

## 1. Product and Company Identification

---

**PRODUCT NAME: LEMTRADA™ (alemtuzumab) Injection**

**Substance name: Alemtuzumab**

**Supplier:**

**Genzyme Corporation  
A SANOFI COMPANY  
500 Kendall Street  
Cambridge, MA 02142**

<b>24-Hour Transport Emergency, US (Chemtree):</b>	<b>(800) 424-9300</b>
<b>24-Hour Transport Emergency, outside US (Chemtree):</b>	<b>(703) 527-3887</b>
<b>Genzyme Product Contact:</b>	<b>(617) 768-9000</b>
<b>24-Hour Emergency, Genzyme US:</b>	<b>(617) 562-4555</b>

**Product use: Pharmaceutical product.**

---

## 2. Hazards Identification

---

### 2.1 Classification in accordance with 29 CFR 1910.1200

Classification: Not classified as a hazardous substance or mixture.

### 2.2 Label elements in accordance with 29 CFR 1910.1200

**Labeling of the finished drug product is not required according to OSHA 29 CFR 1910.1200. The following information is provided for the drug substance, alemtuzumab:**

Signal Word: None required.

Hazard Statement(s): None required.

Symbol(s): None required.

Precautionary Statement(s):

- Prevention: None required.
- Response: None required.
- Storage: None required.
- Disposal: None required.

**2.3 Hazards Not Otherwise Classified (HNOC)**

None known.

---

**3. Composition/Information on Ingredients**

---

<u>Chemical Name:</u>	<u>Common Name:</u>	<u>CAS #:</u>	<u>Percentage or concentration range</u>
Recombinant humanized IgG1 kappa monoclonal antibody	Alemtuzumab	216503-57-0	< 1 %
Water for injection	Water	7732-18-5	> 98 %

Inactive Ingredients: Dibasic sodium phosphate, disodium edetate dehydrate, polysorbate 80, potassium chloride, potassium dihydrogen phosphate, sodium chloride.

---

**4. First Aid Measures**

---

**4.1 First aid procedures**

Eye contact: In case of contact with product, immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lenses if worn. Get medical attention.

Skin contact: In case of contact with product, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if irritation develops and persists.

Ingestion: If swallowed, call a poison center or physician. Do NOT induce vomiting unless directed to do so by a physician. Never give anything by mouth to an unconscious person. Rinse mouth thoroughly with water.

Inhalation: If product is inhaled, remove to fresh air. If breathing is difficult, trained personnel should give oxygen. Get medical attention.

#### **4.2 Most important symptoms and effects, both acute and delayed**

Symptoms and effects from intravenous administration include gastrointestinal effects, headache, dizziness and localized pain.

#### **4.3 Indication of any immediate medical attention and special treatment needed**

Treat symptomatically and supportively.

---

### **5. Fire Fighting Measures**

---

#### **5.1 Extinguishing media**

Suitable extinguishing media: All means: water, carbon dioxide, foam or dry chemical.

Unsuitable extinguishing media: Strong water jet.

#### **5.2 Specific hazards arising from the chemical**

Hazardous combustion products: Carbon monoxide, carbon dioxide.

#### **5.3 Special Protective Equipment and Precautions for Fire-fighters**

In case of fire, use full firefighting turnout (bunker) gear and self-contained breathing apparatus (SCBA). Keep personnel upwind and away from fire. Move container from fire area if you can do it without risk. Do not scatter spilled material with high-pressure water streams. Dike fire-control water for later disposal.

---

### **6. Accidental Release Measures**

---

#### **6.1 Personal precautions and Protective Equipment:**

Eye protection, respiratory protective equipment, and suitable protective clothing should be worn (see Section 8).

#### **6.2 Emergency Procedures:**

Follow local workplace procedures. Prevent the product from entering the environment. Avoid discharges to sewers, drains, waterways, or onto the ground.

### **6.3 Methods for containment:**

Absorb spilled liquid with a suitable inert material, place in suitable container for disposal and mop area.

### **6.4 Methods for clean-up:**

Wash the floor with plenty of water, absorb or retain the cleaning water for disposal.

---

## **7. Handling and Storage**

---

### **7.1 Precautions for Safe Handling**

Product should be used in a controlled work area. Use with adequate ventilation. Avoid contact with eyes, skin and clothing. Place a disposable absorbent pad under the product preparation area. Do not eat, smoke or drink while handling product. Wash thoroughly after handling.

### **7.2 Conditions for Safe Storage**

Store at 2°C to 8°C (36°F to 46°F). Do not freeze or shake. Protect from light.

---

## **8. Exposure Controls/Personal Protection**

---

### **8.1 Exposure Limits**

Sanofi-aventis occupational exposure limit, alemtuzumab: Not determined.

### **8.2 Appropriate Engineering Controls**

Provide adequate ventilation. No other specific controls are needed under normal handling conditions.

### **8.3 Individual Protection Measures**

Eye/face protection: Safety glasses or safety goggles should be worn if there is a potential for eye contact with the product.

Skin protection: Suitable protective gloves should be worn. Use of a protective or disposable gown or laboratory coat is recommended if there exists a potential for contact with the product.

Respiratory protection: None normally required for routine handling of the product. However, approved respiratory protection should be worn if there is a potential for exposure to the product. A respiratory protection program that meets OSHA 29 CFR 1910.134 and ANSI Z88.2 must be followed whenever workplace conditions warrant respirator usage.

General hygiene considerations: Wash hands before breaks and at the end of the work shift.

---

## **9. Physical and Chemical Properties**

---

Appearance: Clear and colorless to slightly yellow aqueous solution.

Odor: No data available.

Odor threshold: No data available.

pH: 6.8 – 7.4

Melting point/ Freezing point: No data available.

Initial boiling point/boiling point range: No data available.

Flash point: No data available.

Evaporation rate: No data available.

Flammability: No data available.

Upper/lower flammability or explosive limits: No data available.

Vapor pressure: No data available.

Vapor density: No data available.

Relative density: No data available.

Solubility: No data available.

Partition coefficient: n-octanol/water: No data available.

Auto-ignition temperature: No data available.

Decomposition temperature: No data available.

Viscosity: No data available.

---

## **10. Stability and Reactivity**

---

### **10.1 Reactivity**

Not a reactive material under normal handling conditions.

### **10.2 Chemical Stability**

Stable under normal handling conditions.

### **10.3 Possibility of hazardous reactions**

None known.

#### 10.4 Conditions to Avoid

Keep away from heat, sparks and flames.

#### 10.5 Incompatible materials

Strong oxidizing and reducing agents.

#### 10.6 Hazardous decomposition products

Carbon monoxide, carbon dioxide.

---

### 11. Toxicological Information

---

**The following information is for the active ingredient alemtuzumab unless otherwise noted:**

Information on likely routes of exposure: Not expected under normal handling conditions. Unintended spills or releases could result in exposure to eyes, skin and respiratory tract.

Symptoms related to the physical, chemical and toxicological characteristics: Symptoms and effects from intravenous administration include gastrointestinal effects, headache, dizziness and localized pain.

Effects of short-term (acute) exposure: No data available.

Effects of long-term (chronic) exposure: No data available.

Acute toxicity (LD50): No data available. Alemtuzumab is an immunoglobulin antibody and is not expected to be biologically available by ingestion due to denaturation.

Skin corrosion/irritation: No data available.

Serious eye damage/irritation: No data available.

Sensitization: No data available.

Specific target organ toxicity – single exposure (STOT-SE): No data available.

Specific target organ toxicity – repeated exposure (STOT-RE): No data available.

Carcinogenicity: Studies to assess the carcinogenic potential have not been conducted.

Not listed by NTP, not found to be a potential carcinogen by IARC or OSHA.

Reproductive toxicity and teratogenicity: Alemtuzumab was tested for effects on fertility and reproductive and developmental toxicity by intravenous administration in transgenic mice. No effects on male and female fertility were seen. Alemtuzumab was shown to cause embryo-fetotoxicity which was considered maternally mediated. Exposure during gestation and lactation period resulted in an alteration in lymphocytes in the F1 generation. The maternal and reproductive NOAELs in the latter study were both 10 mg/kg/day.

Mutagenicity: Studies to assess the mutagenic or genotoxic potential have not been conducted.

Aspiration hazard: Not applicable.

---

## **12. Ecological Information**

---

**The following information is for the active ingredient alemtuzumab unless otherwise noted:**

### **12.1. Ecotoxicity**

No data available.

### **12.2. Persistence and degradability**

No data available.

### **12.3. Bioaccumulative potential**

No data available.

### **12.4 Mobility in soil**

No data available.

### **12.5 Other adverse effects**

No data available.

---

## **13. Disposal Considerations**

---

### **13.1 Disposal of product waste**

Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

### 13.2 Disposal of packaging waste

Dispose of in a safe manner in accordance with federal, state and local environmental regulations. Empty packages, containers or liners may contain product residue.

---

### 14. Transport Information

---

#### 14.1 Basic shipping information, finished product

U.S. DOT	Not a regulated material.
ICAO/IATA	Not a regulated material.
IMDG	Not a regulated material.

---

### 15. Regulatory Information

---

#### US Regulations

CERCLA Hazardous Substance List (40 CFR 302.4): Not listed.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3): Not listed.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130): Not listed.

SARA Title III:

Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A): Not listed.

Section 313 Toxic Release Inventory (40 CFR 372): Not listed.

#### State Regulations

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): Not listed.

Massachusetts Right-To-Know List: Not listed.

New Jersey Right-To-Know List: Not listed.

Pennsylvania Right-To-Know List: Not listed.

---

### 16. Other Information

---

Other Information: The information contained herein is based upon data considered true and accurate. Genzyme Corporation makes no warranties, express or implied, as to the adequacy of the information contained herein. This information is offered solely for the user's consideration, investigation and verification. Report to the manufacturer any allegations of health effects resulting from handling or accidental contact with this material.



Abbreviations and Acronyms

CAS: Chemical Abstracts Service

DOT: U.S. Department of Transportation

EST: Eastern standard time (U.S.)

IATA: International Air Transport Association

IMDG: International Maritime Dangerous Goods Code

LC50: Lethal concentration, 50%

LD50: Lethal dose, 50%

OEL: Occupational Exposure Limit

PPE: Personal Protection Equipment

SDS: Safety Data Sheet

STEL: Short-term exposure limit

TWA: Time-weighted average

U.S.: United States

Date Prepared: June 5, 2015

First version.