

Safetygram #41

OptiYield™ Developer Safe Handling Practices

Introduction

OptiYield Developer is used in the manufacture of semiconductors. The product is typically sold as 0.2-0.3N tetramethylammonium hydroxide (TMAH) aqueous solution, most frequently at 2.6N. Exposure to OptiYield Developer through the skin or the lungs may potentially be fatal. Absorption of the material through the skin may also cause nervous system effects such as lack of coordination and tremors. OptiYield Developer is irritating to the eyes, skin and respiratory system and may cause burns upon prolonged exposure. Properly engineered machinery and controls, coupled with good work practices and personal protective equipment, are essential to ensure the safe handling of this material.

OptiYield Developer is generally used in closed systems at customer sites. The product is transferred to customer equipment, used in the manufacture of semiconductors, and spent residual product is treated as waste. Certain precautionary measures should be followed to avoid contact with OptiYield Developer while operating or maintaining equipment. The process generally involves the delivery of the product to the workstation, connecting containers to the system, disconnecting containers from the system, and system maintenance activities.

Delivery

OptiYield Developer is delivered to the customer facility in DOT approved containers, usually 55-gallon polyethylene drums or 330-gallon polyethylene totes. Upon receipt, the drums or totes are delivered to the storage areas and/or to the system workstation by forklift truck, pallet jacks or drum lifters.

Safety and Health Concerns

- Worker exposure potential is minimal during routine delivery activities
- Danger of drum or tote damage resulting in OptiYield Developer spills

Protective Measures (routine conditions)

- Store OptiYield Developer in an area with sufficient containment for spill control
- Provide room ventilation meeting H6 or H7 requirements
- Wear PVC aprons with long sleeves, 15-mil or greater nitrile gloves, chemical goggles, faceshield and rubber boots

Protective Measures (spill cleanup)

- Wear PVC coated disposable coveralls
- Wear 15-mil or greater nitrile gloves
- Wear full-face air-supplied respirator
- Wear rubber boots





Connecting Totes/Drums

Drums or totes of OptiYield Developer are connected to the system by a hose to a dip tube. The material is transferred from the container to the holding tank in the system.

Safety and Health Concerns

- Exposure to OptiYield Developer mist caused by opening pressurized containers
- Hose connection not secure, resulting in spills and splashes
- Exposure to OptiYield Developer during transfer of the dip tube from one container to another

Protective Measures

- Transfer OptiYield Developer only in segregated rooms having ventilation rates meeting H6 or H7 requirements
- Provide the work area with sufficient containment for spill control
- Store containers in temperature-controlled areas to avoid over-pressurization caused by high temperatures. Equip containers with permanently mounted dip tubes where feasible.
- Equip dip tube fittings with quick-connect fittings that are keyed to match system hose fittings
- Repair small leaks and clean up small spills immediately



Disconnecting Totes/Drums

Once the container has been emptied, the operator must disconnect the hose and remove the container from the work area.

Safety and Health Concerns

- Exposure to OptiYield Developer while disconnecting hose from the container
- Exposure to OptiYield Developer while removing dip tubes from the containers
- Contact with residual OptiYield Developer on top of drums and totes

Protective Measures

- Purge OptiYield Developer from lines before disconnecting
- Clean up small spills on top of drums and totes immediately
- Wear PVC aprons with long sleeves, 15-mil or greater nitrile gloves, chemical goggles, face-shield, and rubber boots when disconnecting hoses



Maintenance Activities

Maintenance of system components, such as pumps, valves and piping, occurs on a prescribed and routine basis. The potential for worker exposure to OptiYield Developer will vary widely, depending on the maintenance task.

Safety and Health Concerns

- Exposure to OptiYield Developer mists when disconnecting lines under pressure
- Exposure to residual OptiYield Developer in pumps or valves during maintenance
- Spills or splashes of OptiYield Developer when removing parts

Protective Measures

- Wear PVC aprons with long sleeves, 15-mil or greater nitrile gloves, chemical goggles, faceshield, and rubber boots
- Reduce pressure in system before breaking lines
- Purge lines, pumps and other equipment prior to disassembly
- Follow safe work practices that include proper lockout/tag out procedures
- Use secondary equipment, such as drip pans or inert absorbents, under component to be disassembled
- Wash components thoroughly with water before disassembly

Always read the MSDS before using a chemical!

Emergency Response System

- Call: +1-800-523-9374
(Continental U.S. and Puerto Rico)
- Call: +1-610-481-7711 (other locations)
- 24 hours a day, 7 days a week
- For assistance involving Air Products and Chemicals, Inc. products

Product Safety Information

- For MSDS, Safetygrams, and Product Safety Information
www.airproducts.com/productsafety

Technical Information Center

- Call: +1-800-752-1597 (U.S.)
- Call: +1-610-481-8565 (other locations)
- Fax: +1-610-481-8690
- E-mail: gasinfo@airproducts.com
- Monday–Friday, 8:00 a.m.–5:00 p.m. EST

Information Sources

- Compressed Gas Association (CGA)
www.cganet.com
- European Industrial Gases Association (EIGA)
www.eiga.org
- Japanese Industrial Gases Association (JIGA)
www.jiga.gr.jp/english
- American Chemistry Council
www.americanchemistry.com

For More Information

Corporate Headquarters
Air Products and Chemicals, Inc.
7201 Hamilton Boulevard
Allentown, PA 18195-1501

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