Anhydrides and Acids
Index

Production Sites .................................................................................................................................................................................. 3
Polynt Intermediates .......................................................................................................................................................................... 4
Anhydrides ...................................................................................................................................................................................... 5
Acids .......................................................................................................................................................................................... 8
Company Addresses ........................................................................................................................................................................ 10
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ASIA PACIFIC
Polynt Chemical (Changzhou) Co., Ltd.
Polynt Intermediates

Since 1955 Polynt has been active in the production, sale, research and development of organic anhydrides and their derivatives.

Benefitting the company’s integrated Business Model, the Intermediates Business Unit manufactures and markets the following product families:

- Anhydrides: Phthalic Anhydride, Maleic Anhydride, Trimellitic Anhydride
- Acids: Malic Acid, Fumaric Acid
- Catalysts: Gas phase oxidation catalysts mainly for Maleic, Phthalic and Pyromellitic Anhydrides
- Maleic Anhydride Derivatives: Special Anhydrides (THPA, HHPA, MTHPA, MHHPA, SA, METH) and Special Esters (DMS, DIPS, DEAS)
- Plasticizers: General Purpose Plasticizers and Special Purpose Plasticizers
- Special Esters: Glycerine Esters, Citrates, Fumarates, Maleates, Low Molecular Weight Phthalates, Sebacates, Acetates and Glycol Ether Acetates, Fatty Acid Esters and Salts

These products have various uses, from basic raw materials for the chemical industry to hardeners for epoxy resins, additives for plastic materials, food and feed additives, cosmetic ingredients and lubricants.
Anhydrides

Polynt Group produces a great variety of anhydrides, but the most important ones are Phthalic Anhydrides, Maleic Anhydride, Trimellitic Anhydride and Tetrahydrophthalic Anhydride.

MALEIC ANHYDRIDE
This is an organic compound obtained by the transformation of Benzene or normal butane, both derived from oil, through the use of catalysts (catalytic oxidation process). Its production, initially based on the fixed bed technology from benzene, was supplemented by the fluidized bed from normal butane in the ‘90s. This dioxide, highly versatile for its reactivity, is used as a raw material for the production of unsaturated polyester resins, additives for lubricating oils, copolymers for water treatment, solvents, esters, synthetic fibers and many products that are used in very diverse industrial sectors.

PHTHALIC ANHYDRIDE
This is an organic compound obtained by the transformation of ortoxylene (derived from oil) through the use of catalysts (catalytic oxidation process). It is used for the production of plasticizers and for different types of unsaturated polyester resins and alkyds.
TRIMELLITIC ANHYDRIDE
This is an organic anhydride obtained by a process of transformation of pseudocumene (derived from oil) through the use of catalysts (catalytic oxidation process). It is mainly used for the production of enamels for insulating electrical cables and powder coatings for the field of electrical appliances, furnishings, metal and for the production of specialty plasticizers, in particular for the electrical, transportation and medical industry.

TETRAHYDROPHTALIC ANHYDRIDE
This is an organic compound obtained from the reaction of Maleic Anhydride and Butadiene. It is mainly used in the manufacturing of unsaturated polyester resins and hardener for epoxy resins production and as a raw material for products used in agriculture.
Anhydrides Product Family

<table>
<thead>
<tr>
<th>PRODUCT FAMILY NAME</th>
<th>APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maleic Anhydride</td>
<td>Unsaturated polyester resins, surface coatings, plasticizers, lubricant additives, copolymers, agricultural chemicals, paper sizing, fumaric acid, succinic anhydride, malic acid, butanediol</td>
</tr>
<tr>
<td>Phthalic Anhydride</td>
<td>Phthalate plasticizers, unsaturated polyester resins, alkyd resins for paints and varnishes, polyester polyols, alky resins, pigments and dyes, agrochemicals</td>
</tr>
<tr>
<td>Trimellitic Anhydride</td>
<td>Trimellitate plasticizers, polyester powder coatings, polyester-imide resins, polyamide-imides, water soluble alkyd resins</td>
</tr>
<tr>
<td>Tetrahydrophthalic Anhydride</td>
<td>Hardener for epoxy resins, light-coloured alkyd resins, unsaturated polyester resins, adhesives, plasticizers, intermediate for pesticides and agrochemicals</td>
</tr>
</tbody>
</table>

For further information please contact us
Acids

Polynt Group mainly produces two acids, Malic Acid and Fumaric Acid.

FUMARIC ACID
This is obtained from the hydration of Maleic Anhydride or from isomerization of Maleic Acid solutions resulting from the process (washing) of Phthalic Anhydride. Its application areas are Unsaturated Polyester Resins, the acidifying of animal feed and plasticized products.

MALIC ACID
Malic Acid is manufactured by hydration of Maleic Anhydride. It is an acid also present in nature whose main application is as an acidulant. Malic Acid is available in different sizes (granular, fine, special fine and powder).
The main application areas are:
• food additives for beverages, desserts, jams and jellies
• additive in animal feed
• antifouling products
• cosmetic industry (for moisturizers and anti-wrinkle)
• construction industry as retardant additive in cement
• metallurgical industry for the metals cleaning and as a binder for the melting molds
## Acids Product Family

<table>
<thead>
<tr>
<th>PRODUCT FAMILY NAME</th>
<th>APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fumaric Acid</td>
<td>Food and feed additives, unsaturated polyester resins, alkyd and allyl resins, paper sizing, adhesives, lubricants</td>
</tr>
<tr>
<td>Malic Acid</td>
<td>Food additive (beverages, bakery products, confectioneries, desserts, jams and fruit jellies), technological additive in animal feed, metal treatment, textile industry, plating industry, retardant for plasters and cements, pharmaceutical, cosmetics.</td>
</tr>
</tbody>
</table>

For further information please contact us

Apples are the main source of origin of Malic Acid
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This brochure is intended to provide a comprehensive list of the Anhydrides and Acids products and services available from Polynt Group. The information contained herein is believed to be correct and corresponds to the latest state of scientific and technical knowledge. However, no warranty is made, either express or implied, regarding its accuracy or the results to be obtained from the use of such information. No statement is intended or should be construed as a recommendation to infringe any existing patent.

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