Safety Data Sheet

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SECTION 1: Identification

1.1. Product identifier
3M™ Abrasive Products, 947D

1.2. Recommended use and restrictions on use

Recommended use
Abrasive Product

1.3. Supplier's details

MANUFACTURER:	3M
DIVISION:	Abrasive Systems Division
ADDRESS:	3M Center, St. Paul, MN 55144-1000, USA
Telephone:	1-888-3M HELPS (1-888-364-3577)

1.4. Emergency telephone number
1-800-364-3577 or (651) 737-6501 (24 hours)

SECTION 2: Hazard identification

2.1. Hazard classification
Not classified as hazardous according to OSHA Hazard Communication Standard, 29 CFR 1910.1200.

2.2. Label elements
Signal word
Not applicable.

Symbols
Not applicable

Pictograms
Not applicable

28% of the mixture consists of ingredients of unknown acute oral toxicity.

SECTION 3: Composition/information on ingredients

Ingredient	C.A.S. No.	% by Wt
Ceramic Aluminum Oxide / Aluminum Oxide Mineral	1344-28-1	15 - 50

Blend (non-fibrous)		
Cloth Backing	None	5 - 40
Cured Resin	Mixture	5 - 30
Filler 1	13983-17-0	< 15
Inorganic Fluoride 1	15096-52-3	2 - 15
Inorganic Fluoride 2	14075-53-7	2 - 15
Filler 2	1317-65-3	< 10
TN Quick Change Metal Attachment	None	< 10
Filler 3	1332-58-7	0.5 - 5
Pigment	1332-37-2	0.1 - 2
Titanium Dioxide	13463-67-7	0.05 - 1

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation:
Remove person to fresh air. If you feel unwell, get medical attention.

Skin Contact:
Wash with soap and water. If signs/symptoms develop, get medical attention.

Eye Contact:
Flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. If signs/symptoms persist, get medical attention.

If Swallowed:
Do not induce vomiting. Rinse mouth. If you feel unwell, get medical attention.

4.2. Most important symptoms and effects, both acute and delayed
No critical symptoms or effects. See Section 11.1, information on toxicological effects.

4.3. Indication of any immediate medical attention and special treatment required
Not applicable

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media
In case of fire: Use a fire fighting agent suitable for ordinary combustible material such as water or foam to extinguish.

5.2. Special hazards arising from the substance or mixture
None inherent in this product.

Hazardous Decomposition or By-Products

Substance	Condition
Carbon monoxide	During Combustion
Carbon dioxide	During Combustion
Hydrogen Fluoride	During Combustion

5.3. Special protective actions for fire-fighters
No special protective actions for fire-fighters are anticipated.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective equipment based on the results of an exposure assessment. Refer to Section 8 for PPE recommendations. If anticipated exposure resulting from an accidental release exceeds the protective capabilities of the PPE listed in Section 8, or are unknown, select PPE that offers an appropriate level of protection. Consider the physical and chemical hazards of the material when doing so. Examples of PPE ensembles for emergency response could include wearing bunker gear for a release of flammable material; wearing chemical protective clothing if the spilled material is a corrosive, a sensitizer, a significant dermal irritant, or can be absorbed through the skin; or donning a positive pressure supplied-air respirator for chemicals with inhalation hazards. For information regarding physical and health hazards, refer to sections 2 and 11 of the SDS. Observe precautions from other sections.

6.2. Environmental precautions
Avoid release to the environment.

6.3. Methods and material for containment and cleaning up
Not applicable.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Do not breathe thermal decomposition products. For industrial/occupational use only. Not for consumer sale or use. Avoid breathing of dust created by sanding, grinding or machining. Damaged product can break apart during use and cause serious injury to face or eyes. Check product for damage such as cracks or nicks prior to use. Replace if damaged. Always wear eye and face protection when working at sanding or grinding operations or when near such operations. Avoid release to the environment. Combustible dust may form by action of this product on another material (substrate). Dust generated from the substrate during use of this product may be explosive if in sufficient concentration with an ignition source. Dust deposits should not be allowed to accumulate on surfaces because of the potential for secondary explosions.

7.2. Conditions for safe storage including any incompatibilities
No special storage requirements.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits
If a component is disclosed in section 3 but does not appear in the table below, an occupational exposure limit is not available for the component.

Ingredient	C.A.S. No.	Agency	Limit type	Additional Comments
Filler 2	1317-65-3	OSHA	TWA(as total dust):15 mg/m3;TWA(respirable fraction):5 mg/m3	
Filler 3	1332-58-7	ACGIH	TWA(respirable fraction):2 mg/m3	A4: Not class. as human carcin
KAOLIN, RESPIRABLE FRACTION	1332-58-7	OSHA	TWA(as total dust):15 mg/m3;TWA(respirable fraction):5 mg/m3	
Ceramic Aluminum Oxide / Aluminum Oxide Mineral Blend (non-fibrous)	1344-28-1	OSHA	TWA(as total dust):15 mg/m3;TWA(respirable fraction):5 mg/m3	
Titanium Dioxide	13463-67-7	ACGIH	TWA(Respirable nanoscale particles):0.2 mg/m3;TWA(Respirable finescale particles):2.5 mg/m3	A3: Confirmed animal carcin.
Titanium Dioxide	13463-67-7	OSHA	TWA(as total dust):15 mg/m3	
Filler 1	13983-17-0	ACGIH	TWA(inhalable fraction):1	A4: Not class. as human

			mg/m3	carcin
FLUORIDE AS DUST	15096-52-3	OSHA	TWA(as F):2.5 mg/m3;TWA(as dust):2.5 mg/m3	
Fluorides, as F	15096-52-3	ACGIH	TWA(as F):2.5 mg/m3	A4: Not class. as human carcin

ACGIH : American Conference of Governmental Industrial Hygienists
AIHA : American Industrial Hygiene Association
CMRG : Chemical Manufacturer's Recommended Guidelines
OSHA : United States Department of Labor - Occupational Safety and Health Administration
TWA: Time-Weighted-Average
STEL: Short Term Exposure Limit
CEIL: Ceiling

8.2. Exposure controls

8.2.1. Engineering controls
For those situations where the material might be exposed to extreme overheating due to misuse or equipment failure, use with appropriate local exhaust ventilation sufficient to maintain levels of thermal decomposition products below their exposure guidelines. Provide appropriate local exhaust ventilation for sanding, grinding or machining. Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapors/spray. If ventilation is not adequate, use respiratory protection equipment. Provide local exhaust at process emission sources to control exposure near the source and to prevent the escape of dust into the work area. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment).

8.2.2. Personal protective equipment (PPE)

Eye/face protection

To minimize the risk of injury to face and eyes, always wear eye and face protection when working at sanding or grinding operations or when near such operations. Select and use eye/face protection to prevent contact based on the results of an exposure assessment. The following eye/face protection(s) are recommended:
Safety Glasses with side shields

Skin/hand protection
Wear appropriate gloves to minimize risk of injury to skin from contact with dust or physical abrasion from grinding or sanding.

Respiratory protection

Assess exposure concentrations of all materials involved in the work process. Consider material being abraded when determining the appropriate respiratory protection. Select and use appropriate respirators to prevent inhalation overexposure.
An exposure assessment may be needed to decide if a respirator is required. If a respirator is needed, use respirators as part of a full respiratory protection program. Based on the results of the exposure assessment, select from the following respirator type(s) to reduce inhalation exposure:
Half facepiece or full facepiece air-purifying respirator suitable for particulates

For questions about suitability for a specific application, consult with your respirator manufacturer.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Solid

Color	Red
Odor	Slight Polymeric
Odor threshold	*Not Applicable*
pH	*Not Applicable*
Melting point	*Not Applicable*
Boiling Point	*Not Applicable*
Flash Point	*Not Applicable*
Evaporation rate	*Not Applicable*
Flammability	Not Applicable
Flammable Limits(LEL)	*Not Applicable*
Flammable Limits(UEL)	*Not Applicable*
Vapor Pressure	*Not Applicable*
Relative Vapor Density	*Not Applicable*
Density	*Not Applicable*
Relative Density	*Not Applicable*
Solubility In Water	*Not Applicable*
Solubility- non-water	*Not Applicable*
Partition coefficient: n-octanol/ water	*Not Applicable*
Autoignition temperature	*Not Applicable*
Decomposition temperature	*Not Applicable*
Kinematic Viscosity	*Not Applicable*
Volatile Organic Compounds	*Not Applicable*
VOC Less H2O & Exempt Solvents	*Not Applicable*
Particle Characteristics	*Not Applicable*

SECTION 10: Stability and reactivity

10.1. Reactivity
This material is considered to be non reactive under normal use conditions.

10.2. Chemical stability
Stable.

10.3. Possibility of hazardous reactions
Hazardous polymerization will not occur.

10.4. Conditions to avoid
None known.

10.5. Incompatible materials
None known.

10.6. Hazardous decomposition products

Substance	Condition
None known.	

Refer to section 5.2 for hazardous decomposition products during combustion.

Extreme heat arising from situations such as misuse or equipment failure can generate hydrogen fluoride as a decomposition product.

SECTION 11: Toxicological information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labeling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

11.1. Information on Toxicological effects

Signs and Symptoms of Exposure

Based on test data and/or information on the components, this material may produce the following health effects:

Inhalation:
Dust from grinding, sanding or machining may cause irritation of the respiratory system. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

Skin Contact:
Mechanical Skin irritation: Signs/symptoms may include abrasion, redness, pain, and itching.

Eye Contact:
Mechanical eye irritation: Signs/symptoms may include pain, redness, tearing and corneal abrasion. Dust created by grinding, sanding, or machining may cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

Ingestion:
No known health effects.

Carcinogenicity:

Ingredient	CAS No.	Class Description	Regulation
TITANIUM DIOXIDE	13463-67-7	Grp. 2B: Possible human carc.	International Agency for Research on Cancer

Additional Information:
This document covers only the product. For complete assessment, when determining the degree of hazard, the material being abraded must also be considered. This product contains titanium dioxide. Cancer of the lungs has been observed in rats that inhaled high levels of titanium dioxide. No exposure to inhaled titanium dioxide is expected during the normal handling and use of this product. Titanium dioxide was not detected when air sampling was conducted during simulated use of similar products containing titanium dioxide. Therefore, the health effects associated with titanium dioxide are not expected during the normal use of this product.

Toxicological Data
If a component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or the data are not sufficient for classification.

Acute Toxicity

Name	Route	Species	Value
Overall product	Ingestion		No data available; calculated ATE >5,000 mg/kg
Ceramic Aluminum Oxide / Aluminum Oxide Mineral Blend (non-fibrous)	Dermal		LD50 estimated to be > 5,000 mg/kg
Ceramic Aluminum Oxide / Aluminum Oxide Mineral Blend (non-fibrous)	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 2.3 mg/l
Ceramic Aluminum Oxide / Aluminum Oxide Mineral Blend (non-fibrous)	Ingestion	Rat	LD50 > 5,000 mg/kg
Inorganic Fluoride 1	Dermal	Rabbit	LD50 > 2,100 mg/kg
Inorganic Fluoride 1	Inhalation-Dust/Mist (4 hours)	Rat	LC50 4.5 mg/l

Inorganic Fluoride 1	Ingestion	Rat	LD50 5,000 mg/kg
Inorganic Fluoride 2	Dermal		LD50 estimated to be > 5,000 mg/kg
Inorganic Fluoride 2	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 5.3 mg/l
Inorganic Fluoride 2	Ingestion	Rat	LD50 5,854 mg/kg
Filler 1	Ingestion	Rat	LD50 > 5,000 mg/kg
Filler 1	Dermal	similar compounds	LD50 > 5,000 mg/kg
Filler 1	Inhalation-Dust/Mist (4 hours)	similar compounds	LC50 > 2.08 mg/l
Filler 2	Dermal	Rat	LD50 > 2,000 mg/kg
Filler 2	Inhalation-Dust/Mist (4 hours)	Rat	LC50 3 mg/l
Filler 2	Ingestion	Rat	LD50 6,450 mg/kg
Filler 3	Dermal		LD50 estimated to be > 5,000 mg/kg
Filler 3	Ingestion	Human	LD50 > 15,000 mg/kg
Pigment	Dermal	Not available	LD50 3,100 mg/kg
Pigment	Ingestion	Not available	LD50 3,700 mg/kg
Titanium Dioxide	Dermal	Rabbit	LD50 > 10,000 mg/kg
Titanium Dioxide	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 6.82 mg/l
Titanium Dioxide	Ingestion	Rat	LD50 > 10,000 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
Ceramic Aluminum Oxide / Aluminum Oxide Mineral Blend (non-fibrous)	Rabbit	No significant irritation
Inorganic Fluoride 1	Multiple animal species	No significant irritation
Inorganic Fluoride 2	Rabbit	No significant irritation
Filler 1	similar compounds	No significant irritation
Filler 2	Rabbit	No significant irritation
Filler 3	Professional judgement	No significant irritation
Pigment	Rabbit	No significant irritation
Titanium Dioxide	Rabbit	No significant irritation

Serious Eye Damage/Irritation

Name	Species	Value
Ceramic Aluminum Oxide / Aluminum Oxide Mineral Blend (non-fibrous)	Rabbit	No significant irritation
Inorganic Fluoride 1	Rabbit	Mild irritant
Inorganic Fluoride 2	Rabbit	No significant irritation
Filler 1	similar compounds	Mild irritant
Filler 2	Rabbit	No significant irritation
Filler 3	Professional judgement	No significant irritation

Pigment	Rabbit	No significant irritation
Titanium Dioxide	Rabbit	No significant irritation

Skin Sensitization

Name	Species	Value
Filler 1	Human	Not classified
Pigment	Human	Not classified
Titanium Dioxide	Human and animal	Not classified

Respiratory Sensitization

For the component/components, either no data are currently available or the data are not sufficient for classification.

Germ Cell Mutagenicity

Name	Route	Value
Ceramic Aluminum Oxide / Aluminum Oxide Mineral Blend (non-fibrous)	In Vitro	Not mutagenic
Filler 1	In Vitro	Not mutagenic
Filler 1	In vivo	Not mutagenic
Pigment	In Vitro	Not mutagenic
Titanium Dioxide	In Vitro	Not mutagenic
Titanium Dioxide	In vivo	Not mutagenic

Carcinogenicity

Name	Route	Species	Value
Ceramic Aluminum Oxide / Aluminum Oxide Mineral Blend (non-fibrous)	Inhalation	Rat	Not carcinogenic
Filler 3	Inhalation	Multiple animal species	Not carcinogenic
Pigment	Inhalation	Human	Some positive data exist, but the data are not sufficient for classification
Titanium Dioxide	Ingestion	Multiple animal species	Not carcinogenic
Titanium Dioxide	Inhalation	Rat	Carcinogenic

Reproductive Toxicity

Reproductive and/or Developmental Effects

Name	Route	Value	Species	Test Result	Exposure Duration
Filler 1	Ingestion	Not classified for development	Multiple animal species	NOAEL 1,600 mg/kg/day	during organogenesis
Filler 2	Ingestion	Not classified for development	Rat	NOAEL 625 mg/kg/day	premating & during gestation

Target Organ(s)

Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Filler 2	Inhalation	respiratory system	Not classified	Rat	NOAEL 0.812 mg/l	90 minutes

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration

Ceramic Aluminum Oxide / Aluminum Oxide Mineral Blend (non-fibrous)	Inhalation	pneumoconiosis	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL Not available	occupational exposure
Ceramic Aluminum Oxide / Aluminum Oxide Mineral Blend (non-fibrous)	Inhalation	pulmonary fibrosis	Not classified	Human	NOAEL Not available	occupational exposure
Inorganic Fluoride 1	Inhalation	bone, teeth, nails, and/or hair	Causes damage to organs through prolonged or repeated exposure	Rat	NOAEL 0.0005 mg/l	5 months
Inorganic Fluoride 1	Inhalation	respiratory system	Causes damage to organs through prolonged or repeated exposure	Rat	NOAEL 0.00021 mg/l	90 days
Inorganic Fluoride 1	Ingestion	bone, teeth, nails, and/or hair	Causes damage to organs through prolonged or repeated exposure	Rat	LOAEL 0.58 mg/kg/day	14 weeks
Filler 1	Inhalation	respiratory system	Not classified	Human	NOAEL Not available	occupational exposure
Filler 1	Inhalation	pulmonary fibrosis	Not classified	Human and animal	NOAEL Not available	
Filler 1	Ingestion	liver	Not classified	Rat	NOAEL 2,500 mg/kg/day	2 years
Filler 1	Ingestion	kidney and/or bladder	Not classified	Rat	NOAEL 2,500 mg/kg/day	2 years
Filler 1	Ingestion	hematopoietic system	Not classified	Rat	NOAEL 2,500 mg/kg/day	2 years
Filler 2	Inhalation	respiratory system	Not classified	Human	NOAEL Not available	occupational exposure
Filler 3	Inhalation	pneumoconiosis	Causes damage to organs through prolonged or repeated exposure	Human	NOAEL NA	occupational exposure
Filler 3	Inhalation	pulmonary fibrosis	Not classified	Rat	NOAEL Not available	
Pigment	Inhalation	pulmonary fibrosis	Not classified	Human	NOAEL Not available	occupational exposure
Pigment	Inhalation	pneumoconiosis	Not classified	Human	NOAEL Not available	occupational exposure
Titanium Dioxide	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for classification	Rat	LOAEL 0.01 mg/l	2 years
Titanium Dioxide	Inhalation	pulmonary fibrosis	Not classified	Human	NOAEL Not available	occupational exposure

Aspiration Hazard
For the component/components, either no data are currently available or the data are not sufficient for classification.

Please contact the address or phone number listed on the first page of the SDS for additional toxicological information on this material and/or its components.

SECTION 12: Ecological information

Ecotoxicological information

Please contact the address or phone number listed on the first page of the SDS for additional ecotoxicological information on this material and/or its components.

Chemical fate information

Please contact the address or phone number listed on the first page of the SDS for additional chemical fate information on this material and/or its components.

SECTION 13: Disposal considerations

13.1. Disposal methods

Dispose of contents/ container in accordance with the local/regional/national/international regulations.

The substrate that was abraded must be considered as a factor in the disposal method for this product. Dispose of waste product in a permitted industrial waste facility. As a disposal alternative, incinerate in a permitted waste incineration facility. Proper destruction may require the use of additional fuel during incineration processes. Combustion products will include halogen acid (HCl/HF/HBr). Facility must be capable of handling halogenated materials.

EPA Hazardous Waste Number (RCRA): Not regulated

SECTION 14: Transport Information

Not regulated per U.S. DOT, IATA or IMO.

These transportation classifications are provided as a customer service. As the shipper YOU remain responsible for complying with all applicable laws and regulations, including proper transportation classification and packaging. 3M transportation classifications are based on product formulation, packaging, 3M policies and 3M understanding of applicable current regulations. 3M does not guarantee the accuracy of this classification information. This information applies only to transportation classification and not the packaging, labeling, or marking requirements. The original 3M package is certified for U.S. ground shipment only. If you are shipping by air or ocean, the package may not meet applicable regulatory requirements.

SECTION 15: Regulatory information

15.1. US Federal Regulations

Contact 3M for more information.

EPCRA 311/312 Hazard Classifications:

Physical Hazards
Not Applicable.

Health Hazards
Not Applicable.

15.2. State Regulations

Contact 3M for more information.

15.3. Chemical Inventories

This product is an article as defined by TSCA regulations, and is exempt from TSCA Inventory listing requirements.
Contact 3M for more information.

15.4. International Regulations

Contact 3M for more information.

This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SECTION 16: Other information

NFPA Hazard Classification
Health: 0 **Flammability:** 1 **Instability:** 0 **Special Hazards:** None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar

emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

HMIS Hazard Classification

Health: 0 **Flammability:** 1 **Physical Hazard:** 0 **Personal Protection:** X - See PPE section.

Hazardous Material Identification System (HMIS® IV) hazard ratings are designed to inform employees of chemical hazards in the workplace. These ratings are based on the inherent properties of the material under expected conditions of normal use and are not intended for use in emergency situations. HMIS® IV ratings are to be used with a fully implemented HMIS® IV program. HMIS® is a registered mark of the American Coatings Association (ACA).

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