Safety Data Sheet

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SECTION 1: Identification

1.1. Product identifier
3M(TM) Scotch-Weld(TM) Urethane Adhesive DP604NS Black and Urethane Adhesive 604NS Black, Part A

Product Identification Numbers
62-2748-8530-0, 62-2748-9530-9, 62-2748-9531-7
7010365926, 7010329538

1.2. Recommended use and restrictions on use

Recommended use
Structural adhesive

1.3. Supplier's details

MANUFACTURER:	3M
DIVISION:	Industrial Adhesives and Tapes 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
Skin Corrosion/Irritation: Category 2.
Serious Eye Damage/Irritation: Category 2A.
Respiratory Sensitizer: Category 1.
Skin Sensitizer: Category 1.
Reproductive Toxicity: Category 1B.
Specific Target Organ Toxicity (repeated exposure): Category 1.
Specific Target Organ Toxicity (single exposure): Category 3.

2.2. Label elements
Signal word
Danger

Symbols
Exclamation mark |Health Hazard |

Pictograms



Hazard Statements

Causes skin irritation.
Causes serious eye irritation.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.
May damage fertility or the unborn child.
May cause respiratory irritation.

Causes damage to organs through prolonged or repeated exposure: respiratory system.

Precautionary statements

Prevention:
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe vapors.
Wash exposed skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves and eye protection.
In case of inadequate ventilation wear respiratory protection.

Response:
IF ON SKIN: Wash with plenty of soap and water.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Call a POISON CENTER or doctor.
Get medical attention if you feel unwell.
If eye irritation persists or if skin irritation or rash occurs: Get medical attention.
If experiencing respiratory symptoms: Call a POISON CENTER or doctor.
Take off contaminated clothing and wash it before reuse.

Storage:
Store in a well-ventilated place. Keep container tightly closed.
Store locked up.

Disposal:
Dispose of contents and container in accordance with applicable local, regional, national, and international regulations.

Supplemental Information:
Persons previously sensitized to isocyanates may develop a cross-sensitization reaction to other isocyanates.

34% of the mixture consists of ingredients of unknown acute inhalation toxicity.

SECTION 3: Composition/information on ingredients

Ingredient	C.A.S. No.	% by Wt
polyurethane prepolymer	67837-35-8	40 - 70
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	5124-30-1	15 - 40 Trade Secret *
1,1'-diphenylmethane diisocyanate polymer	39310-05-9	1 - 5 Trade Secret *
1,1'-methylenebis(isocyanatobenzene)	26447-40-5	1 - 5 Trade Secret *
4,4'-diphenylmethane diisocyanate	101-68-8	1 - 5 Trade Secret *
Polypropylene Glycol Glycerol Triether	25791-96-2	0.5 - 5
carbon black	1333-86-4	0.1 - 1 Trade Secret *
Organic-Chrome-Complex 1	71701-12-7	< 0.3
Organic-Chrome-Complex 2	74421-71-9	< 0.1
Organic-Chrome-Complex 3	Trade Secret* 3M Unique ID: 342972	< 0.1
Chromium	7440-47-3	< 0.1 Trade Secret *

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

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:
Immediately wash with soap and water. Remove contaminated clothing and wash before reuse. If signs/symptoms develop, get medical attention.

Eye Contact:
Immediately flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. Get medical attention.

If Swallowed:
Rinse mouth. If you feel unwell, get medical attention.

4.2. Most important symptoms and effects, both acute and delayed

Irritating to the respiratory tract (coughing, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain). Allergic respiratory reaction (difficulty breathing, wheezing, cough, and tightness of chest). Allergic skin reaction (redness, swelling, blistering, and itching). Target organ effects following prolonged or repeated exposure. See Section 11 for additional details.

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

Aldehydes	During Combustion
Isocyanates	During Combustion
Carbon monoxide	During Combustion
Carbon dioxide	During Combustion
Hydrogen Cyanide	During Combustion
Oxides of Nitrogen	During Combustion
Toxic Vapor, Gas, Particulate	During Combustion

5.3. Special protective actions for fire-fighters
Wear full protective clothing, including helmet, self-contained, positive pressure or pressure demand breathing apparatus, bunker coat and pants, bands around arms, waist and legs, face mask, and protective covering for exposed areas of the head.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Evacuate area. Ventilate the area with fresh air. For large spill, or spills in confined spaces, provide mechanical ventilation to disperse or exhaust vapors, in accordance with good industrial hygiene practice. 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.

6.2. Environmental precautions
Avoid release to the environment. For larger spills, cover drains and build dikes to prevent entry into sewer systems or bodies of water.

6.3. Methods and material for containment and cleaning up
Contain spill. Pour isocyanate decontaminant solution (90% water, 8% concentrated ammonia, 2% detergent) on spill and allow to react for 10 minutes. Or pour water on spill and allow to react for more than 30 minutes. Cover with absorbent material. Working from around the edges of the spill inward, cover with bentonite, vermiculite, or commercially available inorganic absorbent material. Mix in sufficient absorbent until it appears dry. Remember, adding an absorbent material does not remove a physical, health, or environmental hazard. Collect as much of the spilled material as possible. Place in a container approved for transportation by appropriate authorities, but do not seal the container for 48 hours to avoid pressure build-up. Clean up residue with an appropriate solvent selected by a qualified and authorized person. Ventilate the area with fresh air. Read and follow safety precautions on the solvent label and SDS. Dispose of collected material as soon as possible in accordance with applicable local/regional/national/international regulations.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
For industrial/occupational use only. Not for consumer sale or use. Do not handle until all safety precautions have been read and understood. Do not breathe dust/fume/gas/mist/vapors/spray. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Avoid release to the environment. Wash contaminated clothing before reuse. Use personal protective equipment (gloves, respirators, etc.) as required.

7.2. Conditions for safe storage including any incompatibilities
Store in a well-ventilated place. Keep container tightly closed to prevent contamination with water or air. If contamination is suspected, do not reseal container. Store away from acids. Store away from strong bases.

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
4,4'-diphenylmethane diisocyanate	101-68-8	OSHA	CEIL:0.2 mg/m3(0.02 ppm)	
Methylene bisphenyl isocyanate (MDI)	101-68-8	ACGIH	TWA:0.005 ppm	
carbon black	1333-86-4	ACGIH	TWA(inhalable fraction):3 mg/m3	A3: Confirmed animal carcin.
carbon black	1333-86-4	OSHA	TWA:3.5 mg/m3	
Methylene bisphenyl isocyanate (MDI)	26447-40-5	ACGIH	TWA:0.005 ppm	
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	5124-30-1	ACGIH	TWA:0.005 ppm	
CHROMIUM(III) COMPOUNDS (AS CR)	71701-12-7	OSHA	TWA(as Cr):0.5 mg/m3	
Chromium	7440-47-3	ACGIH	TWA(as Cr(0), inhalable fraction):0.5 mg/m3	
Chromium	7440-47-3	OSHA	TWA(as Cr):1 mg/m3	
CHROMIUM(III) COMPOUNDS (AS CR)	74421-71-9	OSHA	TWA(as Cr):0.5 mg/m3	
Organic-Chrome-Complex 3	Trade Secret	OSHA	TWA(as Cr):0.5 mg/m3	

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
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.

8.2.2. Personal protective equipment (PPE)

Eye/face protection

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
Indirect Vented Goggles

Skin/hand protection
Select and use gloves and/or protective clothing approved to relevant local standards to prevent skin contact based on the results of an exposure assessment. Selection should be based on use factors such as exposure levels, concentration of the substance or mixture, frequency and duration, physical challenges such as temperature extremes, and other use conditions. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible gloves/protective clothing.

Gloves made from the following material(s) are recommended: Polymer laminate

If this product is used in a manner that presents a higher potential for exposure (e.g., spraying, high splash potential, etc.), then use of a protective apron may be necessary. See recommended glove material(s) for determining appropriate apron material(s). If a glove material is not available as an apron, polymer laminate is a suitable option.

Respiratory protection

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 organic vapors and particulates
Half facepiece or full facepiece supplied-air respirator

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	Liquid
Specific Physical Form:	Viscous liquid
Color	Black
Odor	Mild Isocyanate
Odor threshold	*No Data Available*
pH	*Not Applicable*
Melting point	*No Data Available*
Boiling Point	>=400 ºF
Flash Point	>=290 ºF [*Test Method:*Tagliabue Closed Cup]
Evaporation rate	<=1 [*Details:*Gels with exposure to humidity.]
Flammability	Not Applicable
Flammable Limits(LEL)	*No Data Available*
Flammable Limits(UEL)	*No Data Available*
Vapor Pressure	<=0.000004 mmHg [@ 68 ºF]
Relative Vapor Density	>=1 [*Ref Std:*AIR=1]
Density	1.056 g/ml [*Ref Std:*WATER=1]
Relative Density	1.056 [*Ref Std:*WATER=1]
Solubility in Water	Negligible
Solubility- non-water	*No Data Available*
Partition coefficient: n-octanol/ water	*No Data Available*
Autoignition temperature	*No Data Available*
Decomposition temperature	*No Data Available*
Kinematic Viscosity	1,894 mm2/sec
Hazardous Air Pollutants	<= 5 % weight [*Test Method:*Calculated]
Molecular weight	*No Data Available*
VOC Less H2O & Exempt Solvents	0.5 g/l [*Test Method:*calculated SCAQMD rule 443.1] [*Details:*when used as intended with Part B]
VOC Less H2O & Exempt Solvents	1 g/l [*Test Method:*calculated SCAQMD rule 443.1] [*Details:*as supplied]
VOC Less H2O & Exempt Solvents	0.05 % [*Test Method:*calculated SCAQMD rule 443.1] [*Details:*when used as intended with Part B]
Particle Characteristics	*Not Applicable*

SECTION 10: Stability and reactivity

10.1. Reactivity
This material may be reactive with certain agents under certain conditions - see the remaining headings in this section.

10.2. Chemical stability
Stable.

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

10.4. Conditions to avoid
Heat is generated during cure. Do not cure a mass larger than 50 grams in a confined space to prevent a premature exothermic reaction with production of intense heat and smoke.

10.5. Incompatible materials
Water
Strong acids
Strong bases
Reaction with water, alcohols, and amines is not hazardous if container can vent to the atmosphere to prevent pressure buildup.

10.6. Hazardous decomposition products

Substance	Condition
None known.	

Refer to section 5.2 for hazardous decomposition products during combustion.

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:
Respiratory Tract Irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. Allergic Respiratory Reaction: Signs/symptoms may include difficulty breathing, wheezing, cough, and tightness of chest. May cause additional health effects (see below).

Skin Contact:
Skin Irritation: Signs/symptoms may include localized redness, swelling, itching, dryness, cracking, blistering, and pain. Allergic Skin Reaction (non-photo induced): Signs/symptoms may include redness, swelling, blistering, and itching.

Eye Contact:
Severe Eye Irritation: Signs/symptoms may include significant redness, swelling, pain, tearing, cloudy appearance of the cornea, and impaired vision.

Ingestion:
Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.
May cause additional health effects (see below).

Additional Health Effects:

Prolonged or repeated exposure may cause target organ effects:
Respiratory Effects: Signs/symptoms may include cough, shortness of breath, chest tightness, wheezing, increased heart rate, bluish colored skin (cyanosis), sputum production, changes in lung function tests, and/or respiratory failure.

Reproductive/Developmental Toxicity:
Contains a chemical or chemicals which can cause birth defects or other reproductive harm.

Carcinogenicity:

Ingredient	CAS No.	Class Description	Regulation
Carbon black	1333-86-4	Grp. 2B: Possible human carc.	International Agency for Research on Cancer

Additional Information:
Persons previously sensitized to isocyanates may develop a cross-sensitization reaction to other isocyanates.

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	Inhalation-Vapor(4 hr)		No data available; calculated ATE >50 mg/l
Overall product	Ingestion		No data available; calculated ATE >5,000 mg/kg
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Dermal	Rat	LD50 > 7,000 mg/kg
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Inhalation-Dust/Mist (4 hours)	Rat	LC50 0.33 mg/l
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Ingestion	Rat	LD50 18,200 mg/kg
1,1'-methylenebis(isocyanatobenzene)	Dermal	Rabbit	LD50 > 5,000 mg/kg
1,1'-methylenebis(isocyanatobenzene)	Inhalation-Dust/Mist (4 hours)	Rat	LC50 0.368 mg/l
1,1'-methylenebis(isocyanatobenzene)	Ingestion	Rat	LD50 31,600 mg/kg
4,4'-diphenylmethane diisocyanate	Dermal	Rabbit	LD50 > 5,000 mg/kg
4,4'-diphenylmethane diisocyanate	Inhalation-Dust/Mist (4 hours)	Rat	LC50 0.368 mg/l
4,4'-diphenylmethane diisocyanate	Ingestion	Rat	LD50 31,600 mg/kg
1,1'-diphenylmethane diisocyanate polymer	Dermal	Rabbit	LD50 > 5,000 mg/kg
1,1'-diphenylmethane diisocyanate polymer	Inhalation-Dust/Mist (4 hours)	Rat	LC50 0.368 mg/l
1,1'-diphenylmethane diisocyanate polymer	Ingestion	Rat	LD50 31,600 mg/kg
Polypropylene Glycol Glycerol Triether	Dermal	Rat	LD50 > 2,000 mg/kg
Polypropylene Glycol Glycerol Triether	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 50 mg/l
Polypropylene Glycol Glycerol Triether	Ingestion	Rat	LD50 4,600 mg/kg
carbon black	Dermal	Rabbit	LD50 > 3,000 mg/kg
carbon black	Ingestion	Rat	LD50 > 8,000 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Rabbit	Irritant
1,1'-methylenebis(isocyanatobenzene)	official classification	Irritant
4,4'-diphenylmethane diisocyanate	official classification	Irritant
1,1'-diphenylmethane diisocyanate polymer	official classification	Irritant
Polypropylene Glycol Glycerol Triether	Rabbit	No significant irritation
carbon black	Rabbit	No significant irritation

Serious Eye Damage/Irritation

Name	Species	Value
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Rabbit	Mild irritant
1,1'-methylenebis(isocyanatobenzene)	Rabbit	Severe irritant
4,4'-diphenylmethane diisocyanate	Rabbit	Severe irritant
1,1'-diphenylmethane diisocyanate polymer	Rabbit	Severe irritant
Polypropylene Glycol Glycerol Triether	Rabbit	Mild irritant
carbon black	Rabbit	No significant irritation

Skin Sensitization

Name	Species	Value
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Human and animal	Sensitizing
1,1'-methylenebis(isocyanatobenzene)	Mouse	Sensitizing
4,4'-diphenylmethane diisocyanate	Mouse	Sensitizing
1,1'-diphenylmethane diisocyanate polymer	Mouse	Sensitizing

Respiratory Sensitization

Name	Species	Value
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Professional judgement	Sensitizing
1,1'-methylenebis(isocyanatobenzene)	Human	Sensitizing
4,4'-diphenylmethane diisocyanate	Human	Sensitizing
1,1'-diphenylmethane diisocyanate polymer	Human	Sensitizing

Germ Cell Mutagenicity

Name	Route	Value
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	In Vitro	Not mutagenic
1,1'-methylenebis(isocyanatobenzene)	In vivo	Not mutagenic
1,1'-methylenebis(isocyanatobenzene)	In Vitro	Some positive data exist, but the data are not sufficient for classification
4,4'-diphenylmethane diisocyanate	In vivo	Not mutagenic
4,4'-diphenylmethane diisocyanate	In Vitro	Some positive data exist, but the data are not sufficient for classification
1,1'-diphenylmethane diisocyanate polymer	In vivo	Not mutagenic
1,1'-diphenylmethane diisocyanate polymer	In Vitro	Some positive data exist, but the data are not sufficient for classification
carbon black	In Vitro	Not mutagenic
carbon black	In vivo	Some positive data exist, but the data are not sufficient for classification
Organic-Chrome-Complex 1	In Vitro	Some positive data exist, but the data are not

		sufficient for classification
Organic-Chrome-Complex 2	In Vitro	Some positive data exist, but the data are not sufficient for classification
Organic-Chrome-Complex 3	In Vitro	Some positive data exist, but the data are not sufficient for classification

Carcinogenicity

Name	Route	Species	Value
1,1'-methylenebis(isocyanatobenzene)	Inhalation	Rat	Some positive data exist, but the data are not sufficient for classification
4,4'-diphenylmethane diisocyanate	Inhalation	Rat	Some positive data exist, but the data are not sufficient for classification
1,1'-diphenylmethane diisocyanate polymer	Inhalation	Rat	Some positive data exist, but the data are not sufficient for classification
carbon black	Dermal	Mouse	Not carcinogenic
carbon black	Ingestion	Mouse	Not carcinogenic
carbon black	Inhalation	Rat	Carcinogenic

Reproductive Toxicity

Reproductive and/or Developmental Effects

Name	Route	Value	Species	Test Result	Exposure Duration
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Inhalation	Not classified for female reproduction	Rat	NOAEL 6 mg/m3	premating into lactation
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Inhalation	Not classified for male reproduction	Rat	NOAEL 6 mg/m3	28 days
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Inhalation	Not classified for development	Rat	NOAEL 6 mg/m3	during gestation
1,1'-methylenebis(isocyanatobenzene)	Inhalation	Not classified for female reproduction	Rat	NOAEL 0.01 mg/l	premating into lactation
1,1'-methylenebis(isocyanatobenzene)	Inhalation	Not classified for male reproduction	Rat	NOAEL 0.01 mg/l	28 days
1,1'-methylenebis(isocyanatobenzene)	Inhalation	Not classified for development	Rat	NOAEL 0.004 mg/l	during organogenesis
4,4'-diphenylmethane diisocyanate	Inhalation	Not classified for female reproduction	Rat	NOAEL 0.01 mg/l	premating into lactation
4,4'-diphenylmethane diisocyanate	Inhalation	Not classified for male reproduction	Rat	NOAEL 0.01 mg/l	28 days
4,4'-diphenylmethane diisocyanate	Inhalation	Not classified for development	Rat	NOAEL 0.004 mg/l	during organogenesis
1,1'-diphenylmethane diisocyanate polymer	Inhalation	Not classified for female reproduction	Rat	NOAEL 0.01 mg/l	premating into lactation
1,1'-diphenylmethane diisocyanate polymer	Inhalation	Not classified for male reproduction	Rat	NOAEL 0.01 mg/l	28 days
1,1'-diphenylmethane diisocyanate polymer	Inhalation	Not classified for development	Rat	NOAEL 0.004 mg/l	during organogenesis
Organic-Chrome-Complex 1	Ingestion	Not classified for male reproduction	Rat	NOAEL 250 mg/kg/day	28 days
Organic-Chrome-Complex 1	Ingestion	Not classified for female reproduction	Rat	NOAEL 80 mg/kg/day	premating into lactation
Organic-Chrome-Complex 1	Ingestion	Toxic to development	Rat	NOAEL 25 mg/kg/day	premating into lactation
Organic-Chrome-Complex 2	Ingestion	Not classified for male reproduction	Rat	NOAEL 250 mg/kg/day	28 days
Organic-Chrome-Complex 2	Ingestion	Not classified for female reproduction	Rat	NOAEL 80 mg/kg/day	premating into lactation
Organic-Chrome-Complex 2	Ingestion	Toxic to development	Rat	NOAEL 25 mg/kg/day	premating into lactation
Organic-Chrome-Complex 3	Ingestion	Not classified for male reproduction	Rat	NOAEL 250 mg/kg/day	28 days
Organic-Chrome-Complex 3	Ingestion	Not classified for female reproduction	Rat	NOAEL 80	premating

				mg/kg/day	into lactation
Organic-Chrome-Complex 3	Ingestion	Toxic to development	Rat	NOAEL 25 mg/kg/day	premating into lactation

Target Organ(s)

Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Inhalation	respiratory irritation	May cause respiratory irritation	Rat	NOAEL not available	
1,1'-methylenebis(isocyanatobenzene)	Inhalation	respiratory irritation	May cause respiratory irritation	official classification	NOAEL Not available	
4,4'-diphenylmethane diisocyanate	Inhalation	respiratory irritation	May cause respiratory irritation	official classification	NOAEL Not available	
1,1'-diphenylmethane diisocyanate polymer	Inhalation	respiratory irritation	May cause respiratory irritation	official classification	NOAEL Not available	

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Inhalation	respiratory system	Not classified	Rat	NOAEL 3 mg/m3	90 days
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Inhalation	heart	Not classified	Rat	NOAEL 18 mg/m3	90 days
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Inhalation	skin	Not classified	Rat	NOAEL 18 mg/m3	90 days
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Inhalation	endocrine system	Not classified	Rat	NOAEL 18 mg/m3	90 days
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Inhalation	gastrointestinal tract	Not classified	Rat	NOAEL 18 mg/m3	90 days
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Inhalation	bone, teeth, nails, and/or hair	Not classified	Rat	NOAEL 18 mg/m3	90 days
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Inhalation	hematopoietic system	Not classified	Rat	NOAEL 18 mg/m3	90 days
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Inhalation	liver	Not classified	Rat	NOAEL 18 mg/m3	90 days
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Inhalation	immune system	Not classified	Rat	NOAEL 18 mg/m3	90 days
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Inhalation	muscles	Not classified	Rat	NOAEL 18 mg/m3	90 days
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Inhalation	nervous system	Not classified	Rat	NOAEL 18 mg/m3	90 days
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Inhalation	eyes	Not classified	Rat	NOAEL 18 mg/m3	90 days
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Inhalation	kidney and/or bladder	Not classified	Rat	NOAEL 18 mg/m3	90 days
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Inhalation	vascular system	Not classified	Rat	NOAEL 18 mg/m3	90 days
1,1'-methylenebis(isocyanatobenzene)	Inhalation	respiratory system	Causes damage to organs through prolonged or repeated exposure	Rat	LOAEL 0.004 mg/l	13 weeks
1,1'-methylenebis(isocyanatobenzene)	Inhalation	endocrine system	Not classified	Rat	NOAEL 0.01 mg/l	28 days
1,1'-methylenebis(isocyanatobenzene)	Inhalation	hematopoietic system	Not classified	Rat	NOAEL 0.01 mg/l	28 days
1,1'-methylenebis(isocyanatobenzene)	Inhalation	liver	Not classified	Rat	NOAEL 0.01 mg/l	28 days
1,1'-	Inhalation	nervous system	Not classified	Rat	NOAEL 0.01	28 days

methylenebis(isocyanatobenzene)					mg/l	
1,1'-methylenebis(isocyanatobenzene)	Inhalation	eyes	Not classified	Rat	NOAEL 0.01 mg/l	28 days
1,1'-methylenebis(isocyanatobenzene)	Ingestion	endocrine system	Not classified	Rat	NOAEL 1,000 mg/kg/day	14 days
1,1'-methylenebis(isocyanatobenzene)	Ingestion	gastrointestinal tract	Not classified	Rat	NOAEL 1,000 mg/kg/day	14 days
1,1'-methylenebis(isocyanatobenzene)	Ingestion	liver	Not classified	Rat	NOAEL 1,000 mg/kg/day	14 days
4,4'-diphenylmethane diisocyanate	Inhalation	respiratory system	Causes damage to organs through prolonged or repeated exposure	Rat	LOAEL 0.004 mg/l	13 weeks
4,4'-diphenylmethane diisocyanate	Inhalation	endocrine system	Not classified	Rat	NOAEL 0.01 mg/l	28 days
4,4'-diphenylmethane diisocyanate	Inhalation	hematopoietic system	Not classified	Rat	NOAEL 0.01 mg/l	28 days
4,4'-diphenylmethane diisocyanate	Inhalation	liver	Not classified	Rat	NOAEL 0.01 mg/l	28 days
4,4'-diphenylmethane diisocyanate	Inhalation	nervous system	Not classified	Rat	NOAEL 0.01 mg/l	28 days
4,4'-diphenylmethane diisocyanate	Inhalation	eyes	Not classified	Rat	NOAEL 0.01 mg/l	28 days
4,4'-diphenylmethane diisocyanate	Ingestion	endocrine system	Not classified	Rat	NOAEL 1,000 mg/kg/day	14 days
4,4'-diphenylmethane diisocyanate	Ingestion	gastrointestinal tract	Not classified	Rat	NOAEL 1,000 mg/kg/day	14 days
4,4'-diphenylmethane diisocyanate	Ingestion	liver	Not classified	Rat	NOAEL 1,000 mg/kg/day	14 days
1,1'-diphenylmethane diisocyanate polymer	Inhalation	respiratory system	Causes damage to organs through prolonged or repeated exposure	Rat	LOAEL 0.004 mg/l	13 weeks
1,1'-diphenylmethane diisocyanate polymer	Inhalation	endocrine system	Not classified	Rat	NOAEL 0.01 mg/l	28 days
1,1'-diphenylmethane diisocyanate polymer	Inhalation	hematopoietic system	Not classified	Rat	NOAEL 0.01 mg/l	28 days
1,1'-diphenylmethane diisocyanate polymer	Inhalation	liver	Not classified	Rat	NOAEL 0.01 mg/l	28 days
1,1'-diphenylmethane diisocyanate polymer	Inhalation	nervous system	Not classified	Rat	NOAEL 0.01 mg/l	28 days
1,1'-diphenylmethane diisocyanate polymer	Inhalation	eyes	Not classified	Rat	NOAEL 0.01 mg/l	28 days
1,1'-diphenylmethane diisocyanate polymer	Ingestion	endocrine system	Not classified	Rat	NOAEL 1,000 mg/kg/day	14 days
1,1'-diphenylmethane diisocyanate polymer	Ingestion	gastrointestinal tract	Not classified	Rat	NOAEL 1,000 mg/kg/day	14 days
1,1'-diphenylmethane diisocyanate polymer	Ingestion	liver	Not classified	Rat	NOAEL 1,000 mg/kg/day	14 days
carbon black	Inhalation	pneumoconiosis	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.

Dispose of completely cured (or polymerized) material in a permitted industrial waste facility. As a disposal alternative, incinerate uncured product in a permitted waste incineration facility. Proper destruction may require the use of additional fuel during incineration processes. Empty drums/barrels/containers used for transporting and handling hazardous chemicals (chemical substances/mixtures/preparations classified as Hazardous as per applicable regulations) shall be considered, stored, treated & disposed of as hazardous wastes unless otherwise defined by applicable waste regulations. Consult with the respective regulating authorities to determine the available treatment and disposal facilities.

EPA Hazardous Waste Number (RCRA): Not regulated

SECTION 14: Transport Information

For Transport Information, please visit http://3M.com/Transportinfo or call 1-800-364-3577 or 651-737-6501.

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
Reproductive toxicity
Respiratory or Skin Sensitization
Serious eye damage or eye irritation
Skin Corrosion or Irritation
Specific target organ toxicity (single or repeated exposure)

Section 313 Toxic Chemicals subject to the reporting requirements of that section and 40 CFR part 372 (EPCRA):

Ingredient	C.A.S. No	% by Wt
4,4'-diphenylmethane diisocyanate	101-68-8	Trade Secret 1 - 5
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	5124-30-1	Trade Secret 15 - 40

15.2. State Regulations
Contact 3M for more information.

15.3. Chemical Inventories
The components of this product are in compliance with the chemical notification requirements of TSCA. All required components of this product are listed on the active portion of the TSCA Inventory.

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: 2 **Flammability:** 1 **Instability:** 1 **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: *3 **Flammability:** 1 **Physical Hazard:** 1 **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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