DYTEK® 1,2-Diaminocyclohexane (DCH-99)

1,2-Diaminocyclohexane
\[ \text{C}_6\text{H}_{14}\text{N}_2 \]

**Product Description**
DYTEK® 1,2-Diaminocyclohexane (DCH-99) is a cyclic aliphatic diamine used in a variety of applications, including urethanes and epoxies.

DYTEK® DCH-99 amine is a mixture of cis- and trans-isomers and a clear liquid at room temperature with an amine-like odor.

**Applications**
- Chelating agent
- Oilfield
- Textiles
- Water treatment
- Detergents
- Epoxy curing agents
- Composites
- Flooring/paving
- Herbicide intermediates
- Polyamide resin
- Adhesives
- Coatings
- Films
- Plastics
- Inks
- Polyurethane/Polyurea
- Extenders
- Catalysts
- Scale/corrosion inhibitors

**Typical Composition (wt %)**

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2-Diaminocyclohexane*</td>
<td>99.0</td>
</tr>
<tr>
<td>2-Methylpentamethylenediamine</td>
<td>0.1</td>
</tr>
<tr>
<td>Hexamethylenediamine</td>
<td>0.1</td>
</tr>
<tr>
<td>Water</td>
<td>0.1</td>
</tr>
<tr>
<td>Color (APHA)</td>
<td>15</td>
</tr>
</tbody>
</table>

**Appearance**
Clear and free of suspended materials

* Approximately 30% cis and 70% trans

**General Information**

- **CAS Registry**: 694-83-7
- **Molecular Weight**: 114
- **Hydrogen Equivalent Weight**: 28.5
- **Amine Value (mg KOH/g)**: 967
- **Melting Point, °C (°F)**
  - Cis: 2 (36)
  - Trans: 15 (59)
- **Boiling Point (760 mm Hg), °C (°F)**: 191 (376)
- **Vapor Pressure (mm Hg, 20°C)**: 0.387
- **Antoine Equation (p = mm Hg, T = °C)**
  \[ \ln(p) = 16.38 - \frac{3821}{200.4 + T} \]
  \[ T = (167) \]
- **Flash Point (Closed Cup), °C (°F)**: 75 (167)
- **Specific Gravity, 20 °C (68 °F)**: 0.94
- **Refractive Index (cis, n\textsubscript{25}D)**: 1.487
- **Solubility (H\textsubscript{2}O)**: Miscible
- **Critical Properties (estimated)**
  - \( P_c \), atm: 43.4
  - \( V_c \), mL: 361.5
  - \( T_c \), °C: 409.2
- **Hansen Solubility Parameters**
  - \( \delta \): 11
  - \( \delta_d \): 8.6
  - \( \delta_p \): 3.5
  - \( \delta_H \): 5.8
- **Volatiles (%)**: 100
- **Heat of Vaporization (cal/g @ 185 °C)**: 106
- **pKa\textsubscript{H}, 30 °C (86 °F)**: 9.6
- **pKa\textsubscript{2}, 30 °C (86 °F)**: 6.1
- **Viscosity (cP, 21 °C, 70 °F)**: 7.2
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