

1. Identification

Product identifier **Metal Bonding Adhesive**

Other means of identification

FIR No. 156626

Recommended use Metal bonding adhesive

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Supplier

Company Name Ford Motor Company
Address Attention: MSDS Information, P.O. Box 1899
 Dearborn, Michigan 48121
 USA
Telephone 1-800-392-3673
SDS Information 1-800-448-2063 (USA and Canada)
 fordsds.com

Emergency telephone numbers

Poison Control Center: USA and Canada: 1-800-959-3673
 INFOTRAC (Transportation): USA and Canada 1-800-535-5053

2. Hazard(s) identification

Physical hazards	Flammable liquids	Category 2
Health hazards	Acute toxicity, dermal	Category 3
	Acute toxicity, inhalation	Category 4
	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 1
	Sensitization, skin	Category 1
	Carcinogenicity	Category 2
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation
Environmental hazards	Not classified.	
OSHA defined hazards	Not classified.	

Label elements



Signal word Danger

Hazard statement Highly flammable liquid and vapor. Toxic in contact with skin. Causes skin irritation. May cause an allergic skin reaction. Causes serious eye damage. Harmful if inhaled. May cause respiratory irritation. Suspected of causing cancer.

Precautionary statement

Prevention Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Avoid breathing mist or vapor. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves/protective clothing/eye protection/face protection.

Response	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. Immediately call a poison center/doctor. If skin irritation or rash occurs: Get medical advice/attention. Take off immediately all contaminated clothing and wash it before reuse. In case of fire: Use appropriate media to extinguish.
Storage	Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated place. Keep cool. Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	May be harmful if swallowed. Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
METHYL METHACRYLATE		80-62-6	30 - 35
CYCLOHEXYL METHACRYLATE		101-43-9	3 - 5
METHACRYLIC ACID		79-41-4	2 - 4
N,N-DIMETHYLANILINE		121-69-7	0.1 - 1

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

4. First-aid measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Call a POISON CENTER or doctor/physician if you feel unwell.
Skin contact	Remove contaminated clothing immediately and wash skin with soap and water. Get medical advice/attention if you feel unwell. In case of eczema or other skin disorders: Seek medical attention and take along these instructions. Wash contaminated clothing before reuse.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.
Ingestion	Rinse mouth. Call a physician or poison control center immediately. Do not induce vomiting.
Most important symptoms/effects, acute and delayed	Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause respiratory irritation. Skin irritation. May cause redness and pain. May cause an allergic skin reaction. Dermatitis. Rash.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim warm. Keep victim under observation. Symptoms may be delayed.
General information	Take off immediately all contaminated clothing. IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Water. Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	Vapors may form explosive mixtures with air. Vapors may travel considerable distance to a source of ignition and flash back. During fire, gases hazardous to health may be formed. Container may explode in heat of fire. Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	Highly flammable liquid and vapor.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Avoid contact with eyes, skin, and clothing. Ventilate closed spaces before entering them. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep people away from and upwind of spill/leak. Local authorities should be advised if significant spillages cannot be contained. Avoid inhalation of vapors and spray mists. Keep unnecessary personnel away. Wear appropriate protective equipment and clothing during clean-up. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. Take precautionary measures against static discharge. Use only non-sparking tools. The product is immiscible with water and will sediment in water systems.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water.

Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS. Avoid discharge into drains, water courses or onto the ground.

Environmental precautions

7. Handling and storage

Precautions for safe handling

All equipment used when handling the product must be grounded. Avoid contact with eyes, skin, and clothing. When using, do not eat, drink or smoke. Use non-sparking tools and explosion-proof equipment. Take precautionary measures against static discharges. Wash contaminated clothing before reuse. Observe good industrial hygiene practices. Wear appropriate personal protective equipment. Explosion-proof general and local exhaust ventilation. Avoid inhalation of vapors and spray mists. Should be handled in closed systems, if possible. Do not get this material in contact with eyes. Avoid prolonged exposure. Wash hands thoroughly after handling. Use only outdoors or in a well-ventilated area. Do not handle until all safety precautions have been read and understood. Obtain special instructions before use. Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. For personal protection, see section 8 of the SDS.

Conditions for safe storage, including any incompatibilities

Store locked up. Keep away from heat, sparks and open flame. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store in a cool, dry place out of direct sunlight. Store in original tightly closed container. Store in a well-ventilated place. Keep in an area equipped with sprinklers. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
METHYL METHACRYLATE (CAS 80-62-6)	PEL	410 mg/m ³
N,N-DIMETHYLANILINE (CAS 121-69-7)	PEL	100 ppm 25 mg/m ³ 5 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value
METHACRYLIC ACID (CAS 79-41-4)	TWA	20 ppm
METHYL METHACRYLATE (CAS 80-62-6)	STEL	100 ppm
N,N-DIMETHYLANILINE (CAS 121-69-7)	TWA	50 ppm
	STEL	10 ppm
	TWA	5 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
METHACRYLIC ACID (CAS 79-41-4)	TWA	70 mg/m3
		20 ppm
METHYL METHACRYLATE (CAS 80-62-6)	TWA	410 mg/m3
		100 ppm
N,N-DIMETHYLANILINE (CAS 121-69-7)	STEL	50 mg/m3
		10 ppm
	TWA	25 mg/m3
		5 ppm

Biological limit values No biological exposure limits noted for the ingredient(s).

Exposure guidelines**US - California OELs: Skin designation**

METHACRYLIC ACID (CAS 79-41-4) Can be absorbed through the skin.
 N,N-DIMETHYLANILINE (CAS 121-69-7) Can be absorbed through the skin.

US - Minnesota Haz Subs: Skin designation applies

N,N-DIMETHYLANILINE (CAS 121-69-7) Skin designation applies.

US - Tennessee OELs: Skin designation

METHACRYLIC ACID (CAS 79-41-4) Can be absorbed through the skin.
 N,N-DIMETHYLANILINE (CAS 121-69-7) Can be absorbed through the skin.

US ACGIH Threshold Limit Values: Skin designation

N,N-DIMETHYLANILINE (CAS 121-69-7) Can be absorbed through the skin.

US NIOSH Pocket Guide to Chemical Hazards: Skin designation

METHACRYLIC ACID (CAS 79-41-4) Can be absorbed through the skin.
 N,N-DIMETHYLANILINE (CAS 121-69-7) Can be absorbed through the skin.

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

N,N-DIMETHYLANILINE (CAS 121-69-7) Can be absorbed through the skin.

Appropriate engineering controls Use adequate ventilation to control airborne concentrations below the exposure limits/guidelines. If user operations generate a vapor, dust and/or mist, use process enclosure, appropriate local exhaust ventilation, or other engineering controls to control airborne levels below the recommended exposure limits/guidelines.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles) and a face shield. Eye wash fountain and emergency showers are recommended.

Skin protection

Hand protection Suitable gloves can be recommended by the glove supplier. Suitable chemical protective gloves should be worn when the potential exists for skin exposure. The choice of an appropriate glove does not only depend on its material but also on other quality features and is different from one producer to the other. Use protective gloves made of: Nitrile. Neoprene. Rubber gloves.

Other Wear appropriate chemical resistant clothing if applicable.

Respiratory protection If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, an approved respirator must be worn. Respirator selection, use and maintenance should be in accordance with the requirements of OSHA Respiratory Protection Standard 29 CFR 1910.134 and/or Canadian Standard CSA Z94.4.

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations Observe any medical surveillance requirements. When using do not smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.

9. Physical and chemical properties**Appearance**

Physical state Liquid.
Form Paste.
Color Off-white.

Odor	Sweet.
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	Not available.
Initial boiling point and boiling range	140 - 321.98 °F (60 - 161.1 °C) (140-322F)
Flash point	59.0 °F (15.0 °C) SETAFLASH
Evaporation rate	< 1 (BuAc=1)
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Explosive limit - lower (%)	1.6 %
Explosive limit - upper (%)	8.8 %
Vapor pressure	Not available.
Vapor density	> 1 (AIR=1)
Relative density	1.13
Relative density temperature	39.2 °F (4 °C)
Solubility(ies)	
Solubility (water)	INSOLUBLE IN WATER
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials	Acids. Strong oxidizing agents. Nitrates. Amines. Peroxides. Fluorine. Chlorine.
Hazardous decomposition products	Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Harmful if inhaled. Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea.
Skin contact	Toxic in contact with skin. Causes skin irritation. May cause an allergic skin reaction.
Eye contact	Causes serious eye damage.
Ingestion	May be harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause respiratory irritation. Skin irritation. May cause redness and pain. May cause an allergic skin reaction. Dermatitis. Rash.

Information on toxicological effects

Acute toxicity Toxic in contact with skin. Harmful if inhaled. May cause respiratory irritation. May cause an allergic skin reaction.

Components	Species	Calculated/Test Results
METHACRYLIC ACID (CAS 79-41-4)		
Acute		
<i>Dermal</i>		
LD50	Guinea pig	1 g/kg
	Rabbit	500 mg/kg
<i>Inhalation</i>		
LC50	Rat	7.1 mg/l, 4 Hours
<i>Oral</i>		
LD50	Mouse	1250 mg/kg
	Rabbit	1200 mg/kg
	Rat	1060 mg/kg
METHYL METHACRYLATE (CAS 80-62-6)		
Acute		
<i>Inhalation</i>		
LC50	Mouse	18.5 mg/l, 2 Hours
	Rat	3750 ppm, 8 Hours
<i>Oral</i>		
LD50	Mouse	5.5 ml/kg
	Rabbit	6000 mg/kg
	Rat	7800 mg/kg
N,N-DIMETHYLANILINE (CAS 121-69-7)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	1770 mg/kg
<i>Oral</i>		
LD50	Rat	1.41 ml/kg
Skin corrosion/irritation	Causes skin irritation.	
Serious eye damage/eye irritation	Causes serious eye damage.	
Respiratory or skin sensitization		
ACGIH sensitization		
METHYL METHACRYLATE (CAS 80-62-6)	Dermal sensitization	
Respiratory sensitization	Not a respiratory sensitizer.	
Skin sensitization	May cause an allergic skin reaction.	
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.	
Carcinogenicity	Suspected of causing cancer.	
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.	
Specific target organ toxicity - single exposure	May cause respiratory irritation.	
Specific target organ toxicity - repeated exposure	Not classified.	
Aspiration hazard	Not an aspiration hazard.	
Chronic effects	Prolonged inhalation may be harmful.	
12. Ecological information		
Ecotoxicity	The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.	

Ecotoxicity

Components	Species	Calculated/Test Results
METHYL METHACRYLATE (CAS 80-62-6)		
Aquatic		
Fish	LC50	Fathead minnow (<i>Pimephales promelas</i>) 130 mg/l, 96 hours
N,N-DIMETHYLANILINE (CAS 121-69-7)		
Aquatic		
Crustacea	EC50	Water flea (<i>Daphnia magna</i>) 1.7 - 3.1 mg/l, 48 hours
Fish	LC50	Fathead minnow (<i>Pimephales promelas</i>) 52.6 mg/l, 96 hours

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential

Partition coefficient n-octanol / water (log Kow)

METHACRYLIC ACID	0.93
METHYL METHACRYLATE	1.38
N,N-DIMETHYLANILINE	2.31

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

<Unspecified>

UN number	UN1133
UN proper shipping name	ADHESIVES
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Label(s)	3
Packing group	II
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IATA

<Unspecified>

UN number	UN1133
UN proper shipping name	ADHESIVES
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Label(s)	3
Packing group	II
Environmental hazards	No.
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IMDG

<Unspecified>

UN number	UN1133
UN proper shipping name	ADHESIVES

Transport hazard class(es)

Class 3
Subsidiary risk -
Label(s) 3

Packing group II

Environmental hazards

Marine pollutant No.

EmS Not available.

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not established.

DOT



IATA; IMDG

**15. Regulatory information****US federal regulations**

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

METHYL METHACRYLATE (CAS 80-62-6) Listed.

N,N-DIMETHYLANILINE (CAS 121-69-7) Listed.

SARA 304 Emergency release notification

Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)**Hazard categories**

Immediate Hazard - Yes
 Delayed Hazard - Yes
 Fire Hazard - Yes
 Pressure Hazard - No
 Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical No

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
METHYL METHACRYLATE	80-62-6	30 - 35
N,N-DIMETHYLANILINE	121-69-7	0.1 - 1

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

METHYL METHACRYLATE (CAS 80-62-6)

N,N-DIMETHYLANILINE (CAS 121-69-7)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

METHYL METHACRYLATE (CAS 80-62-6)

US. Massachusetts RTK - Substance List

METHACRYLIC ACID (CAS 79-41-4)

METHYL METHACRYLATE (CAS 80-62-6)

N,N-DIMETHYLANILINE (CAS 121-69-7)

US. New Jersey Worker and Community Right-to-Know Act

METHACRYLIC ACID (CAS 79-41-4)

METHYL METHACRYLATE (CAS 80-62-6)

N,N-DIMETHYLANILINE (CAS 121-69-7)

US. Pennsylvania Worker and Community Right-to-Know Law

METHACRYLIC ACID (CAS 79-41-4)

METHYL METHACRYLATE (CAS 80-62-6)

N,N-DIMETHYLANILINE (CAS 121-69-7)

US. Rhode Island RTK

METHYL METHACRYLATE (CAS 80-62-6)

N,N-DIMETHYLANILINE (CAS 121-69-7)

US. California Proposition 65

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

International Inventories

All components are listed or are exempt from listing on the Toxic Substances Control Act Inventory.

16. Other information, including date of preparation or last revision

Issue date	07-08-2016
Revision date	07-08-2016
Version	02
HMIS® ratings	Health: 2 Flammability: 3 Physical hazard: 1
NFPA ratings	Health: 1 Flammability: 3 Instability: 0

Preparation Information and Disclaimer

This document was prepared by FCSD-Toxicology, Ford Motor Company, Diagnostic Service Center II, 1800 Fairlane Drive, Allen Park, MI 48101, USA, based in part on information provided by the manufacturer. The information on this data sheet represents our current data and is accurate to the best of our knowledge as to the proper handling of this product under normal conditions and in accordance with the application specified on the packaging and/or technical guidance literature. Any other use of the product which involves using the product in combination with any other product or any other process is the responsibility of the user. To the extent that there are any differences between this product's Safety Data Sheet (SDS) and the consumer packaged product labels, the SDS should be followed.

Revision information This document has undergone significant changes and should be reviewed in its entirety.

Part number(s) TA-1, TA-1-B