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**1. PRODUCT AND COMPANY IDENTIFICATION**

<b>Product name:</b>	<b>LOCTITE TCF 1000 AL known as Thermstrate AL-425-244</b>	<b>IDH number:</b>	563693
<b>Product type:</b>	Phase Change Thermal Interface Material (PCTIM)	<b>Item number:</b>	AL-425-244
<b>Restriction of Use:</b>	None identified	<b>Region:</b>	United States
<b>Company address:</b>	Henkel Corporation One Henkel Way Rocky Hill, Connecticut 06067	<b>Contact information:</b>	Telephone: +1 (860) 571-5100 MEDICAL EMERGENCY Phone: Poison Control Center 1-877-671-4608 (toll free) or 1-303-592-1711 TRANSPORT EMERGENCY Phone: CHEMTREC 1-800-424-9300 (toll free) or 1-703-527-3887 Internet: www.henkelna.com

**2. HAZARDS IDENTIFICATION**

**EMERGENCY OVERVIEW**

**WARNING:** MAY CAUSE AN ALLERGIC SKIN REACTION.  
SUSPECTED OF CAUSING CANCER.

HAZARD CLASS	HAZARD CATEGORY
SKIN SENSITIZATION	1
CARCINOGENICITY	2

**PICTOGRAM(S)**



**Precautionary Statements**

<b>Prevention:</b>	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid breathing dust or fumes. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves, clothing, eye and face protection.
<b>Response:</b>	IF ON SKIN: Wash with plenty of water. IF exposed or concerned: Get medical attention. If skin irritation or rash occurs: Get medical attention. Wash contaminated clothing before reuse.
<b>Storage:</b>	Store locked up.
<b>Disposal:</b>	Dispose of contents and/or container according to Federal, State/Provincial and local governmental regulations.

Classification complies with OSHA Hazard Communication Standard (29 CFR 1910.1200) and is consistent with the provisions of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

See Section 11 for additional toxicological information.

**3. COMPOSITION / INFORMATION ON INGREDIENTS**

Hazardous Component(s)	CAS Number	Percentage*
Aluminum not powder, dust or fume	7429-90-5	60 - 70
Paraffin waxes and Hydrocarbon waxes	8002-74-2	10 - 20

Zinc oxide	1314-13-2	5 - 10
Petrolatum	8009-03-8	1 - 5
Silicon	7440-21-3	1 - 5
Nickel	7440-02-0	1 - 5
Copper Metal	7440-50-8	1 - 5
Manganese	7439-96-5	1 - 5

\* Exact percentages may vary or are trade secret. Concentration range is provided to assist users in providing appropriate protections.

## 4. FIRST AID MEASURES

<b>Inhalation:</b>	Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. If symptoms develop and persist, get medical attention.
<b>Skin contact:</b>	Remove contaminated clothing and footwear. Immediately flush skin with plenty of water (using soap, if available). If symptoms develop and persist, get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.
<b>Eye contact:</b>	Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.
<b>Ingestion:</b>	DO NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If symptoms develop and persist, get medical attention.
<b>Symptoms:</b>	See Section 11.

## 5. FIRE FIGHTING MEASURES

<b>Extinguishing media:</b>	Water spray (fog), foam, dry chemical or carbon dioxide.
<b>Special firefighting procedures:</b>	Wear self-contained breathing apparatus and full protective clothing, such as turn-out gear. In case of fire, keep containers cool with water spray.
<b>Unusual fire or explosion hazards:</b>	None
<b>Hazardous combustion products:</b>	Oxides of carbon. Oxides of nitrogen. Metal oxide fumes. Hydrocarbons.

## 6. ACCIDENTAL RELEASE MEASURES

Use personal protection recommended in Section 8, isolate the hazard area and deny entry to unnecessary and unprotected personnel.

<b>Environmental precautions:</b>	Do not allow product to enter sewer or waterways.
<b>Clean-up methods:</b>	Wear suitable protective clothing, gloves and eye/face protection. If product is spilled in the solid state, pick up and place in an appropriate waste disposal container. If product is spilled in the molten state, allow product to solidify before scraping up and disposing of in an appropriate waste disposal container.

## 7. HANDLING AND STORAGE

**Handling:** Use only with adequate ventilation. Avoid contact with eyes, skin and clothing. Do not taste or swallow. Avoid breathing vapors or mists of this product. Keep container closed. Wash thoroughly after handling.

**Storage:** For safe storage, store at or below 35 °C (95°F)  
Keep in a cool, well ventilated area away from heat, sparks and open flame.  
Keep container tightly closed until ready for use.

For information on product shelf life, please review labels on container or check the Technical Data Sheet.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Employers should complete an assessment of all workplaces to determine the need for, and selection of, proper exposure controls and protective equipment for each task performed.

Hazardous Component(s)	ACGIH TLV	OSHA PEL	AIHA WEEL	OTHER
Aluminum not powder, dust or fume	1 mg/m3 TWA Respirable fraction.	5 mg/m3 PEL (as Al) Respirable fraction. 15 MPPCF TWA Respirable fraction. 5 mg/m3 TWA Respirable fraction.	None	None
Paraffin waxes and Hydrocarbon waxes	2 mg/m3 TWA Fume.	None	None	None
Zinc oxide	2 mg/m3 TWA Respirable fraction. 10 mg/m3 STEL Respirable fraction.	5 mg/m3 PEL Fume. 5 mg/m3 PEL Respirable fraction. 15 mg/m3 PEL Total dust.	None	None
Petrolatum	5 mg/m3 TWA Inhalable fraction.	5 mg/m3 PEL Mist.	None	None
Silicon	None	5 mg/m3 PEL Respirable fraction. 15 mg/m3 PEL Total dust.	None	None
Nickel	1.5 mg/m3 TWA Inhalable fraction.	1 mg/m3 PEL (as Ni)	None	None
Copper Metal	0.2 mg/m3 TWA (as Cu) Fume. 1 mg/m3 TWA (as Cu) Dust and mist.	1 mg/m3 PEL (as Cu) Dust and mist. 0.1 mg/m3 PEL (as Cu) Fume.	None	None
Manganese	0.02 mg/m3 TWA (as Mn) Respirable fraction. 0.1 mg/m3 TWA (as Mn) Inhalable fraction.	5 mg/m3 Ceiling (as Mn) Fume.	None	None

**Engineering controls:** Local exhaust ventilation is recommended when general ventilation is not sufficient to control airborne contamination.

**Respiratory protection:** Use NIOSH approved respirator if there is potential to exceed exposure limit(s).

**Eye/face protection:** Safety goggles or safety glasses with side shields.

**Skin protection:** Use impermeable gloves and protective clothing as necessary to prevent skin contact.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical state:</b>	Solid (coated aluminum foil substrate)
<b>Color:</b>	Gray, White
<b>Odor:</b>	None
<b>Odor threshold:</b>	Not available.
<b>pH:</b>	Not available.
<b>Vapor pressure:</b>	Not available.
<b>Boiling point/range:</b>	Not available.
<b>Melting point/ range:</b>	60 °C (140°F) (coating compound)
<b>Melting point/ range:</b>	482 °C (899.6 °F) (aluminum substrate)
<b>Specific gravity:</b>	2.7 (coating compound)
<b>Vapor density:</b>	Not available.
<b>Flash point:</b>	221 °C (429.8 °F) Cleveland open cup; (coating compound)
<b>Flammable/Explosive limits - lower:</b>	Not available.
<b>Flammable/Explosive limits - upper:</b>	Not available.
<b>Autoignition temperature:</b>	The substance or mixture is not classified as pyrophoric.
<b>Flammability:</b>	The product is not flammable.
<b>Evaporation rate:</b>	Not available.
<b>Solubility in water:</b>	Negligible
<b>Partition coefficient (n-octanol/water):</b>	Not available.
<b>VOC content:</b>	0 %; 0 g/l
<b>Viscosity:</b>	Not available.
<b>Decomposition temperature:</b>	Not available.

## 10. STABILITY AND REACTIVITY

<b>Stability:</b>	Stable at normal conditions.
<b>Hazardous reactions:</b>	None under normal processing.
<b>Hazardous decomposition products:</b>	Oxides of carbon. Oxides of nitrogen. Metal oxide fumes. Hydrocarbons.
<b>Incompatible materials:</b>	Strong oxidizing agents. Acids. Alkalis. Halogenated compounds. Water.
<b>Reactivity:</b>	Not available.
<b>Conditions to avoid:</b>	Heat, flames, sparks and other sources of ignition. Store away from incompatible materials.

## 11. TOXICOLOGICAL INFORMATION

<b>Relevant routes of exposure:</b>	Skin, Inhalation, Eyes
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### Potential Health Effects/Symptoms

**Inhalation:** May cause respiratory tract irritation. May cause central nervous system effects. Drowsiness. Dizziness. Headache.  
**Skin contact:** Causes skin irritation.  
**Eye contact:** Causes serious eye irritation.  
**Ingestion:** Not expected to be harmful by ingestion.

Hazardous Component(s)	LD50s and LC50s	Immediate and Delayed Health Effects
Aluminum not powder, dust or fume	None	Central nervous system, Irritant, Lung
Paraffin waxes and Hydrocarbon waxes	None	Irritant
Zinc oxide	Oral LD50 (Mouse) = 7,950 mg/kg Oral LD50 (Rat) = > 5 g/kg	Blood, Gastrointestinal, Immune system, Irritant, Kidney, Metabolic, Nervous System, Pancreas, Respiratory, Skin
Petrolatum	None	Irritant
Silicon	None	Irritant, Nuisance dust
Nickel	None	Allergen, Carcinogen, Irritant, Kidney, Mutagen, Reproductive, Respiratory
Copper Metal	None	Allergen, Blood, Central nervous system, Developmental, Gastrointestinal, Immune system, Irritant, Kidney, Liver, Mutagen, Sensory, Skin
Manganese	None	Immune system, Irritant, Lung, Nervous System, Reproductive, Respiratory

Hazardous Component(s)	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen (Specifically Regulated)
Aluminum not powder, dust or fume	No	No	No
Paraffin waxes and Hydrocarbon waxes	No	No	No
Zinc oxide	No	No	No
Petrolatum	No	No	No
Silicon	No	No	No
Nickel	Reasonably Anticipated to be a Human Carcinogen.	Group 2B	No
Copper Metal	No	No	No
Manganese	No	No	No

## 12. ECOLOGICAL INFORMATION

**Ecological information:** Not available.

## 13. DISPOSAL CONSIDERATIONS

Information provided is for unused product only.

**Recommended method of disposal:** Follow all local, state, federal and provincial regulations for disposal.

**Hazardous waste number:** Not a RCRA hazardous waste.

## 14. TRANSPORT INFORMATION

The transport information provided in this section only applies to the material/formulation itself, and is not specific to any package/configuration.

U.S. Department of Transportation Ground (49 CFR)

**Proper shipping name:** Not regulated  
**Hazard class or division:** None  
**Identification number:** None  
**Packing group:** None

**International Air Transportation (ICAO/IATA)**

**Proper shipping name:** Not regulated  
**Hazard class or division:** None  
**Identification number:** None  
**Packing group:** None

**Water Transportation (IMO/IMDG)**

**Proper shipping name:** Not regulated  
**Hazard class or division:** None  
**Identification number:** None  
**Packing group:** None

**15. REGULATORY INFORMATION**

**United States Regulatory Information**

**TSCA 8 (b) Inventory Status:** All components are listed or are exempt from listing on the Toxic Substances Control Act Inventory.

**TSCA 12 (b) Export Notification:** None above reporting de minimis

**CERCLA/SARA Section 302 EHS:** None above reporting de minimis.  
**CERCLA/SARA Section 311/312:** Immediate Health, Delayed Health  
**CERCLA/SARA Section 313:** This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40 CFR 372). Zinc oxide (CAS# 1314-13-2). Nickel (CAS# 7440-02-0). Copper Metal (CAS# 7440-50-8). Manganese (CAS# 7439-96-5).

**California Proposition 65:** This product contains a chemical known in the State of California to cause cancer. This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

**Canada Regulatory Information**

**CEPA DSL/NDSL Status:** All components are listed on or are exempt from listing on the Canadian Domestic Substances List.

**16. OTHER INFORMATION**

**This safety data sheet contains changes from the previous version in sections:** 3, 8, 11, 13

**Prepared by:** Product Safety and Regulatory Affairs

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