

MATERIAL SAFETY DATA SHEET

Product Name: BFGOODRICH* Experimental Waveguide Materials: Core

Document: EXPBFGWVCORE CFLN: AUUS

Effective Date: 21 February 2001 Page Number: 1/10

_____ 1. PRODUCT AND COMPANY IDENTIFICATION _____

Product Name BFGOODRICH* Experimental Waveguide

Materials: Core

Company Identification BFGoodrich

Performance Materials

9911 Brecksville Rd.

Cleveland, OH 44141-3247

United States of America

Telephone (216) 447-5000

Chemtrec (24 Hour) (800) 424-9300

Preparer Health, Safety, and Environmental Department

THIS MATERIAL IS SOLELY FOR RESEARCH AND DEVELOPMENT USE. It is not known to be on the TSCA inventory and cannot be distributed by itself or as part of another product in commerce. Its use is to be by or under the supervision of a technically qualified person. The physical, chemical and toxicological properties of this substance have not been fully determined.

_____ 2. COMPOSITION, INFORMATION ON INGREDIENTS _____

--Ingredient-- -CAS Number- ---%---

Methylene chloride 0000075-09-2 < 0.40

Notes:

Amounts specified are typical and do not represent a specification. Remaining components are proprietary, nonhazardous and/or present at amounts below reportable limits.

_____ 3. HAZARDS IDENTIFICATION _____

Material may form a polymer on the skin, eyes, or in the lungs. In the event of direct contact of the liquid with these tissues, seek medical attention.

Acute Health Effects

Repeated or prolonged skin contact may cause irritation.

This product is believed to be extremely irritating to the eyes with possible permanent eye injury.

Strong chemical odor may cause headaches.

Aspiration into the lungs can cause severe pulmonary injury.

MATERIAL SAFETY DATA SHEET

Product Name: BFGOODRICH* Experimental Waveguide Materials: Core

Document: EXPBFGWVCORE CFLN: AUUS

Effective Date: 21 February 2001 Page Number: 2/10

METHYLENE CHLORIDE is an anesthetic. Inhaling vapor may cause confusion, light-headedness, nausea, vomiting, headache, narcosis, and death. High vapor concentrations may be irritating to the eyes and respiratory tract. Direct exposure to the liquid may be irritating to the eyes and skin and may cause burns. Exposure may also worsen the symptoms of angina (chest pain). Methylene chloride is metabolized in part to carbon monoxide and may cause elevations in carboxyhemoglobin in the blood.

Chronic Health Effects

Overexposure of vapors may lead to central nervous system depression producing such effects as headache, dizziness, nausea and loss of consciousness.

METHYLENE CHLORIDE: Repeated or prolonged exposure to vapors may cause cancer or exacerbate cardiac disease.

Signs/Symptoms of Exposure

Irritation.

Routes of Exposure/Entry

Eyes, skin contact, inhalation, ingestion.

Medical Conditions Aggravated by Exposure

Pre-existing skin problems may be aggravated by prolonged or repeated contact.

Persons with sensitive airways (e.g., asthmatics) may react to vapors.

Individuals with heart disease and those with risk factors for heart disease have an increased risk of heart attack when exposed to this material.

Carcinogenic Status

METHYLENE CHLORIDE: IARC - Group 2B; OSHA - Regulated as a carcinogen; NTP - Anticipated carcinogen.

_____ 4. FIRST AID MEASURES _____

If irritation occurs or persists from any route of exposure, remove the affected individual from the area. Call a physician.

Eye Contact

Immediately flush eyes with plenty of clean water for an extended time, not less than fifteen (15) minutes. Flush longer if there is any indication of residual chemical in the eye.

Ensure adequate flushing of the eyes by separating the eyelids with fingers and roll eyes in a circular motion.

Skin Contact

Immediately remove contaminated clothing and shoes.

Wash the affected area thoroughly with plenty of water and soap.

Inhalation

If affected, remove to fresh air.

If not breathing, give artificial respiration.

If breathing is difficult, give oxygen.

Ingestion

Do not induce vomiting.

MATERIAL SAFETY DATA SHEET

Product Name: BFGOODRICH* Experimental Waveguide Materials: Core

Document: EXPBFGWVCORE CFLN: AUUS

Effective Date: 21 February 2001 Page Number: 3/10

Immediately dilute by drinking large amounts of water or milk.

Never give anything by mouth to an unconscious person.

Extreme care must be taken to prevent aspiration.

If victim is unconscious and breathing, position the person on their side to prevent aspiration.

Get medical attention immediately.

Notes to Physicians

Aspiration of material into the lungs due to vomiting can cause chemical pneumonitis which can be fatal.

_____ 5. FIRE FIGHTING MEASURES _____

NFPA Flammability Class IIIB

Flash Point 95.C (203.F)

Closed cup

Explosive Range Not Determined

METHYLENE CHLORIDE has no flash point in a conventional closed tester but it forms flammable vapor-air mixtures at approximately 100°C (212°F).

Extinguishing Media

NFPA Class IIIB (Combustible liquid): Use water spray, ABC dry chemical, foam or carbon dioxide. Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water spray may be used to flush spills away from exposures.

Fire Fighting Instructions

Never direct a hose stream directly onto a burning flammable/combustible liquid. Solid or straight hose stream will cause fire to spread if directed onto a burning spill or into an open container of burning liquid.

Wear self-contained breathing apparatus (SCBA) equipped with a full facepiece and operated in a pressure-demand mode (or other positive pressure mode) and approved protective clothing. Personnel without suitable respiratory protection must leave the area to prevent significant exposure to hazardous gases from combustion, burning or decomposition. In an enclosed or poorly ventilated area, wear SCBA during cleanup immediately after a fire as well as during the attack phase of firefighting operations.

Unusual Fire/Explosion Hazards

Gives off volatile vapors that are heavier than air and may travel along the ground or may be moved by ventilation and ignited by flame, sparks, heaters, or other ignition sources at distant locations (flashback potential).

Hot vapor or mists may be susceptible to spontaneous combustion when mixed with air. Ignition temperatures decrease with increasing vapor volume and vapor/air contact time and are influenced by pressure changes. Therefore, ignition may occur below published ignition temperatures. Use of this product in processes involving elevated-temperatures, vacuum if subject to sudden ingress of air,

MATERIAL SAFETY DATA SHEET

Product Name: BFGOODRICH* Experimental Waveguide Materials: Core

Document: EXPBFGWVCORE CFLN: AUUS

Effective Date: 21 February 2001 Page Number: 4/10

sudden escape of vapor or mist, etc., must be thoroughly evaluated to assure safe operation.

Protect product from flames of any kind; maintain proper clearance when using heat devices, etc.

Irritating or toxic substances will be emitted upon burning, combustion or decomposition.

Exposing closed containers to heat may cause excessive pressure resulting in explosive rupture.

_____ 6. ACCIDENTAL RELEASE MEASURES _____

Issue warning: combustible liquid. Eliminate all ignition sources.

Ventilate the area. If spill is large, be prepared to isolate the hazard area. Deny access to the spill area to persons who are not involved in the cleanup and/or who have not been properly trained in spill management of hazardous/flammable liquids.

Containment Techniques

Contain by diking with sand, earth or other non-combustible material.

Prevent flow into public sewer (explosion hazard), streams or other water systems.

See Section 12, Ecological Information.

Blanket large spills with foam to minimize fire hazard and reduce vaporization. Remove as much as possible.

Clean-Up Techniques

Wear proper personal protective clothing and equipment.

Eliminate ignition sources.

Soak up large spill residue and small spills with an inert absorbent.

Place into labeled, closed container; store in safe location to await disposal.

Change contaminated clothing and launder before reuse.

_____ 7. HANDLING AND STORAGE _____

Handling

Wash thoroughly after handling this product. Always wash up before eating, smoking or using the facilities.

Use under well-ventilated conditions.

Avoid eye contact.

Avoid skin contact.

Avoid inhalation of aerosol, mist, spray, fume or vapor.

Do not ingest, taste, or swallow.

Do not eat, drink or smoke when using this product.

Wash contaminated clothing before reuse.

Discard shoes contaminated with this product.

Provide eyewash fountains and safety showers in the work area.

Do not cut, puncture, or weld on or near the container.

Bond and ground all containers when transferring chemical.

Take precautions to prevent static discharge to prevent ignition of vapors.

MATERIAL SAFETY DATA SHEET

Product Name: BFGOODRICH* Experimental Waveguide Materials: Core

Document: EXPBFGWVCORE CFLN: AUUS

Effective Date: 21 February 2001 Page Number: 5/10

Emptied container may contain residual vapors or liquid which may ignite or explode.

Do not dispose of or reuse empty containers without first cleaning or reconditioning. Do not use water to clean containers. Instead, rinse containers thoroughly with appropriate organic solvent, such as toluene, acetone, or cyclohexane. Incinerate used cleaning solution.

Persons performing cleaning operations must wear personal protection adequate for the solvent being used.

Storage

Store in combustible storage area and away from heat and open flame.

Store cool and dry, under well-ventilated conditions.

Keep container closed when not in use.

Do not store in open, unlabeled or mislabeled containers.

Keep container upright, when not in use, to prevent leakage.

Open containers carefully and slowly.

Avoid storing containers in direct sunlight as vapors may accumulate in the head space creating pressure.

_____ 8. EXPOSURE CONTROLS/PERSONAL PROTECTION _____

Occupational Exposure Limits

--ACGIH-TWA--- -ACGIH-STEL--- ---OSHA-TWA--- --OSHA-STEL---

Methylene chloride

50.00 ppm N/E 25.00 ppm 125.00 ppm

Notes:

Methylene chloride has poor odor warning properties.

Engineering Controls

Always provide effective general and, when necessary, local exhaust ventilation to draw spray, aerosol, fume, mist and vapor away from workers to prevent routine inhalation.

Ventilation must be adequate to maintain the ambient workplace atmosphere below the exposure limit(s) outlined in the MSDS.

Ventilation guidelines/techniques may be found in publications such as Industrial Ventilation: American Conference of Governmental Industrial Hygienists, 1330 Kemper Meadow Drive, Cincinnati, OH, 45240-1634, USA.

Eye/Face Protection

Wear splash-proof goggles.

Skin Protection

Wear chemical resistant (impervious) gloves.

Wear chemical resistant protective clothing.

Respiratory Protection

Wear a respirator approved by NIOSH/MSHA (e.g., an organic vapor respirator, a full face air purifying respirator for organic vapors, or a self-contained breathing apparatus) whenever exposure to aerosol, mist, spray, fume or vapor exceed the exposure limit(s) of any chemical substance listed in this MSDS.

MATERIAL SAFETY DATA SHEET

Product Name: BFGOODRICH* Experimental Waveguide Materials: Core

Document: EXPBFGWVCORE CFLN: AUUS

Effective Date: 21 February 2001 Page Number: 6/10

When exposed to aerosols or vapors, use full face organic vapor cartridge respirator with particulate pre-filter.

Use respirator in accordance with manufacturer's use limitations and OSHA standard 1910.134 (29CFR).

Form Liquid

Appearance/Color Clear

Solubility (in water) Not Determined

pH Value Not Determined

Boiling Range Not Determined

Vapor Pressure (mmHg) 0.00 @ 25 C (77 F) /

10.34 @ 65.C (149.F)

Melting Point Not Determined

Evaporation Rate Not Determined

Vapor Density Not Determined

Partition Coefficient Not Available

% Volatile Weight >/= 63.%

Specific Gravity Not Determined

_____ 10. STABILITY AND REACTIVITY _____

Stability This product is stable

Hazardous Polymerization Hazardous polymerization will not occur

Conditions to Avoid

Contact with water or moist air.

Do not expose to excessive heat or ignition sources.

Material generates methanol and ethanol on contact with water.

Overexposure to ethanol may have a narcotic effect. Ethanol is metabolized to acetaldehyde and acetic acid resulting in metabolic acidosis, CNS depression, and death due to respiratory arrest.

Incompatibility with other materials

May form peroxides on long exposure to air.

Avoid strong acids, bases, and oxidizing agents.

Depending on the amount and specific materials involved, contact can result in intense heat, boiling, flame development, explosion or toxic gas generation.

Hazardous Decomposition Products

Potential decomposition gases have not been fully determined but may

include:

Alcohols

Carbon dioxide, carbon monoxide and hydrocarbons.

_____ 11. TOXICOLOGICAL INFORMATION _____

Route Species Exposure and Dose

Methylene chloride

MATERIAL SAFETY DATA SHEET

Product Name: BFGOODRICH* Experimental Waveguide Materials: Core

Document: EXPBFGWVCORE CFLN: AUUS

Effective Date: 21 February 2001 Page Number: 7/10

Inhalation Mouse LC50 (7H) 14400. ppm

Inhalation Rat, adult LC50 52000. mg/m3

Oral Rat, adult LD50 1600. mg/kg

METHYLENE CHLORIDE has been tested for carcinogenicity in several laboratory rodents. These rodent studies indicate that there is clear evidence that methylene chloride is carcinogenic to male and female mice and female rats. Based on epidemiologic studies, OSHA has concluded that there is suggestive evidence of increased cancer risk in methylene chloride-related worker populations. The epidemiological evidence is consistent with the finding of excess cancer in the experimental animal studies.

As with all chemicals for which test data are limited or do not exist, caution must be exercised through the prudent use of protective equipment and handling procedures to minimize exposure.

_____ 12. ECOLOGICAL INFORMATION _____

METHYLENE CHLORIDE:

LC50 (96 Hour) Fathead minnow 34-193 mg/L

Cond: Flow-through

LC50 (96 Hour) Rainbow trout 10.95-15.32 mg/L

Cond: Flow-through, 13.3°C, pH 7.8, 106 mg/L

LC50 (96 Hour) Bluegill 220 mg/L

EC50 (48 Hour) Water flea 140-330 mg/L

Cond: Static, 21-23°C, pH 6.8-7.2, 66-79 mg/L CaCO3

EC50 (5, 15 min.) Photobacterium phosphoreum 1000-3230 mg/L

Microtox test.

This substance may be toxic to fish and aquatic organisms. Do not release to water.

_____ 13. DISPOSAL CONSIDERATIONS _____

Methylene chloride: EPA Hazardous Waste No. U080 (40CFR261.33).

Incinerate waste product when in liquid form (i.e., as supplied) in a properly permitted (approved) incineration facility in accordance

with federal, state and local regulations.

Liquids cannot be disposed of in a landfill.

Federal, state and local regulations where the waste material is generated, treated, and/or disposed of must be examined to verify the appropriate waste classification.

EPA CERCLA RQ.

--Ingredient-- --lbs- --kg--

Methylene chloride 1000 453.6

MATERIAL SAFETY DATA SHEET

Product Name: BFGOODRICH* Experimental Waveguide Materials: Core

Document: EXPBFGWVCORE CFLN: AUUS

Effective Date: 21 February 2001 Page Number: 8/10

_____ 14. TRANSPORTATION INFORMATION _____

UN Number N/A

UN Pack Group N/A

UN Class N/A

ICAO/IATA Class N/A

Notes:

Surface shipment within the United States:

For shipment in containers of 119 gallons (450 L) or less:

Not regulated.

U.S. DOT RQ.

--Ingredient-- --lbs- --kg--

Methylene chloride 1000 453.6

_____ 15. REGULATORY INFORMATION _____

--SARA Title III Section 313-----

This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and of 40 CFR 372:

Methylene chloride

--SARA Title III Section 312 Hazard Category (40 CFR 311/312)--

Acute Health: Yes Release of Pressure: No

Chronic Health: Yes Reactive: No

Fire: Yes

--PROP 65 (Carcinogen)-----

WARNING: This product contains a chemical known to the state of California to cause cancer.

Methylene chloride

--Clean Air Act (CAA)-----

When processed this product may give off a CAA substance (Section 112). The amount given off varies and is dependent upon process conditions (i.e., use, curing, heating). Listed below are possible CAA substances in this product:

Methylene chloride

Chemical identity of some or all components present is confidential business information (trade secret) and is being withheld as permitted by 29CFR1910.1200 (i).

US (Federal) Regulations

TSCA: This product is not known to be on the TSCA inventory.

MATERIAL SAFETY DATA SHEET

Product Name: BFGOODRICH* Experimental Waveguide Materials: Core

Document: EXPBFGWVCORE CFLN: AUUS

Effective Date: 21 February 2001 Page Number: 9/10

There is a component in this product subject to a SNUR, reference # 40CFR 721.4106.

This SNUR will require persons to notify EPA at least 90 days before commencing manufacturing, importing, or processing this substance for a significant new use.

The significant new use(s) are: Release to water. Requirements as specified in Sec. 721.90 (a)(1), (b)(1), and (c)(1).

_____ 16. OTHER INFORMATION _____

HMIS Rating (H-F-R-PPI) 2-2-0-B

NFPA Rating (H-F-R) 2-2-0

KEY: 0=Insignificant; 1=Slight; 2=Moderate; 3=High; 4=Extreme.

Hazardous Materials Identification System (HMIS), National Paint and Coatings Assn. rating applies to product "as packaged" (i.e., ambient temperature).

National Fire Protection Association (NFPA) rating identifies the severity of hazards of material during a fire emergency (i.e., "on

fire").

Legend:

*: A Trademark of The BFGoodrich Company

ACGIH: American Conference of Governmental Industrial Hygienists

A1: Confirmed human carcinogen

A2: Suspected human carcinogen

A3: Animal carcinogen

CAS No: Chemical Abstract Service Registry Number

IARC: International Agency for Research on Cancer

Group1: Carcinogenic to humans

Group2A: Probably carcinogenic to humans

Group2B: Possibly carcinogenic to humans

Group3: Unclassifiable as a carcinogen to humans

MSHA: Mine Safety and Health Administration

NIOSH: National Institute for Occupational Safety and Health

NTP: National Toxicology Program

N/A: Not Applicable

N/E: None Established

OSHA: Occupational Safety and Health Administration

PEL: Permissible Exposure Limit

PNOC: Particulates Not Otherwise Classified

RTK: Right To Know

STEL: Short Term Exposure Limit (15 minute Time Weighted Average)

TLV: Threshold Limit Value

C: Ceiling limit

S: Skin notation refers to the potential significant

contribution to the overall exposure by the cutaneous route

including mucous membranes and the eyes and by direct skin

contact with the substance

WEEL: Workplace Environmental Exposure Level

WHMIS: Canadian Workplace Hazardous Materials Information System

MATERIAL SAFETY DATA SHEET

Product Name: BFGOODRICH* Experimental Waveguide Materials: Core

Document: EXPBFGWVCORE CFLN: AUUS

Effective Date: 21 February 2001 Page Number: 10/10

Users Responsibility/Disclaimer of Liability

As the conditions or methods of use are beyond our control, we do not assume any responsibility and expressly disclaim any liability for any use of this material. Information contained herein is believed to be true and accurate but all statements or suggestions are made without warranty, expressed or implied, regarding accuracy of the information, the hazards connected with the use of the material or the results to be obtained from the use thereof. Compliance with all applicable federal, state and local laws and local regulations remains the responsibility of the user.

This bulletin cannot cover all possible situations which the user may experience during processing. Each aspect of your operation should be examined to determine if, or where, additional precautions may be necessary. All health and safety information contained in this bulletin should be provided to your employees or customers. It is your responsibility to develop appropriate work practice guidelines and employee instructional programs for your operation.

Last Page

MATERIAL SAFETY DATA SHEET

Product Name: BFGOODRICH* Experimental Waveguide Materials: Clad

Document: EXPBFGWVCLAD CFLN: AUUS

Effective Date: 21 February 2001 Page Number: 1/10

_____ 1. PRODUCT AND COMPANY IDENTIFICATION _____

Product Name BFGOODRICH* Experimental Waveguide

Materials: Cladding

Company Identification BFGoodrich

Performance Materials

9911 Brecksville Rd.

Cleveland, OH 44141-3247

United States of America

Telephone (216) 447-5000

Chemtrec (24 Hour) (800) 424-9300

Preparer Health, Safety, and Environmental Department

THIS MATERIAL IS SOLELY FOR RESEARCH AND DEVELOPMENT USE. It is not

known to be on the TSCA inventory and cannot be distributed by itself

or as part of another product in commerce. Its use is to be by or

under the supervision of a technically qualified person. The

physical, chemical and toxicological properties of this substance have

not been fully determined.

_____ 2. COMPOSITION, INFORMATION ON INGREDIENTS _____

--Ingredient-- -CAS Number- ---%---

Methylene chloride 0000075-09-2 < 0.40

Notes:

Amounts specified are typical and do not represent a specification.

Remaining components are proprietary, nonhazardous and/or present at amounts below reportable limits.

_____ 3. HAZARDS IDENTIFICATION _____

Material may form a polymer on the skin, eyes, or in the lungs. In the event of direct contact of the liquid with these tissues, seek medical attention.

Acute Health Effects

Repeated or prolonged skin contact may cause irritation.

This product is believed to be extremely irritating to the eyes with possible permanent eye injury.

Strong chemical odor may cause headaches.

Aspiration into the lungs can cause severe pulmonary injury.

MATERIAL SAFETY DATA SHEET

Product Name: BFGOODRICH* Experimental Waveguide Materials: Clad

Document: EXPBFGWVCLAD CFLN: AUUS

Effective Date: 21 February 2001 Page Number: 2/10

METHYLENE CHLORIDE is an anesthetic. Inhaling vapor may cause confusion, light-headedness, nausea, vomiting, headache, narcosis, and death. High vapor concentrations may be irritating to the eyes and respiratory tract. Direct exposure to the liquid may be irritating to the eyes and skin and may cause burns. Exposure may also worsen the symptoms of angina (chest pain). Methylene chloride is metabolized in part to carbon monoxide and may cause elevations in carboxyhemoglobin in the blood.

Chronic Health Effects

Overexposure of vapors may lead to central nervous system depression producing such effects as headache, dizziness, nausea and loss of consciousness.

METHYLENE CHLORIDE: Repeated or prolonged exposure to vapors may cause cancer or exacerbate cardiac disease.

Signs/Symptoms of Exposure

Irritation.

Routes of Exposure/Entry

Eyes, skin contact, inhalation, ingestion.

Medical Conditions Aggravated by Exposure

Pre-existing skin problems may be aggravated by prolonged or repeated contact.

Persons with sensitive airways (e.g., asthmatics) may react to vapors.

Individuals with heart disease and those with risk factors for heart disease have an increased risk of heart attack when exposed to this material.

Carcinogenic Status

METHYLENE CHLORIDE: IARC - Group 2B; OSHA - Regulated as a carcinogen; NTP - Anticipated carcinogen.

_____ 4. FIRST AID MEASURES _____

If irritation occurs or persists from any route of exposure, remove the affected individual from the area. Call a physician.

Eye Contact

Immediately flush eyes with plenty of clean water for an extended time, not less than fifteen (15) minutes. Flush longer if there is any indication of residual chemical in the eye.

Ensure adequate flushing of the eyes by separating the eyelids with fingers and roll eyes in a circular motion.

Skin Contact

Immediately remove contaminated clothing and shoes.

Wash the affected area thoroughly with plenty of water and soap.

Inhalation

If affected, remove to fresh air.

If not breathing, give artificial respiration.

If breathing is difficult, give oxygen.

Ingestion

Do not induce vomiting.

MATERIAL SAFETY DATA SHEET

Product Name: BFGOODRICH* Experimental Waveguide Materials: Clad

Document: EXPBFGWVCLAD CFLN: AUUS

Immediately dilute by drinking large amounts of water or milk.

Never give anything by mouth to an unconscious person.

Extreme care must be taken to prevent aspiration.

If victim is unconscious and breathing, position the person on their side to prevent aspiration.

Get medical attention immediately.

Notes to Physicians

Aspiration of material into the lungs due to vomiting can cause chemical pneumonitis which can be fatal.

_____ 5. FIRE FIGHTING MEASURES _____

NFPA Flammability Class IIIA

Flash Point 90.C (194.F)

Closed cup

Explosive Range Not Determined

METHYLENE CHLORIDE has no flash point in a conventional closed tester

but it forms flammable vapor-air mixtures at approximately 100°C (212°F).

Extinguishing Media

NFPA Class IIIA (Combustible liquid): Use dry chemical, "alcohol" foam, carbon dioxide or water spray.

Fire Fighting Instructions

Never direct a hose stream directly onto a burning flammable/combustible liquid. Solid or straight hose stream will cause fire to spread if directed onto a burning spill or into an open container of burning liquid.

Wear self-contained breathing apparatus (SCBA) equipped with a full facepiece and operated in a pressure-demand mode (or other positive pressure mode) and approved protective clothing. Personnel without suitable respiratory protection must leave the area to prevent significant exposure to hazardous gases from combustion, burning or decomposition. In an enclosed or poorly ventilated area, wear SCBA during cleanup immediately after a fire as well as during the attack phase of firefighting operations.

Unusual Fire/Explosion Hazards

Gives off volatile vapors that are heavier than air and may travel

along the ground or may be moved by ventilation and ignited by flame, sparks, heaters, or other ignition sources at distant locations (flashback potential).

Hot vapor or mists may be susceptible to spontaneous combustion when mixed with air. Ignition temperatures decrease with increasing vapor volume and vapor/air contact time and are influenced by pressure changes. Therefore, ignition may occur below published ignition temperatures. Use of this product in processes involving elevated-temperatures, vacuum if subject to sudden ingress of air, sudden escape of vapor or mist, etc., must be thoroughly evaluated to assure safe operation.

MATERIAL SAFETY DATA SHEET

Product Name: BFGOODRICH* Experimental Waveguide Materials: Clad

Document: EXPBFGWVCLAD CFLN: AUUS

Effective Date: 21 February 2001 Page Number: 4/10

Protect product from flames of any kind; maintain proper clearance when using heat devices, etc.

Irritating or toxic substances will be emitted upon burning, combustion or decomposition.

Exposing closed containers to heat may cause excessive pressure resulting in explosive rupture.

_____ 6. ACCIDENTAL RELEASE MEASURES _____

Issue warning: combustible liquid. Eliminate all ignition sources.

Ventilate the area. If spill is large, be prepared to isolate the hazard area. Deny access to the spill area to persons who are not involved in the cleanup and/or who have not been properly trained in spill management of hazardous/flammable liquids.

Containment Techniques

Contain by diking with sand, earth or other non-combustible material.

Prevent flow into public sewer (explosion hazard), streams or other water systems.

See Section 12, Ecological Information.

Blanket large spills with foam to minimize fire hazard and reduce vaporization. Remove as much as possible.

Clean-Up Techniques

Wear proper personal protective clothing and equipment.

Eliminate ignition sources.

Soak up large spill residue and small spills with an inert absorbent.

Place into labeled, closed container; store in safe location to await disposal.

Change contaminated clothing and launder before reuse.

_____ 7. HANDLING AND STORAGE _____

Handling

Wash thoroughly after handling this product. Always wash up before eating, smoking or using the facilities.

Use under well-ventilated conditions.

Avoid eye contact.

Avoid skin contact.

Avoid inhalation of aerosol, mist, spray, fume or vapor.

Do not ingest, taste, or swallow.

Do not eat, drink or smoke when using this product.

Wash contaminated clothing before reuse.

Discard shoes contaminated with this product.

Provide eyewash fountains and safety showers in the work area.

Do not cut, puncture, or weld on or near the container.

Bond and ground all containers when transferring chemical.

Take precautions to prevent static discharge to prevent ignition of vapors.

Emptied container may contain residual vapors or liquid which may ignite or explode.

MATERIAL SAFETY DATA SHEET

Product Name: BFGOODRICH* Experimental Waveguide Materials: Clad

Document: EXPBFGWVCLAD CFLN: AUUS

Effective Date: 21 February 2001 Page Number: 5/10

Do not dispose of or reuse empty containers without first cleaning or reconditioning. Do not use water to clean containers. Instead, rinse containers thoroughly with appropriate organic solvent, such as toluene, acetone, or cyclohexane. Incinerate used cleaning solution.

Persons performing cleaning operations must wear personal protection adequate for the solvent being used.

Storage

Store in combustible storage area and away from heat and open flame.

Store cool and dry, under well-ventilated conditions.

Keep container closed when not in use.

Do not store in open, unlabeled or mislabeled containers.

Keep container upright, when not in use, to prevent leakage.

Open containers carefully and slowly.

Avoid storing containers in direct sunlight as vapors may accumulate in the head space creating pressure.

_____ 8. EXPOSURE CONTROLS/PERSONAL PROTECTION _____

Occupational Exposure Limits

--ACGIH-TWA--- -ACGIH-STEL--- ---OSHA-TWA--- --OSHA-STEL---

Methylene chloride

50.00 ppm N/E 25.00 ppm 125.00 ppm

Notes:

Methylene chloride has poor odor warning properties.

Engineering Controls

Always provide effective general and, when necessary, local exhaust ventilation to draw spray, aerosol, fume, mist and vapor away from workers to prevent routine inhalation.

Ventilation must be adequate to maintain the ambient workplace atmosphere below the exposure limit(s) outlined in the MSDS.

Ventilation guidelines/techniques may be found in publications such as Industrial Ventilation: American Conference of Governmental Industrial Hygienists, 1330 Kemper Meadow Drive, Cincinnati, OH, 45240-1634, USA.

Eye/Face Protection

Wear splash-proof goggles.

Skin Protection

Wear chemical resistant (impervious) gloves.

Wear chemical resistant protective clothing.

Respiratory Protection

Wear a respirator approved by NIOSH/MSHA (e.g., an organic vapor respirator, a full face air purifying respirator for organic vapors, or a self-contained breathing apparatus) whenever exposure to aerosol, mist, spray, fume or vapor exceed the exposure limit(s) of any chemical substance listed in this MSDS.

When exposed to aerosols or vapors, use full face organic vapor

cartridge respirator with particulate pre-filter.

MATERIAL SAFETY DATA SHEET

Product Name: BFGOODRICH* Experimental Waveguide Materials: Clad

Document: EXPBFGWVCLAD CFLN: AUUS

Effective Date: 21 February 2001 Page Number: 6/10

Use respirator in accordance with manufacturer's use limitations and
OSHA standard 1910.134 (29CFR).

_____ 9. PHYSICAL AND CHEMICAL PROPERTIES _____

Form Liquid

Appearance/Color Clear

Solubility (in water) Not Determined

pH Value Not Determined

Boiling Range Not Determined

Vapor Pressure (mmHg) 0.00 @ 25 C (77 F) /

25.85 @ 65.C (149.F)

Melting Point Not Determined

Evaporation Rate Not Determined

Vapor Density Not Determined

Partition Coefficient Not Available

% Volatile Weight >/= 73.%

Specific Gravity Not Determined

_____ 10. STABILITY AND REACTIVITY _____

Stability This product is stable

Hazardous Polymerization Hazardous polymerization will not occur

Conditions to Avoid

Contact with water or moist air.

Do not expose to excessive heat or ignition sources.

Material generates methanol and ethanol on contact with water.

Overexposure to ethanol may have a narcotic effect. Ethanol is
metabolized to acetaldehyde and acetic acid resulting in metabolic
acidosis, CNS depression, and death due to respiratory arrest.

Incompatibility with other materials

May form peroxides on long exposure to air.

Avoid strong acids, bases, and oxidizing agents.

Depending on the amount and specific materials involved, contact can

result in intense heat, boiling, flame development, explosion or toxic gas generation.

Hazardous Decomposition Products

Potential decomposition gases have not been fully determined but may include:

Alcohols

Carbon dioxide, carbon monoxide and hydrocarbons.

_____ 11. TOXICOLOGICAL INFORMATION _____

Route Species Exposure and Dose

Methylene chloride

Inhalation Mouse LC50 (7H) 14400. ppm

Inhalation Rat, adult LC50 52000. mg/m3

MATERIAL SAFETY DATA SHEET

Product Name: BFGOODRICH* Experimental Waveguide Materials: Clad

Document: EXPBFGWVCLAD CFLN: AUUS

Effective Date: 21 February 2001 Page Number: 7/10

Oral Rat, adult LD50 1600. mg/kg

METHYLENE CHLORIDE has been tested for carcinogenicity in several laboratory rodents. These rodent studies indicate that there is clear evidence that methylene chloride is carcinogenic to male and female mice and female rats. Based on epidemiologic studies, OSHA has concluded that there is suggestive evidence of increased cancer risk in methylene chloride-related worker populations. The epidemiological evidence is consistent with the finding of excess cancer in the experimental animal studies.

As with all chemicals for which test data are limited or do not exist, caution must be exercised through the prudent use of protective equipment and handling procedures to minimize exposure.

_____ 12. ECOLOGICAL INFORMATION _____

METHYLENE CHLORIDE:

LC50 (96 Hour) Fathead minnow 34-193 mg/L

Cond: Flow-through

LC50 (96 Hour) Rainbow trout 10.95-15.32 mg/L

Cond: Flow-through, 13.3°C, pH 7.8, 106 mg/L

LC50 (96 Hour) Bluegill 220 mg/L

EC50 (48 Hour) Water flea 140-330 mg/L

Cond: Static, 21-23°C, pH 6.8-7.2, 66-79 mg/L CaCO₃

EC50 (5, 15 min.) Photobacterium phosphoreum 1000-3230 mg/L

Microtox test.

This substance may be toxic to fish and aquatic organisms. Do not release to water.

_____ 13. DISPOSAL CONSIDERATIONS _____

Methylene chloride: EPA Hazardous Waste No. U080 (40CFR261.33).

Incinerate waste product when in liquid form (i.e., as supplied) in a properly permitted (approved) incineration facility in accordance with federal, state and local regulations.

Liquids cannot be disposed of in a landfill.

Federal, state and local regulations where the waste material is generated, treated, and/or disposed of must be examined to verify the appropriate waste classification.

EPA CERCLA RQ.

--Ingredient-- --lbs- --kg--

Methylene chloride 1000 453.6

_____ 14. TRANSPORTATION INFORMATION _____

MATERIAL SAFETY DATA SHEET

Product Name: BFGOODRICH* Experimental Waveguide Materials: Clad

Document: EXPBFGWVCLAD CFLN: AUUS

Effective Date: 21 February 2001 Page Number: 8/10

UN Number N/A

UN Pack Group N/A

UN Class N/A

ICAO/IATA Class N/A

Notes:

Surface shipment within the United States:

For shipment in containers of 119 gallons (450 L) or less:

Not regulated.

U.S. DOT RQ.

--Ingredient-- --lbs- --kg--

Methylene chloride 1000 453.6

_____ 15. REGULATORY INFORMATION _____

--SARA Title III Section 313-----

This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and of 40 CFR 372:

Methylene chloride

--SARA Title III Section 312 Hazard Category (40 CFR 311/312)--

Acute Health: Yes Release of Pressure: No

Chronic Health: Yes Reactive: No

Fire: Yes

--PROP 65 (Carcinogen)-----

WARNING: This product contains a chemical known to the state of California to cause cancer.

Methylene chloride

--Clean Air Act (CAA)-----

When processed this product may give off a CAA substance (Section 112). The amount given off varies and is dependent upon process conditions (i.e., use, curing, heating). Listed below are possible CAA substances in this product:

Methylene chloride

Chemical identity of some or all components present is confidential business information (trade secret) and is being withheld as permitted by 29CFR1910.1200 (i).

US (Federal) Regulations

TSCA: This product is not known to be on the TSCA inventory.

There is a component in this product subject to a SNUR, reference # 40CFR 721.4106.

MATERIAL SAFETY DATA SHEET

Product Name: BFGOODRICH* Experimental Waveguide Materials: Clad

Document: EXPBFGWVCLAD CFLN: AUUS

Effective Date: 21 February 2001 Page Number: 9/10

This SNUR will require persons to notify EPA at least 90 days before commencing manufacturing, importing, or processing this substance for a significant new use.

The significant new use(s) are: Release to water. Requirements as specified in Sec. 721.90 (a)(1), (b)(1), and (c)(1).

_____ 16. OTHER INFORMATION _____

HMIS Rating (H-F-R-PPI) 2-2-0-B

NFPA Rating (H-F-R) 2-2-0

KEY: 0=Insignificant; 1=Slight; 2=Moderate; 3=High; 4=Extreme.

Hazardous Materials Identification System (HMIS), National Paint and Coatings Assn. rating applies to product "as packaged" (i.e., ambient temperature).

National Fire Protection Association (NFPA) rating identifies the severity of hazards of material during a fire emergency (i.e., "on fire").

Legend:

*: A Trademark of The BFGoodrich Company

ACGIH: American Conference of Governmental Industrial Hygienists

A1: Confirmed human carcinogen

A2: Suspected human carcinogen

A3: Animal carcinogen

CAS No: Chemical Abstract Service Registry Number

IARC: International Agency for Research on Cancer

Group1: Carcinogenic to humans

Group2A: Probably carcinogenic to humans

Group2B: Possibly carcinogenic to humans

Group3: Unclassifiable as a carcinogen to humans

MSHA: Mine Safety and Health Administration

NIOSH: National Institute for Occupational Safety and Health

NTP: National Toxicology Program

N/A: Not Applicable

N/E: None Established

OSHA: Occupational Safety and Health Administration

PEL: Permissible Exposure Limit

PNOC: Particulates Not Otherwise Classified

RTK: Right To Know

STEL: Short Term Exposure Limit (15 minute Time Weighted Average)

TLV: Threshold Limit Value

C: Ceiling limit

S: Skin notation refers to the potential significant

contribution to the overall exposure by the cutaneous route

including mucous membranes and the eyes and by direct skin

contact with the substance

WEEL: Workplace Environmental Exposure Level

WHMIS: Canadian Workplace Hazardous Materials Information System

Users Responsibility/Disclaimer of Liability

As the conditions or methods of use are beyond our control, we do not

MATERIAL SAFETY DATA SHEET

Product Name: BFGOODRICH* Experimental Waveguide Materials: Clad

Document: EXPBFGWVCLAD CFLN: AUUS

Effective Date: 21 February 2001 Page Number: 10/10

assume any responsibility and expressly disclaim any liability for any use of this material. Information contained herein is believed to be true and accurate but all statements or suggestions are made without warranty, expressed or implied, regarding accuracy of the information, the hazards connected with the use of the material or the results to be obtained from the use thereof. Compliance with all applicable federal, state and local laws and local regulations remains the responsibility of the user.

This bulletin cannot cover all possible situations which the user may experience during processing. Each aspect of your operation should be examined to determine if, or where, additional precautions may be necessary. All health and safety information contained in this bulletin should be provided to your employees or customers. It is your responsibility to develop appropriate work practice guidelines and employee instructional programs for your operation.

