvantages of Other Cleaning Systems

- **Aqueous wash**
 - Moisture entrapment
 - Rust
 - Low grease-cutting capability
 - Long soak times for cleaning
 - Low penetration for complex parts
 - Long drying time
 - Large potential for rust
 - High energy consumption
- **Trichlorethylene**
 - Hazardous composition
 - Extensive venting required
 - Banned in some states due to high photochemical reactivity
 - High disposal costs



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