1. **IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING**

1.1 **Product Identifiers**
- **Product Name:** Recombinant Human TNF-alpha Protein
- **Catalog Number:** 210-TA

1.2 **Relevant identified uses of the substance or mixture and uses advised against**
- **Identified Uses:** For Research Use Only

1.3 **Details of the supplier of the safety data sheet**
- **Company:** R&D Systems, Inc. a Bio-Techne Brand
- **Telephone:** 1-800-343-7475
- **Fax:** 1-612-656-4400
- **Internet:** www.rndsystems.com
- **Email address:** info@bio-techne.com

1.4 **Emergency Telephone Number**
- **Emergency Tel:** US: 612-379-2956 or 800-343-7475 / Europe: +44(0)1235-529449

2. **HAZARDS IDENTIFICATION**

2.1 **Classification of the substance or mixture**
- This substance does not meet the classification criteria of the EC Directives 67/548/EEC, 1999/45/EC, 1272/2008 [CLP], GHS or 29 CFR 1910.1200 [OSHA].

2.2 **Label Elements**
- The product does not need to be labelled in accordance with EC directives or respective national laws.

2.3 **Other Hazards - None**

3. **COMPOSITION/INFORMATION ON INGREDIENTS**

3.1 **Substances**
- Not applicable.

3.2 **Mixtures**
- This product does not contain hazardous chemicals at concentrations of 1% or greater. This product is not known to contain carcinogens at concentrations of 0.1% or greater.

4. **FIRST AID MEASURES**

4.1 **Description of first aid measures**
- **General Advice**
  - Consult a doctor and show this safety data sheet.
  - **If Inhaled**
    - Remove to fresh air and monitor breathing. If breathing becomes difficult, give oxygen. If breathing stops, give artificial respiration. Consult a doctor.
  - **In Case of Skin Contact**
    - Immediately wash skin with copious amounts of soap and water for at least 15 minutes. Remove contaminated clothing and shoes and wash before reuse. Consult a doctor.
  - **In Case of Eye Contact**
    - Flush with copious amounts of water for at least 15 minutes. Consult a doctor.
  - **If Swallowed**
    - Rinse mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Consult a doctor.

4.2 **Most important symptoms and effects, both acute and delayed**
- To the best of our knowledge, the chemical, physical and toxicological properties have not been thoroughly investigated.

4.3 **Indication of immediate medical attention and special treatment needed**
- Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

5. **FIRE-FIGHTING MEASURES**

5.1 **Extinguishing Media**
- **Suitable extinguishing media**
  - Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 **Special hazards arising from the substance or mixture**
- In combustion, may emit toxic fumes.

5.3 **Precautions for fire-fighters**
- Wear suitable protective clothing to prevent contact with skin and eyes and self-contained breathing apparatus.
6. ACCIDENTIAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Do not take action without suitable protective clothing - see section 8 of SDS. Evacuate personnel to safe areas. Ensure adequate ventilation. Avoid breathing vapors, mist, dust or gas.

6.2 Environmental precautions
Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
Cover spillage with suitable absorbent material. Hold all material for appropriate disposal as described under section 13 of SDS.

6.4 Reference to other sections
For required PPE see section 8. For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid inhalation, contact with eyes, skin and clothing. Avoid the formation of dust and aerosols. Use in a well-ventilated area. Keep away from sources of ignition. Avoid prolonged or repeated exposure.

7.2 Conditions for safe storage, including any incompatibilities
Store in cool, well-ventilated area. Keep away from direct sunlight. Keep container tightly sealed until ready for use.

7.3 Specific end uses
Not applicable.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters
Components with workplace control parameters
Contains no substances with occupational exposure limit values.

8.2 Exposure controls
Appropriate Engineering Controls
Use in a fume hood where applicable. Ensure all engineering measures described under section 7 of SDS are in place. Ensure laboratory is equipped with a safety shower and eye wash station.

Personal Protective Equipment
Eye / Face Protection
Use appropriate safety glasses.

Skin Protection
Use appropriate chemical resistant gloves (minimum requirement use standard BS EN 374:2003). Gloves should be inspected before use. Wash and dry hands thoroughly after handling.

Body Protection
Wear appropriate protective clothing.

Respiratory Protection
If risk assessment indicates necessary, use a suitable respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Lyophilized white powder or clear liquid</td>
</tr>
<tr>
<td>Odor</td>
<td>Little to none</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>No data available.</td>
</tr>
<tr>
<td>pH</td>
<td>No data available.</td>
</tr>
<tr>
<td>Melting / Freezing Point</td>
<td>No data available.</td>
</tr>
<tr>
<td>Boiling Point / Range</td>
<td>No data available.</td>
</tr>
<tr>
<td>Flash Point</td>
<td>No data available.</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>No data available.</td>
</tr>
<tr>
<td>Flammability (Solid, Gas)</td>
<td>No data available.</td>
</tr>
<tr>
<td>Upper / Lower Flammability or Explosive Limits</td>
<td>No data available.</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>No data available.</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>No data available.</td>
</tr>
<tr>
<td>Relative Density</td>
<td>No data available.</td>
</tr>
<tr>
<td>Partition Coefficient</td>
<td>No data available.</td>
</tr>
<tr>
<td>Autoignition Temperature</td>
<td>No data available.</td>
</tr>
<tr>
<td>Decomposition Temperature</td>
<td>No data available.</td>
</tr>
<tr>
<td>Viscosity</td>
<td>No data available.</td>
</tr>
<tr>
<td>Explosive Properties</td>
<td>No data available.</td>
</tr>
<tr>
<td>Oxidizing Properties</td>
<td>No data available.</td>
</tr>
</tbody>
</table>

9.2 Other safety information
No data available.

10. STABILITY AND REACTIVITY

10.1 Reactivity
Stable under recommended transport or storage conditions.

10.2 Chemical stability
Stable under recommended storage conditions.
10.3 Possibility of hazardous reactions
Hazardous reactions will not occur under normal transport or storage conditions. Decomposition may occur on exposure to conditions or materials listed below.

10.4 Conditions to avoid
Heat, moisture.

10.5 Incompatible materials
Strong acids/alkalis, strong oxidising/reducing agents.

10.6 Hazardous decomposition products
Strong acids/alkalis, strong oxidising/reducing agents.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects
- **Acute Toxicity**
  - Skin Corrosion / Irritation
    - Classified based on available data
  - Serious Eye Damage / Irritation
    - Classified based on available data
  - Respiratory or Skin Sensitization
    - Classified based on available data
  - Germ Cell Mutagenicity
    - Classified based on available data
  - Carcinogenicity
    - Classified based on available data
- **Reproductive Toxicity**
  - Specific Target Organ Toxicity - Single Exposure
    - Classified based on available data
  - Specific Target Organ Toxicity - Repeated Exposure
    - Classified based on available data
- **Aspiration Hazard**
  - Classified based on available data

**Symptoms / Routes of Exposure**
- **Inhalation:**
  - There may be irritation of the throat with a feeling of tightness in the chest.
- **Ingestion:**
  - There may be irritation of the throat.
- **Skin:**
  - There may be mild irritation at the site of contact.
- **Eyes:**
  - There may be irritation and redness.
- **Delayed / Immediate Effects:**
  - No known symptoms.

**Additional Information**
- Classified based on available data

12. ECOLOGICAL INFORMATION

12.1 Toxicity
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 Results of PBT and vPvB assessment
No data available.

12.6 Other adverse effects
No data available.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
14. TRANSPORT INFORMATION

Classified according to the criteria of the UN Model Regulations as reflected in the IMDG Code, ADR, RID, DOT and IATA.

14.1 UN-Number

Does not meet the criteria for classification as hazardous for transport.

14.2 UN proper shipping name

Does not meet the criteria for classification as hazardous for transport.

14.3 Transport hazard class(es)

Does not meet the criteria for classification as hazardous for transport.

14.4 Packaging group

Does not meet the criteria for classification as hazardous for transport.

14.5 Environmental hazards

Does not meet the criteria for classification as hazardous for transport.

14.6 Special precautions for users

Does not meet the criteria for classification as hazardous for transport.

Additional Transport Information

Does not meet the criteria for classification as hazardous for transport.

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 453/2010.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

TSCA (Toxic Substances Control Act) : Not applicable.
SARA 313 : Not applicable.
SARA 311/312 : Not applicable.
CERCLA Reportable Quantity : Not applicable.
California Proposition 65 : Not applicable.

15.2 Chemical safety assessment

A Chemical Safety Assessment has not been made for this product.

16. OTHER INFORMATION

Further Information

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This company shall not be held liable for any damage resulting from handling or from contact with the above product. This material must only be handled by suitably qualified experienced scientists in appropriately equipped and authorized facilities. The above information is believed to be correct but does not purport to be all inclusive and should be used as a guide only for experienced personnel. Always consult your safety advisor and follow appropriate local and national safety legislation. The absence of warning must not, under any circumstance, be taken to mean that no hazard exists.

End of safety data sheet