TORAY IR Day
Medium-Term Management Program Project AP-G 2025

Resins & Chemicals Business

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Vice President, General Manager, Resins & Chemicals Division
Toray Industries, Inc.
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VI. Contribution to Realization of a Sustainable Society

VII. Target for FY 2025

(Reference) Revising Revenue Target of Performance Chemicals Subsegment
Overview of the Resins & Chemicals Business
1. Position within the Performance Chemicals Segment

**Breakdown of revenue by segment (FY 2022)**

<table>
<thead>
<tr>
<th>Segment</th>
<th>Revenue (Billion yen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance Chemicals</td>
<td>909.4 (37%)</td>
</tr>
<tr>
<td>Fibers &amp; Textiles</td>
<td>999.2</td>
</tr>
<tr>
<td>Environment &amp; Engineering</td>
<td>228.8</td>
</tr>
<tr>
<td>Carbon Fiber Composite Materials</td>
<td>281.7</td>
</tr>
<tr>
<td>Life Science</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td></td>
</tr>
<tr>
<td>Total of Toray Group</td>
<td>2.5 trillion yen</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>909.4</strong></td>
</tr>
</tbody>
</table>

About 17% of consolidated revenue
2. Introduction to the Resins Business – Strengths

- **Product**: A Wide Variety of Products
- **Solution**: Capability to Provide Total Solutions
- **Global**: Global Capability
2. Overview of the Resins Business – Product Line-up

- Toray product (brand name)

- **TI POLYMER**
  - PAI (TI polymer)
  - CFRP (TORAYCA™ resin)

- **Super Engineering Plastics**
  - PEEK
  - LCP (SIVERAS™)
  - PPS (TORELINA™)

- **Engineering Plastics**
  - PBT (TORAYCON™)
  - Nylon 6 & 66 & 610 (AMILAN™)
  - POM
  - PP
  - PC
  - mPPE
  - ABS (TOYOLAC™)

- **Semi-engineering Plastics**
  - Polyimide resin
  - Liquid crystal polyester resin (LCP)
  - PPS resin
  - PBT resin
  - Nylon resin

- **Polyolefin foam**

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2. Overview of the Resins Business – The Value-Creation Process, Proposal of Solutions to Customers

Provide Total Solutions to Support Customers’ Product Development Comprehensively

**Toray Group’s Business Domains**
- Raw Materials
- Polymerization
- Compounding
- Molding

**Customers’ Business Domains**
- Parts
- Final Products

Understanding customers’ needs and issues
(through meetings, digital marketing, technology conferences, trade shows, etc.)

Innovation through Co-Creation
- Material development and proposals
- Proposals for design
- Support for Process and Molding
- Support for Mass Production

Raw Materials → Polymerization → Compounding → Molding → Parts → Final Products
2. Overview of the Resins Business –Global Sites

<Global Policy>

- Global suppliability of same grades
- Global operation of Toray’s QC system
- On-site development and technological support

<Overseas Business>
- 10 Countries
- 19 Bases
2. Overview of the Resins Business – Global Sites

<Trend in production capacity of resin compounding>

Increase of capacity in growth regions

40% increase in 10 years
### 3. Overview of the Chemicals Business

<table>
<thead>
<tr>
<th>Basic chemicals business</th>
<th>Fine chemicals business</th>
<th>Aromatic fine chemicals business</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nylon, polyester raw materials</td>
<td>Pharmaceutical and agrochemical raw materials</td>
<td>Flavors, fragrances</td>
</tr>
<tr>
<td>Caprolactam, Terephthalic acid</td>
<td>NZ products</td>
<td>Chiral compounds</td>
</tr>
<tr>
<td>Fine particles of high-functional resins for 3D printers</td>
<td>Veterinary medicines for dogs and cats</td>
<td></td>
</tr>
<tr>
<td>RAPROS™, INTERCAT™</td>
<td>Solvents and cleaning agents</td>
<td>DMSO</td>
</tr>
<tr>
<td>Sealants</td>
<td>Sealants</td>
<td>THIOKOL LP™</td>
</tr>
</tbody>
</table>

**Toray Products**

**Toray Fine Chemicals products**

**Soda Aromatic Products**
Review of the Medium-Term Management Program, AP-G 2022
In FY 2021, market demand was strong overall due to the recovery from COVID-19, and there was substantial overachievement of the target. However, the core operating income was -13.0 billion yen below the target in FY 2022*. There were several factors that led to decrease in sales volume such as delay in recovery in automobile production volume, continued zero-COVID policy in China, and customers’ adjustment in procurement from the accumulated inventory in the supply chain.

*For FY 2020-2022 total, achieved the medium-term target. The fine chemicals business performed strongly, and we were able to capture the recovery demand from COVID-19 by expanding production capacity at TPM and by expanding sales of PPS resins.
### (1) Summary of AP-G 2022

<table>
<thead>
<tr>
<th>Basic Policies</th>
<th>Summary of Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong></td>
<td>Expand businesses in growth areas (next generation mobility, etc.)</td>
</tr>
<tr>
<td><strong>2</strong></td>
<td>Expand sales of high value-added products globally</td>
</tr>
<tr>
<td><strong>3</strong></td>
<td>Strengthen upfront development capabilities, total solution proposal capabilities</td>
</tr>
<tr>
<td><strong>4</strong></td>
<td>Promotion of measures toward realizing a sustainable society</td>
</tr>
</tbody>
</table>

### (2) Trend in Revenue

<table>
<thead>
<tr>
<th>Trend in Revenue</th>
<th>Billion yen</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 2019</td>
<td>320.4</td>
</tr>
<tr>
<td>FY 2020</td>
<td>309.2</td>
</tr>
<tr>
<td>FY 2021</td>
<td>425.9</td>
</tr>
<tr>
<td>FY 2022</td>
<td>419.5</td>
</tr>
</tbody>
</table>

Revenue Target in AP-G 2022
Business Environment and Basic Policies of AP-G 2025
## Business Environment and Basic Policy

### Business Environment

1. Increasing need for sustainability measures
2. Economic recovery from the pandemic and increase in competition from competitors’ production capacity increases
3. World population growth, declining birthrate and aging population in developed countries
4. Advancement of digital society

### Contributing to building a sustainable world by creating high value-added products

1. Enhancing governance (business operation prioritizing quality and compliance)
2. High-added-value creation
   - Business expansion in growth market (next-generation vehicles, semiconductor, pharmaceutical and agrochemical raw materials, veterinary medicines)
   - Global expansion of PPS resins TORELINA™ as well as fine chemical products, shift to high-performance products with ABS resins TOYOLAC™
   - Development of innovative technologies, enhancement of total solution proposal, marketing leveraging DX
3. Contribution to realization of a sustainable society
   - Development and sales expansion of sustainable materials (recycled/ bio-based) and marine biodegradable resins
AP-G 2025 Strategies for the Resins Business
1. Enhancing governance: Promotion of Recurrence Prevention Measures in Response to the Inappropriate Actions Relating to the UL Certification

(1) Progress on UL certification

- Completed recertification UL for necessary grades and ISO9001. Will continue with recurrence prevention, solid quality control system, and enhancement of compliance awareness

(2) Actions on the recurrence prevention measures in response to the recommendations of the Expert Committee

<table>
<thead>
<tr>
<th>Group-wide Recurrence Measures</th>
<th>Measures by the Resins &amp; Chemicals, Manufacturing, and Quality Assurance Divisions</th>
</tr>
</thead>
</table>
| 1. Enhance compliance awareness | ✓ Promotion of corporate culture reform through senior managers continually communicating messages to employees the importance of compliance and through communication to the frontlines  
                                  ✓ Enhancement communication by 5,900 employees on the floor, in order to 1. Enhance process control, 2. Create a culture of openness and 3. Foster a sense of pride (Ongoing) |
| 2. Establish work procedures and an training system for UL-related operations | ✓ 1. Training for all members  
                                  2. Restructuring of the certification system/operation procedures  
                                  3. UL verification audit, C-CAP (Completed) |
| 3. Transfer personnel between business divisions and other interaction | ✓ 1. Change of director in charge of the division  
                                  2. Personnel transfer of related individuals (Completed) |
| 4. Establish a system to confirm UL compliance by the internal quality assurance organizations and/or external organizations | ✓ 1. Internal audit by the Quality Assurance Division  
                                  2. External audit by UL and ISO recertification (Chiba, Nagoya) (Completed) |
| 5. Strengthen the structure of quality assurance organization | ✓ 1. Strengthened organizational structure by increasing members in the division and by strengthening auditing system, etc. (Completed) |
| 6. Establish system to ensure reporting of misconduct to Toray administrative organizations | ✓ 1. Improved contents of the internal survey (implemented in November 2022), conducted a follow-up of results (Completed) |
2. High-added-value Creation

Advancement of Resin Compound Business

⇒ Promoting global sales expansion of high performance products and increase the ratio within the revenue

<In engineering plastic resins business, percentage of high performance products in revenue>

- Revenue for high performance products increased 1.4 fold
- Revenue for high performance products increased 1.6 fold

2019: 27% → 30% → 64%

Major high performance products:
- PPS resins
- Torayca™ resins
- Resin products for xEV and ADAS
- Resin products for WH connectors
- Resin products for smartphones
- Marine biodegradable resins
2(1). Business Strategies for Automobile Applications

a. Capturing xEV demand and entering a new growth phase

Trend in global automobile production

- **Growth of automobile market**: 110% (FY 2022 → FY 2025)
- **Growth of xEV market**: 213% (FY 2022 → FY 2025)

Engineering plastics business for automobile applications (Trend in revenue)

- **Expansion of engineering plastics business for automobile applications**: 135% (Revenue from FY 2022 → FY 2025)
- **Revenue from ICEV application (internal combustion engine vehicle)**
  - Increase ratio within revenue to 25% → 250%
- **Revenue from xEV application**

Source: S&P Global and estimate by Toray

xEV: EV+F-HEV+FCV (excluding M-HEV)
2(1) Business strategies for automobile applications
b. Toray’s products for xEV

- **xEV Inverter**: Heat cycle, high voltage resistant, PPS resins
  - **Torelina™**

- **xEV Capacitor**: Epoxy adhesion, high voltage resistant
  - **Torelina™**

- **Hydrogen Tank**: Workability, high-toughness
  - **Amilan™**

- **Sensor Components**: Heat cycle, high voltage resistant
  - **Torelina™**

- **Rader Components**: Low-dielectric, dimension stability
  - **Toraycon™**

- **Cooling component**: Chemical-resistant, heat cycle
  - **Torelina™**

- **xEV Battery**: Chemical-resistant, dimension stability
  - **Torelina™**

- **Automotive ECU Case**: Electric character, dimension stability
  - **Toraycon™**

- **Automotive connector**: Electric character, dimension stability
  - **Toraycon™**
Global demand is expanding 7% annually on the backdrop of growing needs in xEVs, automotive electronic components, and light-weighting properties (2022→2025).

Super engineering plastics with long-term heat resistance, outstanding chemical resistance, and flame-retardant properties.

Adopted in versatile applications including power semiconductors with increasing demand for energy-saving and labor-saving

The world’s only integrated manufacturer from monomer, polymer, to compounding, in addition to Fibers & Textiles and Films business.

World’s largest PPS polymer/compounding company (Market Share of compounds: 27% in 2019→32% in 2022→36% in 2025)
2 (2) Global Business of PPS Resins TORELINA™
b. Expansion of production sites and enhancement of solution proposal

➢ Placing production and technical centers globally, possessing cross-linked/linear polymers and utilizing technologies including nanoalloy and CAE* analysis enable total solution proposal in globally

➢ World’s only manufacturer with polymer production bases in two countries (Japan and South Korea) and the ability to respond to BCP.

➢ Increasing sales globally, mainly in Europe and China

(ratio of sales outside Japan: 60% in 2019→73% in 2025)

*Computer Aided Engineering
In TAK, South Korea, production capacity for PPS resins will be increased 5,000 tons in the second phase (starting operation in December 2024).

- Established integrated production system from raw materials, polymerization to compounding.
- Proceeding expansion of world’s largest PPS polymerization capacity.

Toray-G total capacity: 27,600 tons in 2019 ➢ 32,600 tons by end of 2024
Demand was slow in 2022 but expected to gradually recover from 2023 onwards.

In general purpose ABS resins, competition will be harsh due to the production capacity increase in China. High performance products will be back to recovery track, at the annual growth rate of 5%.

Demand for products and initiatives for low environmental impact is expected to accelerate.

Focusing on the strategic expansion in high performance product markets such as transparent resins and automobile applications.
2(3) Global Business of ABS Resins TOYOLAC™

b. Strategies for high performance

Producing high performance products in 2 bases

Chiba plant
(Ichihara, Japan)

TPM
(Penang, Malaysia)

Integrated operation

72,000 tons/ year

Production capacity

425,000 tons/ year

Strategies for TOYOLAC™

A. World’s No.1 share in transparent resins
- Target: Global share of around 45% in 2025
- Expansion of medical application as a growth field

B. Expansion of high performance products for automobiles
- Target sales volume in 2025: 1.6 times vs 2022
- Sales expansion of products which are thermally stable, excellent in painting properties, has anti-squeaking properties, low coefficient of linear thermal expansion, and ASA resin products

C. Expansion of other advanced products
- Target sales volume in 2025: 1.3 times vs 2022
- Sales expansion of products that have antistatic property, excellent painting property for motorcycle, and GF reinforced high-rigidity

D. Establish status as supplier of high performance and sustainable ABS resins
- Market development and sales expansion of recycled grade (PCR/PIR)
- Launching ABS resins using bio-based monomers

Excellence in materials and solutions

- Cost competitiveness and quality stability with proprietary co-polymerization process
- Specialty AS resins and alloy technology

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2(4) Ultimate value creation
Value Creation through Digital Innovation

**Materials Big data**
- Wide range of product lineup
- High quality physical data
- Proven track record for development of materials and additive formulation (glass/carbon fibers, fillers, etc.)
- Latest analysis data

**AI**
- Physical property prediction models with high precision (long-term durability, CO₂ emission)
- Optimizing compositions
- Formulation by inverse analysis

**CAE**
- Virtual examination of product shape
- Mold design by flow analysis
- Quality evaluation by thermal deformation analysis

- Displaying cause of warp deformation
- Examination of gate position and runner
- Residual stress/thermal deformation

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*MI: Materials Informatics, AI: Artificial Intelligence, CAE: Computer Assisted Engineering

Value to customers

➢ Significantly shorten lead-time for product development
➢ Significantly reduce product development cost
➢ Achieving selection of best material candidate

Integration of MI driven materials development and CAE enhance the efficiency of customer development
What is NANOALLOY™ Technology?

Toray’s proprietary technology which helps dramatic improvement of property by blending in nanometer order.

- **Nano-dispersion**: ~several10nm
- **Nano-bicontinuous**: ~100nm

**Conventional alloy**

**PC body**
(Weight-saving and drop impact resistance)

**Badminton strings**
(Flexibly changing its shape for high speed impact)

**Crash pad to reinforce bumper**
(advanced shock absorber when crashing)
AP-G 2025 Strategies for the Chemicals Business
1. Expansion of the Fine Chemicals Business

(1) Businesses with world’s top share

Through utilization of proprietary technologies and raw materials, operating businesses with world’s top share

**<NZ (New Zeolite) products>**

- Toray’s proprietary technology
- Isomerization/adsorption separation
- Meta-Dichlorobenzene
- →Raw materials for agricultural/pharmaceutical active ingredients
- Contributing to advancement of agriculture and food security

**<DMSO>**

- Highly safe polar solvent
- →Remover, cleaning agent, organic synthesis solvent
- • Production/business operation at 2 locations, Japan and China
- • Lining up high-added-value products including excipient and low metal grade
- Contributing to a substitution for other less safe polar solvents and to expanding demand for semiconductors

**<Thiokol™>**

- • Special polymer with sulfur in the polymer backbone
- • Easily change to high-molecular weight rubber at room temperature
- • Low permeability, high chemical and oil resistance
- →Sealant (insulating glass), adhesive agent
- Contributing to energy saving through highly insulating glass sealant applications

Target revenue in FY 2025: +21% vs FY 2023
1. Expansion of the Fine Chemicals Business
(2) Veterinary medicine business

With my precious family, forever.

“I want to live happily with my companion animal, my family member, as long as possible.”

To respond to the owners' wish, we will develop innovative veterinary medicines for dogs and cats with passion and contribute to advancement of veterinary treatment.

Operating business for longer healthy life expectancy of companion animals

INTERCAT™
Antiviral medicine

World’s first
Feline interferon (genetically modified) drug

RAPROS™
Medicine for chronic kidney disease

World’s first
Kidney disease medicine for cat
1. Expansion of the Fine Chemicals Business
   (3) Aromatic fine chemicals business

**<Fragrance>**

Create fragrance for cosmetics
→Fragrance for hair care, body care and skin care products

- Proposal for fragrance based on marketing research and analysis

**<Flavor>**

Create flavor for food
→Flavoring/enhancing flavor for beverages, sweets, dairy products, masking unpleasant odor

- Supply chains of flavor for China and ASEAN

- Unique technologies for synthetic/natural raw materials production
- Original technologies for analysis and evaluation of aroma

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Paint the scenes of prosperous future with aroma, an invisible paint
2. New Business (High performance resin powders for 3D printing)

Aiming to expand new business by utilizing Toray’s unique high performance polymer and technologies for functional prototype and end-use parts

**<Toraymill™ PPS>**

- High-heat resistance, insulation properties, machine characteristic
- Uniform particle size distribution, high fluidity
- 3D Printing
- Automotive filter piping

**<Toraypearl™ PA6>**

- Uniform particle size distribution, high fluidity
- 3D Printing
- Intake manifold

No machining wastes and mold-free, reduction of inventory (parts) through on-demand production → Realization of sustainable manufacturing
3. Lactam and Lactam-related Business

Caprolactam: Utilizing Toray’s unique photoreaction technology (Photo Nitrosation Cyclohexane: PNC process), realized high safety (at normal temperature and pressure) and easy process (single stage reaction)
Related business: Expanding business in various fields, leveraging unique by-products

Reducing environmental impact using lactam process

<Measures>
LED conversion of Photoreactive light source
Developing a new type of lamp utilizing LED

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4. Ultimate Value Creation
(1) Recycling-oriented Business

Towards a world where resources are sustainably managed

Establishing a recycling-oriented business model utilizing unused resources (currently under development)

(1) Leveraging burned ash as fertilizer by Toray’s granulation technology
(2) Domestic production of fertilizer raw materials (phosphorus and kalium) that depend on imports

Currently

Unused resources (sludge, etc.)

Excrements from humans and livestock

Incineration

Landfill disposal, raw materials for cement

Phosphorus, etc.

Incinerated livestock manure ash (P, K) + Ammonium sulfate (N)

N: nitrogen, P: phosphorus K: kalium

Agriculture

Granulate

Utilize as fertilizers

Toray’s proprietary technologies

Fine-grained ammonium sulfate (less than 2mm)

Granulated ammonium sulfate (2-4 mm)
4. Ultimate Value Creation

(2) Direct Marketing

Direct internet-based marketing of veterinary medicine RAPROS™ for veterinarians

1. Creating a database on veterinary hospitals and targeting on hospitals that have not used RAPROS™
   ⇒ Planning and implementing sales activities including seminars for the target hospitals

2. Direct marketing for veterinarians through Toray’s veterinary medicine site
   ⇒ Sending direct mails to the veterinarians who have registered on the website
   (marketing promotion)
      - Marketing research and gathering information on new cases.
      - (There are comments on difficulties of giving drugs, especially by pill)

3. (1) Posting a video on how to give pills to animals on YouTube (Supporting problems for owners)
   (2) Examining possibilities for adding flavor to RAPROS™

Launch in markets outside Japan, utilizing direct web marketing know-how
Contribution to the Realization of a Sustainable Society
1. Flow Chart of Environmentally Friendly Materials Production

Realizing sustainable production using 3 methods

- Biomass
  - Biomass naphtha
    - Manufacturers that own naphtha crackers
  - Bio-based monomer
    - Start-ups
  - Bio-based adipic acid
    - Toray

- Bio-based materials
  - Naphtha
  - Monomer
  - Polymer
  - Compound
  - Product
  - Use

- Recycling
  - Preprocessing
  - Collection
  - Disposal

- Chemical recycling
  - Depolymerization
    - Chemical recycling
    - Polymer production maker
  - Material recycling
    - Polymer process maker

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2. Source of Environmentally Friendly Materials by Manufacturing Process

<table>
<thead>
<tr>
<th>Material Recycling</th>
<th>Chemical Recycling</th>
<th>Biomass</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ABS PC/ABS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>● Parts for air conditioner</td>
<td>● PA auto parts</td>
<td>● Biomass styrene monomer</td>
</tr>
<tr>
<td>● Water bottle, CD</td>
<td>● Fishing nets</td>
<td>▲ Biomass acrylic nitrile</td>
</tr>
<tr>
<td><strong>PA</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>● Scrap wastes from PA processing</td>
<td>● PA auto parts</td>
<td>▲ Bio-based adipic acid</td>
</tr>
<tr>
<td>▲ Airbags</td>
<td>● Fishing nets</td>
<td>▲ Bio-based cyclohexane</td>
</tr>
<tr>
<td>● Office chair</td>
<td></td>
<td>▲ Marine biodegradable resins</td>
</tr>
<tr>
<td><strong>PBT PBT/PET</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>● Scrap wastes from PET film processing</td>
<td>● Scrap wastes from PBT processing</td>
<td>▲ Bio-based BDO</td>
</tr>
<tr>
<td>● PBT auto parts</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PPS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>● Plumbing parts</td>
<td></td>
<td>▲ Biomass benzene</td>
</tr>
<tr>
<td>● PPS auto parts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>● Scrap wastes from PET film processing</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(1) Currently, sales expansion mainly in material recycling products
(2) Differentiation by chemical recycling, one of the Toray’s strengths
(3) Utilizing Toray’s internal resources with high quality and supply stability
1) Recycling of airbags for automobiles (PA)

- Collected airbags from scrapped car
- Resin pellet
  - Silicon inhibition (Toray)
- Used for automobile parts
- Clinging silicon
- After inhibition
- Toray’s technology inhibiting of residual silicon deposition

Features:
1. Recycling airbags collected from the market to auto parts
2. Inhibiting residual silicon which negatively affects physical properties using Toray’s technology
3. Reducing carbon footprint by 36%*

2) Recycling of water bottles and CDs (PC//ABS)

- Collected water bottles, CD, DVD
- Crushing, washing, quality inspection
- Molding processing
- Resin Pellet
- Utilize for home appliances, etc.

Features:
1. Recycling water bottles, CDs and DVDs to produce recycled PC resins, which are alloyed with ABS resins
2. RoHS certification available by severe inspection process
3. Excellent molding processability, good appearance (Expansion of applications including home appliances)

*Calculation under the special circumstances. Not guaranteed figures.
3. Expansion of Sustainable Materials
(2) Chemical recycling

Chemical recycling (subcritical water depolymerization technology)

Chemical decomposing and recycling by composite plastic

### Subcritical water

- **Phase diagram of water**
  - Critical point
  - Fluid
  - Supercritical water
  - Solid
  - Subcritical water

- **Temperature (°C) vs. Pressure (MPa)**
  - 0.0075, 100, 374
  - 6.1×10⁻⁴

- **Processes including purification and separation industrialized by Toray’s proprietary technologies**
- **Establishment of a polymer recycling system**

- Hydrogen bonding with low density: Polymer will be dissolved
- Hydrogen bonding with high density: Polymer will be hydrolyzed

**Chemical decomposing plastic by high temperature, high pressure water**
3. Expansion of Environmentally Friendly Materials

(3) Biomass

1) Internal production of bio-based adipic acid (PA66)
   - Under Research
   - Developed a bio-based adipic acid made from sugars derived from inedible component of plants by combining Toray’s microbial fermentation technology and chemical purification technology (world’s first development of adipic acid made from sugar derived from inedible biomass)
   - Enabling low GHG emission (no N₂O emission), produced by microbial fermentation process which is different from conventional chemical synthetic procedure
   - Target to commercialize around 2030, after completing production technology development and marketing research

2) Biomass ABS by mass-balance method
   - Under Development
   - (Example of mass balance method)
   - Produced products contain 25% recycled material, but they can be sold to Customer A as a product containing 100% recycled material and to other customers as 0%.

   <Feature>
   1. Biomass ABS made from biomass styrene monomer is under development
   2. Production start expected in October 2023. Toray will become the first in Japan to produce biomass ABS.
   3. Biomass styrene monomer is manufactured by Idemitsu, leveraging the mass balance method. Toray will use this monomer to produce ABS resins by mass balance method
4. Sales Expansion Target of Environmentally Friendly Materials

<Summary of Initiatives to achieve the Toray Group Sustainability Vision>

(1) Toray will enhance its measures toward sustainability through three approaches: material recycling, chemical recycling, and biomass.

(2) Currently, expansion of sales mainly through material recycling. Aim to differentiate from others by chemical recycling.

(3) Will maximize use of Toray’s internal resources with high quality and supply stability.

Aim to convert 30% of raw materials to sustainable materials by 2030.
In the resins business, in addition to market recovery, aim to capture demand in growth markets such as the xEV market, by enhancing solution proposing capabilities, expanding global bases, and developing high performance products. Moreover, will proceed with the expansion of the fine chemicals business.

Target: +16.0 billion yen in core operating income compared to FY 2022
Revision of Revenue Target:
Performance Chemicals Subsegment
## Performance Chemicals (Revision of Revenue Target by Subsegment)

### Revenue Target by Subsegment

<table>
<thead>
<tr>
<th></th>
<th>FY 2022 Forecast</th>
<th>AP-G 2025 FY 2025 Target</th>
<th>AP-G 2025 Revised Target*1 for FY 2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resins &amp; Chemicals</td>
<td>427.0</td>
<td>550.0</td>
<td>520.0</td>
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<tr>
<td>Films</td>
<td>327.0</td>
<td>400.0</td>
<td>380.0</td>
</tr>
<tr>
<td>Electronic &amp; Information Materials</td>
<td>56.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Trading, other</td>
<td>553.0</td>
<td>590.0</td>
<td>590.0</td>
</tr>
<tr>
<td>Reconciliations</td>
<td>▲437.0</td>
<td>▲600.0</td>
<td>▲550.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>926.0</strong></td>
<td><strong>1,040.0</strong></td>
<td><strong>1,040.0</strong></td>
</tr>
</tbody>
</table>

*1Internal transaction in Toray Industries was deducted.
Descriptions of predicted business results, projections and business plans contained in this material are based on assumptions and forecasts regarding the future business environment, made at the time of publication.

Information provided in this material does not constitute any guarantee concerning the Toray Group’s future performance.
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