DATA SHEET Nr 1010 H

4-CHLOROBUTYRYL CHLORIDE
4 CBCL

Molecular formula: $\text{C}_4\text{H}_6\text{Cl}_2\text{O}$
Molecular weight: 141.0
CAS number: 4635-59-0
EC number: 225-059-1

SYNONYM
Gamma-chlorobutyryl chloride

APPEARANCE
Clear liquid with pungent odor.

PHYSICAL PROPERTIES
Density (20 °C): 1.26 g/cm$^3$
Boiling point: 173 °C/101 kPa
Melting point: -47 °C
Solubility:
Soluble in usual organic solvents (acetone, chloroform, toluene, THF).

CHEMICAL PROPERTIES
• Reacts by hydrolysis yielding hydrochloric acid and 4-chlorobutyric acid.
• Reacts with amines yielding amides.
• Reacts with alcohols yielding esters.

USES
• Synthesis intermediate for pharmaceuticals and fine chemicals.
4-CHLOROBUTYRYL CHLORIDE
4 CBCL

SPECIFICATION

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Guaranteed value</th>
<th>Method</th>
<th>Operating procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Clear liquid</td>
<td>Visual</td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>≤ 50 APHA*</td>
<td>Colorimetry</td>
<td>C – 210</td>
</tr>
<tr>
<td>Purity</td>
<td>≥ 98.0 %</td>
<td>Gas chromatography</td>
<td>GC – 420</td>
</tr>
<tr>
<td>Phosgene</td>
<td>≤ 0.1 %</td>
<td>Iodometry</td>
<td>I – 230</td>
</tr>
<tr>
<td>Hydrogen chloride</td>
<td>≤ 0.1 %</td>
<td>Acidimetry</td>
<td>A – 220</td>
</tr>
<tr>
<td>γ-Butyrolactone</td>
<td>≤ 1.0 %</td>
<td>Gas chromatography</td>
<td>GC – 420</td>
</tr>
<tr>
<td>4-Chlorobutyric acid</td>
<td>≤ 0.5 %</td>
<td>Gas chromatography</td>
<td>GC – 420</td>
</tr>
<tr>
<td>4-Chlorobutyric anhydride</td>
<td>≤ 1.0 %</td>
<td>Gas chromatography</td>
<td>GC – 420</td>
</tr>
</tbody>
</table>

* During the storage the product may show slight purple coloration.

PACKAGING
Polyethylene lined metal drum containing 200 kg.
Polyethylene drum containing 220 kg.
In bulk.

HANDLING PRECAUTIONS
- Physicochemical hazard
  Flash point (closed cup): 85 °C
- Health hazards:
  LD 50 (oral, rat): 1100 mg/kg
  Irritating action on skin and mucous membranes.
  Corrosive.
- Recommended:
  When handling this product wear mask, gloves, goggles and protective clothes.
  Wash contaminated surfaces immediately with plenty of water.

In case of inhalation take person to fresh air and call a physician.
- Neutralization:
  Neutralize with an alkaline solution.

STORAGE
Stored in its closed original drum in a covered, dry, cool and well-ventilated warehouse the product is stable.

However, in case of prolonged storage it is recommended to check again the product before use by measuring typical parameters of its quality such as color, hydrogen chloride, 4-chlorobutyric acid and anhydride levels.

TRANSPORTATION
Refer to the MSDS.