

VDF-TrFE COPOLYMERS POWDER

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

1.1. Identification of the substance or mixture

Product name : VDF-TrFE COPOLYMERS POWDER

1.2. Use of the Substance/Mixture

Recommended use : - Electronic industry
- film
- For industrial use only.

1.3. Company/Undertaking Identification

Address : SOLVAY SPECIALTY POLYMERS USA, LLC
4500 McGINNIS FERRY ROAD
ALPHARETTA GA 30005-3914
USA

1.4. Emergency and contact telephone numbers

Emergency telephone number : 1 (800) 424-9300 CHEMTREC® (USA & Canada)
Contact telephone number (product information): (856) 853-8119 (Product information)

SECTION 2. HAZARDS IDENTIFICATION

Although OSHA has not adopted the environmental portion of the GHS regulations, this document may include information on environmental classification/labeling.

2.1. Classification of the substance or mixture

HCS 2012 (29 CFR 1910.1200)

Combustible dust : May form combustible dust concentrations in air

2.2. Label elements

HCS 2012 (29 CFR 1910.1200)

Hazard statements:

May form combustible dust concentrations in air

VDF-TrFE COPOLYMERS POWDER

Revision Date: 10/24/2014

2.3. Other hazards which do not result in classification

None identified

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Chemical nature : Fluoropolymer resin

Chemical Name	Identification number	Concentration [%]
Copolymer of trifluoroethene and 1,1-difluoroethene	CAS-No.: 28960-88-5	> 99.9 %

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

3.2 Mixtures

Not applicable, this product is a substance

SECTION 4. FIRST AID MEASURES

4.1. Inhalation

- Remove the subject from dusty environment and let him blow his nose.

Exposure to decomposition products :

- Move to fresh air.
- Oxygen or artificial respiration if needed.
- Symptoms of poisoning may develop many hours after exposure.
- Keep under medical supervision for at least 48 hours.

4.2. Eye contact

- In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Exposure to decomposition products :

- Rinse immediately with plenty of water, also under the eyelids.
- Remove contact lenses.

4.3. Skin contact

- Wash off with soap and water.

Exposure to decomposition products :

- Wash off with soap and water.
- Immediately apply calcium gluconate gel 2.5% and massage into the affected area using rubber gloves; continue to massage while repeatedly applying gel until 15 minutes after pain is relieved.
- Consult a physician.

4.4. Ingestion

- If large quantities of this material are swallowed, call a physician immediately.
- Never give anything by mouth to an unconscious person.

SECTION 5. FIREFIGHTING MEASURES

5.1. Suitable extinguishing media

- Water
- powder
- Foam
- Dry chemical
- Carbon dioxide (CO₂)

5.2. Extinguishing media which shall not be used for safety reasons

- None.

5.3. Special exposure hazards in a fire

- The product is not flammable.
- Not explosive
- In case of fire hazardous decomposition products may be produced such as: Gaseous hydrogen fluoride (HF), Fluorophosgene

5.4. Hazardous decomposition products

- Gaseous hydrogen fluoride (HF).
- Fluorophosgene
- The release of other hazardous decomposition products is possible.

5.5. Special protective equipment for firefighters

- Wear self-contained breathing apparatus and protective suit.
- When intervention in close proximity wear acid resistant over suit.

5.6. Other information

- Evacuate personnel to safe areas.
- Approach from upwind.
- Protect intervention team with a water spray as they approach the fire.
- Keep containers and surroundings cool with water spray.
- Keep product and empty container away from heat and sources of ignition.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. Advice for non-emergency personnel

- Prevent further leakage or spillage if safe to do so.

VDF-TrFE COPOLYMERS POWDER

Revision Date: 10/24/2014

6.1.2. Advice for emergency responders

- Ensure adequate ventilation.
- Avoid dust formation.
- Material can create slippery conditions.
- Sweep up to prevent slipping hazard.
- Keep away from open flames, hot surfaces and sources of ignition.

6.2. Environmental precautions

- Should not be released into the environment.
- The product should not be allowed to enter drains, water courses or the soil.
- In case of accidental release or spill, immediately notify the appropriate authorities if required by Federal, State/Provincial and local laws and regulations.
- Do not flush into surface water or sanitary sewer system.

6.3. Methods and materials for containment and cleaning up

- Sweep up or vacuum up spillage and collect in suitable container for disposal.

6.4. Reference to other sections

- Refer to protective measures listed in sections 7 and 8.

SECTION 7. HANDLING AND STORAGE

7.1. Handling

- Ensure adequate ventilation.
- Avoid dust formation.
- Use personal protective equipment.
- Do not contaminate tobacco products.
- Keep away from heat and sources of ignition.
- To avoid thermal decomposition, do not overheat.
- Take measures to prevent the build up of electrostatic charge.
- Clean and dry piping circuits and equipment before any operations.
- Ensure all equipment is electrically grounded before beginning transfer operations.

7.2. Storage

- Keep in properly labelled containers.
- Keep away from heat and sources of ignition.
- Keep away from combustible material.
- Keep away from Incompatible products.

7.3. Packaging material

- glass
- Plastic container of HDPE
- polyethylene containers

7.4. Other information

- Provide tight electrical equipment well protected against corrosion.
- Refer to protective measures listed in sections 7 and 8.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Exposure Limit Values

Particles not otherwise specified (PNOS)

- US. ACGIH Threshold Limit Values 2007
time weighted average = 3 mg/m³
Remarks: as respirable particles
 - US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) 02 2006
Permissible exposure limit = 5 mg/m³
Remarks: respirable dust fraction, All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by the Particulates Not Otherwise Regulated (PNOR) limit which is the same as the inert or nuisance dust limit of Table Z-3.
 - US. ACGIH Threshold Limit Values 2010
time weighted average = 10 mg/m³
Remarks: Inhalable fraction
 - US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) 02 2006
Permissible exposure limit = 15 mg/m³
Remarks: Total dust, All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by the Particulates Not Otherwise Regulated (PNOR) limit which is the same as the inert or nuisance dust limit of Table Z-3.
 - US. OSHA Table Z-3 (29 CFR 1910.1000) 2000
time weighted average = 15 millions of particles per cubic foot of air
Remarks: respirable dust fraction
 - US. OSHA Table Z-3 (29 CFR 1910.1000) 2000
time weighted average = 50 millions of particles per cubic foot of air
Remarks: Total dust
 - US. OSHA Table Z-3 (29 CFR 1910.1000) 2000
time weighted average = 5 mg/m³
Remarks: respirable dust fraction
 - US. OSHA Table Z-3 (29 CFR 1910.1000) 2000
time weighted average = 15 mg/m³
Remarks: Total dust
 - US. OSHA Table Z-1-A (29 CFR 1910.1000) 1989
time weighted average = 5 mg/m³
Remarks: respirable dust fraction
 - US. OSHA Table Z-1-A (29 CFR 1910.1000) 1989
time weighted average = 15 mg/m³
Remarks: Total dust
- Remarks:
- Threshold limit values of by-products from thermal decomposition
- #### Hydrogen fluoride anhydrous
- US. ACGIH Threshold Limit Values 03 2013
time weighted average = 0.5 ppm
Remarks: as F
 - US. ACGIH Threshold Limit Values 03 2013

VDF-TrFE COPOLYMERS POWDER

Revision Date: 10/24/2014

- Ceiling Limit Value = 2 ppm
Remarks: as F
- US. OSHA Table Z-1-A (29 CFR 1910.1000) 1989
time weighted average = 3 ppm
Remarks: as F
 - US. OSHA Table Z-1-A (29 CFR 1910.1000) 1989
Short term exposure limit = 6 ppm
Remarks: as F
 - US. ACGIH Threshold Limit Values 03 2013
Remarks: as F, Can be absorbed through skin.
 - US. OSHA Table Z-2 (29 CFR 1910.1000) 02 2006
time weighted average = 3 ppm
 - US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) 02 2006
Permissible exposure limit = 2.5 mg/m³
Remarks: as F
 - US. Tennessee. OELs. Occupational Exposure Limits, Table Z1A 06 2008
time weighted average = 3 ppm
Remarks: as F
 - US. Tennessee. OELs. Occupational Exposure Limits, Table Z1A 06 2008
Short term exposure limit = 6 ppm
Remarks: as F
- Carbonyl difluoride**
- US. ACGIH Threshold Limit Values 03 2013
time weighted average = 2 ppm
 - US. ACGIH Threshold Limit Values 03 2013
Short term exposure limit = 5 ppm
 - US. OSHA Table Z-1-A (29 CFR 1910.1000) 1989
time weighted average = 2 ppm
time weighted average = 5 mg/m³
 - US. OSHA Table Z-1-A (29 CFR 1910.1000) 1989
Short term exposure limit = 5 ppm
Short term exposure limit = 15 mg/m³
 - US. OSHA Table Z-2 (29 CFR 1910.1000) 02 2006
time weighted average = 2.5 mg/m³
Remarks: Dust
 - US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) 02 2006
Permissible exposure limit = 2.5 mg/m³
Remarks: as F
 - US. Tennessee. OELs. Occupational Exposure Limits, Table Z1A 06 2008
time weighted average = 2 ppm
time weighted average = 5 mg/m³
 - US. Tennessee. OELs. Occupational Exposure Limits, Table Z1A 06 2008
Short term exposure limit = 5 ppm
Short term exposure limit = 15 mg/m³

8.2. Engineering controls

- Provide appropriate exhaust ventilation at machinery and at places where dust can be generated.

VDF-TrFE COPOLYMERS POWDER

Revision Date: 10/24/2014

- Provide local ventilation appropriate to the product decomposition risk (see section 10).
- Refer to protective measures listed in sections 7 and 8.
- Apply technical measures to comply with the occupational exposure limits.
- For additional information, consult the current edition of The Guide to the Safe Handling of Fluoropolymers published by the Society of Plastics Industry, Inc. (SPI) Fluoropolymer Division.

8.3. Personal protective equipment

8.3.1. Respiratory protection

- In case of dust clouds, effective dust mask.
- Use respirator when performing operations involving potential exposure to vapour of the product.
- In case of decomposition (see Section 10), wear a suitable respirator with a combination filter for organic vapor and particulate.
- Use NIOSH approved respiratory protection.
- Comply with OSHA respiratory protection requirements.
- For additional information, consult the current edition of The Guide to the Safe Handling of Fluoropolymers published by the Society of Plastics Industry, Inc. (SPI) Fluoropolymer Division.

8.3.2. Hand protection

- Latex gloves
- When handling hot material, use heat resistant gloves.
- Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).

8.3.3. Eye protection

- Safety glasses with side-shields
- In case of high-temperature processing
- Tightly fitting safety goggles

8.3.4. Skin and body protection

- Long sleeved clothing
- Safety shoes

8.3.5. Hygiene measures

- Ensure that eyewash stations and safety showers are close to the workstation location.
- When using, do not eat, drink or smoke.
- Wash hands before breaks and at the end of workday.
- Handle in accordance with good industrial hygiene and safety practice.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. General Information

Appearance	: powder
Colour	: white
Odour	: odourless

VDF-TrFE COPOLYMERS POWDER

Revision Date: 10/24/2014

9.2. Important health safety and environmental information

Boiling point/boiling range	: <i>Remarks:</i> Not applicable
Flash point	: <i>Remarks:</i> The product is not flammable.
Flammability	: <i>Remarks:</i> The product is not flammable.
Explosive properties	: <u><i>Explosion danger:</i></u> <i>Remarks:</i> Not explosive
Oxidizing properties	: <i>Remarks:</i> Non oxidizer
Bulk density	: 1,500 kg/m ³
Solubility(ies)	: Water <i>Remarks:</i> insoluble

9.3. Other data

Melting point/range	: ca. 145 °C (293 °F)
Granulometry	: 300 µm
Decomposition temperature	: > 300 °C (572 °F)

SECTION 10. STABILITY AND REACTIVITY

10.1. Stability

- Stable under recommended storage conditions.

10.2. Conditions to avoid

- Heat, flames and sparks.
- To avoid thermal decomposition, do not overheat.
- The decomposition is promoted at high temperature by silica (glass fibers etc.) and titanium dioxide.

10.3. Materials to avoid

- Silica and titanium dioxide at high temperature, acetone-like, Acids, Silicate containing materials (glass, cement,...), Strong bases

10.4. Hazardous decomposition products

- Gaseous hydrogen fluoride (HF), Fluorophosgene
- The release of other hazardous decomposition products is possible.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1. Acute toxicity

Acute oral toxicity

- No data available

Acute inhalation toxicity

- No data available

Acute dermal toxicity

- No data available

11.2. Skin corrosion/irritation

- No data available

11.3. Serious eye damage/eye irritation

- No data available,

11.4. Respiratory or skin sensitisation

- No data available

11.5. Germ cell mutagenicity

- No data available

11.6. Carcinogenicity

- No data available

11.7. Reproductive toxicity

- No data available

11.8. Specific target organ toxicity - single exposure

- Remarks: No data available

11.9. Specific target organ toxicity - repeated exposure

- Remarks: No data available

11.10. Aspiration hazard

- No data available

11.11. Other information

- Description of possible hazardous to health effects is based on experience and/or toxicological characteristics of several components.
- Product dust may be irritating to eyes, skin and respiratory system.
- The thermal decomposition vapours of fluorinated polymers may cause polymer fume fever with flu-like symptoms in humans, especially when smoking contaminated tobacco.
- Thermal decomposition can lead to release of toxic and corrosive gases.
- Exposure to decomposition products
- Causes severe irritation of eyes, skin and mucous membranes.

SECTION 12. ECOLOGICAL INFORMATION

12.1. Ecotoxicity effects

Chronic toxicity

- Remarks: No data available

12.2. Mobility

- Remarks: No data available

12.3. Persistence and degradability

Abiotic degradation

- Result: No data available

Biodegradation

- Remarks: No data available

12.4. Bioaccumulative potential

- Result: No data available

12.5. Other adverse effects

- No data available

12.6. Remarks

- Ecological injuries are not known or expected under normal use.

SECTION 13. DISPOSAL CONSIDERATIONS

13.1. Waste from residues / unused products

- Do not dump into any sewers, on the ground, or into any body of water. All disposal methods must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations.
- Waste characterizations and compliance with applicable laws and regulations are the responsibility of the waste generator.
- Can be incinerated, when in compliance with local regulations.
- The incinerator must be equipped with a system for the neutralisation or recovery of HF.

13.2. Packaging treatment

- Empty containers can be landfilled, when in accordance with the local regulations.

13.3. RCRA Hazardous Waste

- Listed RCRA Hazardous Waste (40 CFR 302) - No

SECTION 14. TRANSPORT INFORMATION

- Sea (IMO/IMDG)

VDF-TrFE COPOLYMERS POWDER

Revision Date: 10/24/2014

- not regulated
- Air (ICAO/IATA)
- not regulated
- U.S. Dept of Transportation
- not regulated
- It is recommended that ERG Guide number 111 be used for all non-regulated material.
- Canadian Transportation of Dangerous Goods
- not regulated

SECTION 15. REGULATORY INFORMATION

15.1. Inventory Information

USA. Toxic Substances Control Act (TSCA)	: -	In compliance with inventory, Contains component(s) that meet the TSCA polymer exemption criteria of 40 CFR 723.250..
Canada. Domestic Substances List (DSL)	: -	Not in compliance with the inventory.
Canada. Non-Domestic Substances List (NDSL)	: -	Not in compliance with the inventory.
Australia. Inventory of Chemical Substances (AICS)	: -	Not in compliance with the inventory.
Korea. Existing Chemicals Inventory (KECI (KR))	: -	Not in compliance with the inventory.
China. Inventory of Existing Chemical Substances (IECSC)	: -	Not in compliance with the inventory.
Japan. Industrial Safety & Health Law Inventory (ISHL (JP))	: -	Listed on inventory.
Japan. Inventory of Existing & New Chemical Substances (ENCS)	: -	Listed on inventory.
Philippine. Inventory of Chemicals and Chemical Substances (PICCS)	: -	Not in compliance with the inventory.
New Zealand. Inventory of Chemicals (NZIOC)	: -	Not in compliance with the inventory.
Taiwan. National Existing Chemical Substance Inventory (NECSI)	: -	Listed on inventory.
EU. European Registration, Evaluation, Authorisation and Restriction of Chemical (REACH)	: -	If product is purchased from Solvay in Europe it is in compliance with REACH, if not please contact the supplier..

VDF-TrFE COPOLYMERS POWDER

Revision Date: 10/24/2014

15.2. Other regulations

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A)

- not regulated.

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required

- not regulated.

US. EPA CERCLA Hazardous Substances (40 CFR 302)

- not regulated.

US. New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

- not regulated.

US. Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323)

- not regulated.

US. California Safe Drinking Water & Toxic Enforcement Act (Proposition 65)

- This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm..

SECTION 16. OTHER INFORMATION

Further information

- New (SDS)
- Distribute new edition to clients
- Date prepared 10/24/2014

Material Safety Data Sheets contain country specific regulatory information; therefore, the MSDS's provided are for use only by customers of the company mentioned in section 1 in North America. If you are located in a country other than Canada, Mexico or the United States, please contact the Solvay Group company in your country for MSDS information applicable to your location.

The previous information is based upon our current knowledge and experience of our product and is not exhaustive. It applies to the product as defined by the specifications. In case of combinations or mixtures, one must confirm that no new hazards are likely to exist. In any case, the user is not exempt from observing all legal, administrative and regulatory procedures relating to the product, personal hygiene, and integrity of the work environment. (Unless noted to the contrary, the technical information applies only to pure product).

To our actual knowledge, the information contained herein is accurate as of the date of this document. However, neither the company mentioned in section 1 nor any of its affiliates makes any warranty, express or implied, including merchantability or fitness for use, or accepts any liability in connection with this information

SAFETY DATA SHEET
HCS 2012 (29 CFR 1910.1200)

VDF-TrFE COPOLYMERS POWDER

Revision Date: 10/24/2014

or its use. This information is for use by technically skilled persons at their own discretion and risk and does not relate to the use of this product in combination with any other substance or any other process. This is not a license under any patent or other proprietary right. The user alone must finally determine suitability of any information or material for any contemplated use in compliance with applicable law, the manner of use and whether any patents are infringed. This information gives typical properties only and is not to be used for specification purposes. The company mentioned in section 1 reserves the right to make additions, deletions or modifications to the information at any time without prior notification.

Trademarks and/or other products of the company mentioned in section 1 referenced herein are either trademarks or registered trademarks of the company mentioned in section 1 or its affiliates, unless otherwise indicated.

Copyright 2014, Company mentioned in Section 1. All Rights Reserved.