

Bolstering our capabilities to propose solutions that satisfy needs

The strength as our foundation

As a general manufacturer of high-performance materials—polyurethane, rubber, and plastic—we have strength in being able to leverage technologies and expertise built up over long years of R&D to perform everything from materials compositions and compounds to design and processing, all in one place. We also have the ability to conduct many different types of product development that suit various needs by combining high-performance materials with foaming and molding technology.

Creating added value

In addition to simply dealing with our customers' needs, we also propose additional and improved functionality as we engage in dialogue to learn more about the usage purpose and applications, problems, and other details. In the automotive industry where development schedules are clearly set, we also do what we call “front-loading.” Establishing contact with the customer early on, we do our best to propose our own distinctive solutions and communicate the type of value that we can add.



TOPICS: INOAC R&D Sections

Our R&D is comprised of two sections—the section that develops our own original solutions (INOAC Technical Center Co., Ltd.), and the section that develops materials and products closely together with our customers (the Global Technology Development Division). They propose what they develop to the development and sales sections of our various departments, get them included in product designs in every industry, commercialize the results, and turn them into products.

INOAC Technical Center Co., Ltd.

Our technical center selects topics with a high degree of novelty that go beyond the boundaries of our existing business entities to develop original future-oriented solutions. Human resources are also particularly important to making that happen. Therefore, the center also actively dedicates effort to human resources development. For instance, the center actively organizes study sessions for acquiring high levels of expertise, including opportunities to learn basic technologies through industry-academia collaboration.



INOAC Technical Center Co., Ltd.



At a study session

Global Technical Division

This division ascertains various industry needs and conducts R&D for materials and products to address them. In addition to developing materials, the division also works to establish more in-depth manufacturing (developing production methods) as well as analytical and evaluation technologies. To acquire the intellectual property rights to the results of these development efforts, an Intellectual Property Department has been established within the division's organization. This group contributes to the creation of both tangible and intangible intellectual property.



Sound-absorbing PUF mold component containing biomaterials

Working with the automotive industry

As a company that has strong relationships with automakers, we are focusing on industry changes such as CASE and MaaS as priority topics. The shift to electric vehicles requires functionalities such as weight reduction, sound absorption, soundproofing, thermal insulation, and heat radiation. Leveraging our strengths in compounding and foaming

technologies, we are working dedicatedly to develop products that automakers desire. We have also established what we call a “Production Prep Review Panel” that handles the function of checking on the progress of production preparation. For each item that they review, we strive to improve our quality by achieving the numerical targets and making improvements.

Social | Improving value

Creating enterprise value

Environmental initiatives

There is increasing demand for environmental considerations such as the SDGs to counteract the environmental problems spreading around us. Taking this social landscape into consideration, we are developing products that help reduce CO₂ emissions and pushing forward with other eco-friendly initiatives such as recycling activities and reducing resource usage.

In product development, we launched development with biomass levels over 50% among other efforts to shift toward plant-based raw materials as we chart a course away from fossil fuel-based products.

In our recycling efforts, our activities in the field of material recycling have been ongoing for many years. We are striving to establish chemical recycling technologies with even higher recycling rates, choosing the necessary equipment and considering the reaction and equipment conditions for each different material.

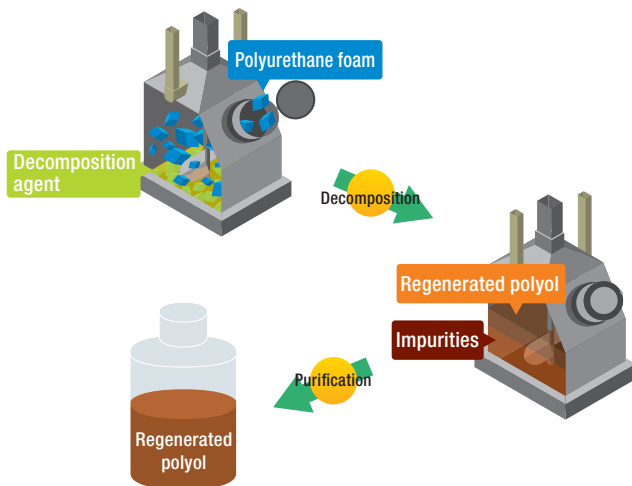


Illustration of the polyurethane foam chemical recycling process

Intellectual property strategy

As an initiative to acquire patents in product development, we have set a goal of 300 patent applications per year. In the development of our flagship products, we are also working to bolster our competitiveness by owning a concentration of multiple patents for each individual product.

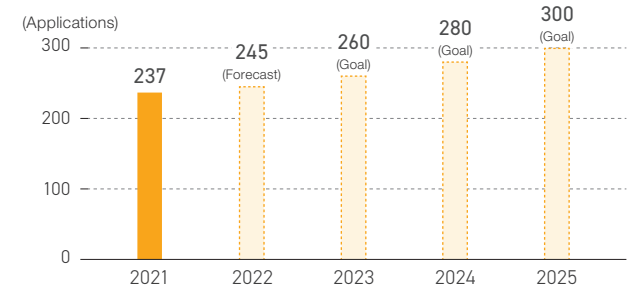
Overseas, we are expanding the presence of our R&D sections globally to address needs that must be met quickly. We are also establishing a support organization in parallel with this expansion in order to facilitate smooth local patent applications.

Bolstering development capability through industry-academia collaboration

We engage in joint development with universities and other institutions, primarily in medium- to long-term basic development. Taking on new perspectives and mechanisms in more specialized fields of research enables us to bolster our development capability. To manage progress, we hold internal briefing sessions twice per year to verify the progress and direction of our research. Through participation in academic presentations, we are able to further enhance our cutting-edge technologies while at the same time sharing our research findings with society.

One example of our industry-academia collaboration is “flexible aerogel” high performance thermal insulator, a product of joint development efforts with the Research Institute for Chemical Process Technology at the National Institute of Advanced Industrial Science and Technology (AIST). In light of world trends such as carbon neutrality and the SDGs in addition to Japan’s Top Runner Program, demand for energy saving is increasing and superior high performance thermal insulators are attracting greater attention. Rigid polyurethane foam and vacuum thermal insulator are well-known conventional thermal insulators, but they both have issues with molding processability since they are hard materials. We engaged in this joint research

Patent applications per year



in order to solve that problem. Devising a compound of silica aerogel and fine cell foam, we successfully developed a high-performance thermal insulator with superior properties in terms of thermal insulation, processability, and aging performance.

Development of flexible aerogel high performance thermal insulator



Quality improvement efforts

FY 2022 Quality Policy

1. Practice thorough quality compliance

- (1) Observing laws (official accreditations & certifications)
- (2) Quality assurance that meets clients' requirements

2. Receive quality awards from clients

3. Improve our quality globally

- (1) Develop local human resources to facilitate global business expansion
- (2) Build an INOAC global standard quality system
- (3) Improve quality by conducting quality assurance audits of overseas business entities

* Audit production sites based on an INOAC global standard quality system

4. More robust quality risk management for new and critical quality products

- (1) Conduct thorough quality audits for new products and ensure quality at production launch
- (2) Thoroughly audit critical quality products (including officially accredited & certified products)

5. Prevent critical quality problems in advance by thoroughly managing implemented changes

- (1) Thoroughly manage changes in production processes resulting from changes to materials or compositions

6. Utilize IoT to streamline, reduce labor, increase precision, and reduce workforce in quality-related work

- (1) Increase reliability by automating test work

7. Increase the reliability of products and production processes by building measurement control systems

Basic approach

We strive to create satisfactory quality for all of our customers by thoroughly ensuring quality compliance based on our Quality Policy and strengthening our quality risk management. We have implemented a comprehensive management system based on ISO 9001 to guarantee the quality of products that can be used safely with confidence, and to provide products and services that deliver satisfaction. We are also engaged in efforts to improve quality by collaborating with our customers.

Specific efforts

Auditing observance of official accreditations & certifications

Our products which have received official accreditations or certifications are registered in the Global Quality Assurance Division which is in charge of our management system for quality. We verify whether there are any discrepancies between what is written in the applications and the corresponding products, production processes, and related specifications. We also periodically inspect whether there are any discrepancies between the registered information and the actual products, production processes, and related specifications.

Biomass Mark certification

CoolEco hard cold storage agent made with biomass plastic



Product component audit for critical quality

We guide audits of critical quality components at our production sites in Japan and abroad to prevent any serious quality issues in advance that could threaten the loss of social trust.

Quality audit of new products

For products created using new technologies, new materials, new processes or for new usage applications, we strive to prevent serious quality issues in advance through audits by staff members including our president to determine whether they are ready for market launch.

Audit members

President, Global Technology Development Division, Global Quality Assurance Division, persons in charge of technology, quality assurance, and sales in the applicable departments

Audit areas

Material quality, product characteristics, product performance, structure, exterior, comparison with similar products, product safety, production safety, quality risks

Managing new materials changes

For materials changes with high risk of serious quality issues, we build frameworks in which the Global Technology Development Division and the persons in charge of technology and quality assurance at the departments in charge deliberate over the changes, and approval is given by the Global Quality Assurance Division. We are enhancing our quality risk management by making our management systems even stronger.

QC group activities

We have been carrying out QC (quality control) group activities for small groups to voluntarily gather on the topic of quality improvement since around 1965. These activities have since expanded worldwide. Starting in fiscal 1985, INOAC has held the World QC & Improvement Competition on a global scale in order to share quality control activities taking place throughout the group of companies.

Many of our locations still conducted QC group activities in fiscal 2021 even as the problems surrounding the COVID-19 pandemic continued. We spread the message about what these activities have achieved by selecting some particularly outstanding examples of such activities and recording a video about them. This video featuring eight case examples in Japan and eight overseas was recorded in three languages and was streamed worldwide.