

## MATERIAL SAFETY DATA SHEET (MSDS)

4,5,5-Trifluoropent-4-enoic acid | Prepared in accordance with the Globally Harmonised System (GHS Rev. 9) and REACH Regulation (EC) No. 1907/2006 Annex II.

### SECTION 1: IDENTIFICATION OF THE SUBSTANCE AND OF THE SUPPLIER

|                      |                                                                                                                          |
|----------------------|--------------------------------------------------------------------------------------------------------------------------|
| Product Name         | 4,5,5-Trifluoropent-4-enoic acid                                                                                         |
| C.A.S. Number        | 110003-22-0                                                                                                              |
| Product Category     | Organic Acids & Carboxylates                                                                                             |
| Product Group        | Carboxylic Acids                                                                                                         |
| Grade / Standard     | Fine chemical grade — assay on specification                                                                             |
| Identified Uses      | Research, analysis and fine chemical synthesis. Industrial and professional use.                                         |
| Uses Advised Against | Any application not described above without prior written confirmation from the supplier.                                |
| Supplier             | Scapex Exports Pvt. Ltd., 830, 8th Floor, Sun Gravitas, Times of India Road, Shyamal, Ahmedabad – 380015, Gujarat, India |
| Telephone / E-mail   | +91 9925522674   info@scapexexports.com                                                                                  |
| Emergency Telephone  | +91 9925522674 (Mon–Sat, 09:30–18:30 IST)                                                                                |
| MSDS Number          | SCX/MSDS/26D11A                                                                                                          |

### SECTION 2: HAZARDS IDENTIFICATION

|                    |                                           |
|--------------------|-------------------------------------------|
| GHS Classification | Not classified as dangerous for transport |
| Signal Word        | <b>WARNING</b>                            |
| Pictograms         | Exclamation mark                          |

#### Hazard Statements

- H315 — Causes skin irritation.
- H319 — Causes serious eye irritation.

#### Precautionary Statements

- P101 If medical advice is needed, have product container or label at hand.
- P102 Keep out of reach of children.
- P262 Do not get in eyes, on skin, or on clothing.
- P264 Wash hands thoroughly after handling.
- P280 Wear protective gloves and eye protection.
- P302+P352 IF ON SKIN: Wash with plenty of water.
- P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes.
- P337+P313 If eye irritation persists: Get medical advice / attention.

### SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

|                       |                                                                                       |
|-----------------------|---------------------------------------------------------------------------------------|
| Chemical Identity     | 4,5,5-Trifluoropent-4-enoic acid                                                      |
| C.A.S. Number         | 110003-22-0                                                                           |
| Concentration / Grade | Fine chemical grade — assay on specification                                          |
| Impurities            | No impurities present at concentrations that alter the classification of the product. |

### SECTION 4: FIRST-AID MEASURES

|                          |                                                                                                                                                                                                                     |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Inhalation</b>        | Remove the casualty to fresh air and keep at rest in a position comfortable for breathing. If breathing is difficult, give oxygen. If breathing has stopped, give artificial respiration. Obtain medical attention. |
| <b>Skin Contact</b>      | Remove contaminated clothing and shoes immediately. Wash the affected area with plenty of soap and water for at least 15 minutes. Obtain medical attention if irritation develops or persists.                      |
| <b>Eye Contact</b>       | Rinse immediately with plenty of water for at least 15 minutes, holding the eyelids open. Remove contact lenses if present and easy to do. Obtain immediate medical attention.                                      |
| <b>Ingestion</b>         | Do NOT induce vomiting. Rinse the mouth with water. Never give anything by mouth to an unconscious person. Obtain immediate medical attention and show this Material Safety Data Sheet (MSDS).                      |
| <b>Note to Physician</b> | Treat symptomatically. No specific antidote is known.                                                                                                                                                               |

## SECTION 5: FIRE-FIGHTING MEASURES

|                                       |                                                                                                                                    |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>Suitable Extinguishing Media</b>   | Water spray, dry chemical powder, carbon dioxide (CO <sub>2</sub> ) or alcohol-resistant foam.                                     |
| <b>Unsuitable Extinguishing Media</b> | High-pressure water jet.                                                                                                           |
| <b>Specific Hazards</b>               | Thermal decomposition may generate irritating and toxic gases. Containers may rupture when heated.                                 |
| <b>Advice for Fire-fighters</b>       | Wear self-contained breathing apparatus and full protective clothing. Prevent fire-fighting water entering drains or watercourses. |

## SECTION 6: ACCIDENTAL RELEASE MEASURES

|                                   |                                                                                                                                                                                                                                                                                            |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Personal Precautions</b>       | Evacuate unnecessary personnel. Ensure adequate ventilation. Wear the personal protective equipment described in Section 8. Eliminate all ignition sources where the product is flammable.                                                                                                 |
| <b>Environmental Precautions</b>  | Prevent entry into drains, sewers, surface water and groundwater. Notify the relevant authorities if release to the environment occurs.                                                                                                                                                    |
| <b>Containment &amp; Cleaning</b> | Contain the spill with an inert absorbent (dry sand, earth or vermiculite). Collect into a labelled, closed container for disposal. Do not use combustible absorbents such as sawdust where the product is an oxidiser. Ventilate the area and wash the spill site after material pick-up. |

## SECTION 7: HANDLING AND STORAGE

|                                 |                                                                                                                                                                                                                                      |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Precautions for Handling</b> | Use only in well-ventilated areas. Avoid contact with skin, eyes and clothing. Avoid the formation and inhalation of dust, mist or vapour. Do not eat, drink or smoke in the work area. Wash thoroughly after handling.              |
| <b>Conditions for Storage</b>   | Store in the original, tightly closed container in a cool, dry, well-ventilated place away from direct sunlight and heat. Keep away from incompatible materials listed in Section 10. Store in a bonded area where liquids are held. |
| <b>Packaging Materials</b>      | Use only the original packaging or an equivalent material approved for this product.                                                                                                                                                 |

## SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

|                                     |                                                                                                                                                                                        |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Occupational Exposure Limits</b> | Refer to the national occupational exposure limits applicable in the country of use. Where no limit is established, maintain airborne concentrations as low as reasonably practicable. |
| <b>Engineering Controls</b>         | Provide local exhaust ventilation at points of dust, mist or vapour generation. Provide eyewash stations and safety showers close to the work station.                                 |

|                               |                                                                                                                                                                                         |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Eye / Face Protection</b>  | Chemical safety goggles to EN 166 / IS 5983. A face shield is required where splashing is possible.                                                                                     |
| <b>Skin Protection</b>        | Chemical-resistant gloves to EN 374 (nitrile or butyl rubber, thickness and breakthrough time selected for the task). Chemical-resistant apron, suit and boots as required by the task. |
| <b>Respiratory Protection</b> | Where ventilation is insufficient, use an approved respirator with a particulate filter (P2/P3) for dusts or an appropriate vapour cartridge for solvents.                              |
| <b>Hygiene Measures</b>       | Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use.                                                             |

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

|                                 |                                                     |
|---------------------------------|-----------------------------------------------------|
| <b>Appearance</b>               | Crystalline solid — appearance as per specification |
| <b>Odour</b>                    | Characteristic                                      |
| <b>Physical State</b>           | Solid                                               |
| <b>pH</b>                       | See product specification                           |
| <b>Melting / Freezing Point</b> | See product specification                           |
| <b>Boiling Point / Range</b>    | See product specification                           |
| <b>Flash Point</b>              | Not applicable                                      |
| <b>Relative Density</b>         | See product specification                           |
| <b>Solubility</b>               | See product specification                           |
| <b>Vapour Pressure</b>          | See product specification                           |
| <b>Purity / Assay</b>           | Fine chemical grade — assay on specification        |

## SECTION 10: STABILITY AND REACTIVITY

|                                           |                                                                                       |
|-------------------------------------------|---------------------------------------------------------------------------------------|
| <b>Reactivity</b>                         | Stable under the recommended handling and storage conditions.                         |
| <b>Chemical Stability</b>                 | Stable under normal ambient conditions.                                               |
| <b>Possibility of Hazardous Reactions</b> | None known under recommended conditions of use.                                       |
| <b>Conditions to Avoid</b>                | Heat, direct sunlight, moisture, ignition sources and mechanical damage to packaging. |
| <b>Incompatible Materials</b>             | Strong oxidising agents, strong acids and strong bases.                               |
| <b>Hazardous Decomposition Products</b>   | Oxides of carbon and other toxic fumes on thermal decomposition.                      |

## SECTION 11: TOXICOLOGICAL INFORMATION

|                                          |                                                                                 |
|------------------------------------------|---------------------------------------------------------------------------------|
| <b>Likely Routes of Exposure</b>         | Inhalation, skin contact, eye contact and ingestion.                            |
| <b>Acute Toxicity</b>                    | Product-specific LD50/LC50 data are available from the manufacturer on request. |
| <b>Symptoms and Effects</b>              | Causes skin irritation, Causes serious eye irritation.                          |
| <b>Carcinogenicity</b>                   | Not classified as carcinogenic.                                                 |
| <b>Reproductive Toxicity</b>             | Not classified for reproductive toxicity.                                       |
| <b>Germ Cell Mutagenicity</b>            | Not classified.                                                                 |
| <b>STOT — Single / Repeated Exposure</b> | Not classified.                                                                 |

## SECTION 12: ECOLOGICAL INFORMATION

|                                      |                                                                                                    |
|--------------------------------------|----------------------------------------------------------------------------------------------------|
| <b>Aquatic Toxicity</b>              | No significant ecotoxicity expected at normal use concentrations.                                  |
| <b>Persistence and Degradability</b> | Data not available for this product. Assess against local discharge consent limits before release. |
| <b>Bioaccumulative Potential</b>     | Data not available.                                                                                |
| <b>Mobility in Soil</b>              | Data not available.                                                                                |
| <b>Other Adverse Effects</b>         | Do not allow the product to enter drains, sewers or watercourses.                                  |

### SECTION 13: DISPOSAL CONSIDERATIONS

|                               |                                                                                                                                                                                                               |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Waste Treatment</b>        | Dispose of the product and its container through an authorised waste treatment or disposal facility, in accordance with local, state and national regulations. Do not discharge to drains or the environment. |
| <b>Contaminated Packaging</b> | Empty containers retain product residue. Triple-rinse where appropriate and offer for approved reconditioning or disposal. Do not re-use containers for other purposes.                                       |

### SECTION 14: TRANSPORT INFORMATION

|                                |                                                                      |
|--------------------------------|----------------------------------------------------------------------|
| <b>UN Number</b>               | Not regulated                                                        |
| <b>UN Proper Shipping Name</b> | Not applicable                                                       |
| <b>Transport Hazard Class</b>  | Not applicable                                                       |
| <b>Packing Group</b>           | Not applicable                                                       |
| <b>Marine Pollutant</b>        | No                                                                   |
| <b>IMDG / IATA / ADR</b>       | Not classified as dangerous goods for transport by sea, air or road. |

### SECTION 15: REGULATORY INFORMATION

|                                   |                                                                                                                                                        |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Classification System</b>      | Globally Harmonised System (GHS Rev. 9); CLP Regulation (EC) No. 1272/2008.                                                                            |
| <b>EU REACH</b>                   | Registration status is held by the manufacturer. A REACH statement is available from Scapex Exports on request.                                        |
| <b>India</b>                      | Manufacture, Storage and Import of Hazardous Chemicals Rules; Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, as applicable. |
| <b>Chemical Safety Assessment</b> | A chemical safety assessment has not been carried out by Scapex Exports for this product.                                                              |

### SECTION 16: OTHER INFORMATION

|                                  |                                                                                                                                                                                                                                                                           |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Basis of Classification</b>   | Classification in Section 2 has been assigned on the basis of the chemical class of the product and the standard commercial grade supplied. Where the manufacturer of a particular batch publishes a different classification, the manufacturer's classification governs. |
| <b>Full Text of H-statements</b> | H315: Causes skin irritation.; H319: Causes serious eye irritation.                                                                                                                                                                                                       |
| <b>Revision</b>                  | Revision 1 — first issue                                                                                                                                                                                                                                                  |
| <b>Prepared by</b>               | Quality Assurance, Scapex Exports Pvt. Ltd.                                                                                                                                                                                                                               |

**Disclaimer.** The information in this Material Safety Data Sheet (MSDS) is provided in good faith and is believed to be correct at the date of issue. It relates only to the specific material identified and is not a specification. It does not constitute a warranty, express or implied, of merchantability or fitness for a particular purpose. It is the responsibility of the user to satisfy themselves as to the suitability and completeness of this information for their own particular use, and to comply with all applicable laws and regulations.