One of the world’s largest producers of custom chemicals, WeylChem offers the proper technical packages and production systems to reliably supply manufacturers with Grignard reagents and Grignard-derived intermediates anywhere in the world. What began in the 1970’s as a strategy to produce flavorings synthetically using common Grignard reagents has expanded into industrial scale production for the manufacturing industries of the world.

Common and Uncommon Grignard Reagents

WeylChem’s Grignard reagents have become a valuable tool for the formation of carbon-carbon bonds and for the formation of carbonphosphorus, carbon-tin, carbon-silicon, carbon-boron and other carbon-heteroatom bonds.

WEYLCHEM OFFERS A WIDE RANGE OF GRIGNARD REAGENTS:

<table>
<thead>
<tr>
<th>Product</th>
<th>CAS</th>
<th>Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allylmagnesium chloride</td>
<td>2622-05-1</td>
<td>C3H5ClMg</td>
</tr>
<tr>
<td>Benzylmagnesium chloride</td>
<td>6921-34-2</td>
<td>C7H7ClMg</td>
</tr>
<tr>
<td>Cyclohexylmagnesium chloride</td>
<td>931-51-1</td>
<td>C6H11ClMg</td>
</tr>
<tr>
<td>Ethylmagnesium bromide</td>
<td>925-90-6</td>
<td>C2H5BrMg</td>
</tr>
<tr>
<td>Ethylmagnesium chloride</td>
<td>2386-64-3</td>
<td>C2H5ClMg</td>
</tr>
<tr>
<td>Isobutylmagnesium bromide</td>
<td>926-62-5</td>
<td>C4H9BrMg</td>
</tr>
<tr>
<td>Isobutylmagnesium chloride</td>
<td>5674-02-2</td>
<td>C4H9ClMg</td>
</tr>
<tr>
<td>Isopropylmagnesium chloride</td>
<td>1068-55-9</td>
<td>C3H7ClMg</td>
</tr>
<tr>
<td>Vinylmagnesium chloride</td>
<td>3536-96-7</td>
<td>C2H3ClMg</td>
</tr>
<tr>
<td>Methylmagnesium chloride</td>
<td>676-58-4</td>
<td>CH3ClMg</td>
</tr>
<tr>
<td>n-Butylmagnesium chloride</td>
<td>693-04-9</td>
<td>C4H9ClMg</td>
</tr>
<tr>
<td>Phenylmagnesium chloride</td>
<td>100-59-4</td>
<td>C6H5ClMg</td>
</tr>
<tr>
<td>t-Butylmagnesium chloride</td>
<td>677-22-5</td>
<td>C4H9ClMg</td>
</tr>
<tr>
<td>4-Tolylmagnesium chloride</td>
<td>696-61-7</td>
<td>C7H7ClMg</td>
</tr>
</tbody>
</table>

Today we offer commercial Grignard reagents, uncommon Grignard reagents and Grignard-derived intermediates from pilot to industrial-scale. If you plan to reconfigure your plant for new projects, or adopt chemistries and processes that change the economics of your in-house Grignard manufacturing capability, consider the manufacturing assets, laboratory services and decades of expertise offered by WeylChem Group of Companies.

WeylChem Manufacturing Program Benefits

- 40 years of safe handling
- Industrial-scale capacity for commercial Grignard reagents
- Pilot plant to commercial 4,000 gallon scale
- Confidential handling of Grignard-derived intermediates
- Manufacturing services available on a commercial, custom or contract basis
- Multi-purpose, scalable facility for custom and specialty products
- In-house laboratory and technical services
- Robust packaging designed to handle hazardous chemistry
**CORE TECHNOLOGIES**

- **Downstream Chemistry**
  With multipurpose facilities, WeylChem is equipped to supply a wide range of multi-step chemicals that involve a Grignard reaction. Offering commercial Grignard reagent chemistry as well as downstream chemistry, WeylChem tailors manufacturing to deliver on the promise of higher performance and value.

- **Material Handling**
  A multi-purpose production source, WeylChem supports customers with a full range of material handling capabilities.

- **Organic chlorides:**
  Allyl Chloride, Allyl bromide, Allyl alcohol, Methyl Chloride, Benzyl Chloride, Benzoyl Chloride, Acetyl Chloride, Cyanuric Chloride

- **Inorganic Chlorides:**
  Trichlorosilane, Phosphorous Oxychloride, Phosphorous Trichloride, Aluminum Chloride, Thionyl Chloride

- **Gases and Reagents:**
  H2S, Ammonia, CO2, HCl, HBr, Bromine, Chlorine, Vinyl Chloride

- **Solvents:**
  Dichlorobenzene, Methylene Chloride, Chloroform, Hexane, Toluene, MIBK, DMF, DMSO, THF, Diglyme, Methyl-THF, Monoglyme, Butyl Ether

- **Others:**
  Sodium Nitrite, Phenol, Potassium Cyanide, Formaldehyde, Dimethylsulfate, Sodium Methoxide, Hydrogen Peroxide; Maleic Anhydride

**MANUFACTURING EQUIPMENT**

A wide range of equipment is in place to produce Grignard reagents and Grignard-derived intermediates from pilot-scale to industrial-scale:

- **Pilot Scale**
  - Equipment: 100 gallons, 650 gallons, HF 600 Heinkel Hastelloy

- **Large Scale**
  - Equipment: 2,800 gallons, 4,000 gallons

- **Vessels/Reactors**
  - Equipment: 67 stirred vessels/reactors (8-30 cm): 2000-8000 gallon SS & GL

- **Solids Handling**
  - Equipment: 3 Hastelloy Centrifuges for corrosive solids handling
  - 2 Hastelloy dryers
  - 1 tumble dryer

- **Film Evaporators**
  - Equipment: 6 Wiped-film evaporators (235°C; 1mmHg)

- **Fractionating Units**
  - Equipment: 12 fractionating units (170 - 235°C; 10-20 mmHg)

- **Utilities**
  - Steam (170°C)
  - Chiller (-40°C)
  - Hot oil (265°C)

**Let us help you create the Grignard chemistry solution you require.**

Contact us for more information:

**www.weylchem.com**

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