

**TECH OFFER**

## Novel Thermoplastic Materials for New Application Development



### KEY INFORMATION

TECHNOLOGY CATEGORY:

Chemicals - Polymers

Chemicals - Additives

Chemicals - Organic

Materials - Plastics & Elastomers

TECHNOLOGY READINESS LEVEL (TRL): **TRL9**

COUNTRY: **JAPAN**

ID NUMBER: **TO175108**

### OVERVIEW

The technology on offer are high value-added plastic materials that exhibits unique properties such as excellent sliding properties, anti-abrasion properties, releasability, anti-fouling properties and gas permeability or gas and moisture barrier properties respectively. With superior these properties, these materials are suitable for use in the development of different applications across manufacturing and healthcare sectors.

Additionally, these materials have potential as alternatives to fluoropolymers such as polytetrafluoroethylene (PTFE). PTFE, widely used in many cases due to many valuable properties, has faced stricter regulations in Europe, particularly regarding perfluorooctanoic acid and substitute substances used in its manufacturing. This has driven the need for alternative materials.

The technology owner has successfully demonstrated the use of these materials for automotive and consumer products and is

interested to work with partners from other sectors such as food, healthcare, electronics, and construction on joint R&D projects to create novel applications.

## TECHNOLOGY FEATURES & SPECIFICATIONS

Main technical features of these high-value added thermoplastic materials are follows:

- Superior sliding and anti-abrasion properties compared to engineering plastics such as nylon and polybutylene terephthalate e.g., for sliding parts
- Excellent releasability and anti-fouling properties due to very low surface tension e.g., used for microwavable food containers
- Excellent gas permeability e.g., hollow fibers in gas separation membranes
- Exhibits excellent gas and moisture barrier properties e.g., used in medical packaging

## POTENTIAL APPLICATIONS

Potential applications of these thermoplastics include:

- Robot parts, toys, sporting goods, fishing goods, food preparation machine parts (plastics with superior sliding and anti-abrasion properties)
- Micro fluid chips, cosmetic/food preparation machine parts (plastics with excellent releasability and anti-fouling properties)
- Gas permeable membranes (plastics with excellent gas permeability)
- Micro fluid chips and medical packaging (plastics with gas and moisture barrier properties)

## UNIQUE VALUE PROPOSITION

- For materials with superior sliding and anti-abrasion properties: long product life, noise reduction, tactile sense, safe and efficient alternatives to PTFE
- For materials with excellent releasability and anti-fouling properties: ease of cleaning, efficient use of food, cosmetics and chemical products
- For materials with excellent gas permeability: efficient use of gas (e.g., oxygen gas)
- For materials with gas and moisture barrier properties: maintains the quality of products inside packaging or containers