Hypol-Ⅱ for Licensed PP Technology

Mitsui Chemicals

License Division
Mitsui Chemicals Inc.

HYPOL™ is a trademark of Mitsui Chemicals
What is Hypol-Ⅱ?
What is Hypol-Ⅱ?

Mitsui Chemicals creates Hypol-Ⅱ technology for PP Manufacturing which realizes Excellent Properties by utilizing state-of-the-art Reaction System with Innovative Catalyst
Products map - Injection molding grades -

- Flexural modulus (kg/cm²)
  - 20,000
  - 15,000
  - 10,000
  - 5,000
  - 0.1

- MFR (g/10min)
  - 6

- High flow
- High stiffness
- High impact
- Ultra high impact

- Homo polymer
- Impact copolymer
Products map
- Film, Tape, Fiber, Blow molding grades -

Flexural modulus (kg/cm²)

MFR (g/10min)

- Blow
- Film, Tape
- Fiber

Homo polymer
Impact copolymer
Why is Hypol-Ⅱ the best?
Benefits

A. PP License experience
- 34 years licensing experience with 25 plants realization

B. State-of-the-art reaction system
- High efficiency and Stable reactor
- High copolymer content
- Innovative catalysts

C. Excellent product quality
- Impact copolymer with excellent impact resistance
- Various kinds of Homopolymer

D. Constant technical support
- Support for plant expansion or modification
- Update information such technology as new grades or catalysts
Licensee Location

A. PP License experience

25 plants around the world
State-of-the-art reaction system

Homopolymerization

**Bulk Phase Reactor**
- Multi Stage

- High Efficiency
- Better Uniformity
- Easy MWD Control

Copolymerization

**Gas Phase Reactor**

- High Copolymer Content
- Stable Operability
- Easy Composition Control

Unique design of the Mitsui Gas Phase Reactor ensures stable, long-term operation without fouling or frequent shutdowns for cleaning.
B. State-of-the-art reaction system

<table>
<thead>
<tr>
<th>Granule Type</th>
<th>Spherical Type</th>
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</thead>
<tbody>
<tr>
<td>MK, MH, GH series</td>
<td>Under development</td>
</tr>
<tr>
<td>RK, RH series</td>
<td></td>
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<tr>
<td>TK series</td>
<td>TK series</td>
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</tbody>
</table>

1st Generation : 1954 (Natta)

2nd Generation (Solvay)

3rd Generation : 1975

4th Generation

5th, 6th Generation
Impact copolymer with excellent impact resistance

Homopolymer

Mitsui

Amount

PSD

Copolymer

Excellent Impact Resistance

Homogenous PER Dispersion

Mould

Conventional

Excellent Impact Resistance

Less Impact Resistance
Constant technical support

D. Constant technical support

- Plant Capacity Expansion
- New Production Grades
- New MCI Catalysts
- Other Improvement

Hypol- II
Summary
MCI’s PP technology brings huge benefits to your projects

State-of-the-art reaction system

Process

Catalysts

Products

Innovative Catalysts

Excellent product quality
新たな顧客価値を創造し
事業活動を通じて

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The detailed information is provided after conclusion of secrecy agreement.