INTRODUCTION
Adipic acid is a key raw material for a broad range of applications in the plastics and textile industries, Radici Chimica’s state-of-the-art technology produces adipic acid with a high degree of purity, ensuring optimal performance for each and every application.

APPLICATIONS
Adipic acid is a chemical intermediate mainly used in the manufacture of polyamide 66 and is, therefore, a fundamental building block for a wide variety of products in the plastics and textile industries. Other uses include polyester resins, fibres, polyurethane, plasticizers, lubricants and specialised end uses.

ADIPIC ACID
Crystalline adipic acid tends to form conglomerates. The parameters that can affect conglomerate formation include not only the time of storage but also humidity, temperature and particle size. It is recommended that molten adipic acid should be kept and transported in a nitrogen atmosphere. The main risk in handling adipic acid is the danger of explosion. Adipic acid dust, suspended in the air, can ignite at temperatures of 500-550°C. According to the Bureau of Mines (USA), adipic acid dust has an explosion severity index of 1.9 and relative explosion hazard rating of strong. Crystalline adipic acid should be stored under nitrogen cover, or under a mix of nitrogen and air with an oxygen content of less than 10%. During pneumatic conveying of adipic acid, both nitrogen and air can be used. However, in the latter case, precautions must be taken to avoid the risk of ignition of the dust. In particular, the conveying equipment must have explosion vents in order to dissipate the force of any possible explosion, and all equipment must be carefully earthed to prevent static charges. Solid adipic acid and its aqueous solutions attack mild steel even at room temperature but do not greatly affect stainless steel and aluminium.

HANDLING AND STORAGE

ADIPIC ACID TECHNICAL DATA
Formula: C6H10O4
Molecular weight: 146.146

| Property | Units | Value | Analysis method
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>-</td>
<td>Odourless, white, crystalline solid</td>
<td></td>
</tr>
<tr>
<td>Solubility in water (20°C)</td>
<td>%</td>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>Density (solid at 20°C)</td>
<td>g/cm3</td>
<td>1.360</td>
<td></td>
</tr>
<tr>
<td>Density (liquid at 165°C)</td>
<td>g/cm3</td>
<td>1.085</td>
<td></td>
</tr>
<tr>
<td>pH (2.5% wt in water at 20°C)</td>
<td>-</td>
<td>2.7</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Units</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total nitrogen (as nitric acid)</td>
<td>ppm</td>
<td>20 max</td>
</tr>
<tr>
<td>Ashes</td>
<td>ppm</td>
<td>5 max</td>
</tr>
<tr>
<td>Colour (bethanolic solution)</td>
<td>HAZEN</td>
<td>5 max</td>
</tr>
<tr>
<td>Melting point</td>
<td>APHA</td>
<td>60 max</td>
</tr>
<tr>
<td>Iron</td>
<td>ppm</td>
<td>0.2 max</td>
</tr>
<tr>
<td>Crystallization point</td>
<td>°C</td>
<td>152 ± 0.5</td>
</tr>
<tr>
<td>Water</td>
<td>%</td>
<td>0.2 max</td>
</tr>
<tr>
<td>Assay</td>
<td>%</td>
<td>99.8 min</td>
</tr>
</tbody>
</table>

Methods of analysis are available on request

SAFETY DATA

Personal Protection:
- Eye protection: Safety glasses impervious to dust
- Hand protection: Protective gloves
- Respiratory protection: Anti-dust mask
- Protective clothing: Anti-dust overalls, visor with hood
**INTRODUCTION**

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**ADIPIC ACID**

Crystalline adipic acid tends to form conglomerates. The parameters that can affect conglomerate formation include not only the time of storage but also humidity, temperature and particle size. It is recommended that molten adipic acid should be kept and transported in a nitrogen atmosphere.

The main risk in handling adipic acid is the danger of explosion. Adipic acid dust, suspended in the air, can ignite, and its explosibility is greater than that of its pure liquid. The explosion index is 1.9. Adipic acid dust has an explosion severity index of 1.8 and an explosion hazard rating of strong.

According to the Bureau of Mines (USA), adipic acid dust has an explosion severity index of 1.9 and an explosion hazard rating of strong. Crystalline adipic acid should be stored under nitrogen cover, or under a mix of nitrogen and air with an oxygen content of less than 10%. During pneumatic conveying of adipic acid, both nitrogen and air can be used. However, in the latter case, precautions must be taken to avoid the risk of ignition of the dust. In particular, the conveying equipment must have explosion vents in order to dissipate the force of any possible explosion, and all equipment must be carefully earthed to prevent static charges. Solid adipic acid and its aqueous solutions attack mild steel even at room temperature but do not greatly affect stainless steel and aluminium.

**HANDLING AND STORAGE**

Crystalline adipic acid is a white, crystalline solid. It is hygroscopic and is soluble in many organic solvents. It is not readily soluble in water. It is incompatible with strong acids, strong oxidising agents, bases, and with certain organic solvents.

**ADIPIC ACID TECHNICAL DATA**

**Formula:** \( \text{C}_6\text{H}_{10}\text{O}_4 \)  
**Molecular weight:** 146.146

**Properties:**
- **Appearance:** Odourless, white, crystalline solid
- **Solubility in water (20°C):** 2.7
- **Density (solid at 25°C):** 1.890
- **Density (liquid at 165°C):** 1.085
- **pH (2.5% wt in water at 20°C):** 2.7

**Specifications:**
- **Total nitrogen (as nitric acid):** ppm 20 max
- **Ashes:** ppm 5 max
- **Colour (ethanolic solution):** HAZEN 5 max
- **Melt colour:** APHA 10 max
- **Iron:** ppm 0.2 max
- **Crystallization point:** °C 152 ± 0.5
- **Water:** % 0.2 max
- **Assay:** % 99.8 min

** Units  Value  Analysis method**

**Methods of analysis are available on request.**

**SAFETY DATA**

**Personal Protection:**
- **Eye protection:** Safety glasses impervious to dust
- **Hand protection:** Protective gloves
- **Respiratory protection:** Anti-dust mask
- **Protective clothing:** Anti-dust overalls, visor with hood
ADIPIC ACID

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