

# Custom Synthesis

From milligram-scale to ton-scale



# Why TCI?

1

## Technologies

We will help you find the best solution with over 60 years of solid experience in organic synthesis.

- Oligosaccharide Synthesis
- Ultra Low Temperature Reaction
- Halogenation Including Fluorination
- Sublimation Purification
- High-pressure Reaction
- Asymmetric Synthesis
- Fermentation

2

## Intermediates

TCI's wide variety of synthetic intermediates provides flexibility to design the most efficient synthetic route.

3

## Facilities

We consistently handle multiple-step reactions and processes, using a wide variety of in-house equipment and facilities.

-TCI has more than one hundred types of manufacturing equipment availability at its disposal, equating to over three hundred individual pieces of apparatus.

# TCI offers

## Custom Synthesis

Custom synthesis is available upon request. If you can't find a compound in our catalog, please do not hesitate to contact us.

Product areas

- Organic Intermediates
- Functional Materials
- Premix of Drug Medicines and Intermediates, Investigational New Drugs (TCI complies with cGMP)
- Electronic Materials (Low Metal Concentration)
- Oligosaccharides
- Raw Materials for Cosmetics

Quantities

- Milligram ~ Ton scale
- Continuous production

## Scaling Up

Many compounds in our catalog are also available in larger quantities.

Strict confidentiality is assured for all projects. If an official agreement is required, we can prepare one upon request.

# Manufacturing Facilities

Fukaya Factory granted ISO 9001:2000 Certificate (JQA-QM8374) and IQNet Certificate (JP-JQA-QM8374), and ISO 14001:2004 Certificate (JQA-EM5386) and IQNet Certificate (JP-JQA-EM5386)

## Reaction Equipment



Reactor: 8000 L Glass-lined

### ● Main Reaction Equipment

Reactors: 100 L to 8000 L / Glass-Lined, Stainless Steel  
 Ultra Low Temperature Reactors (-80 °C): 200 L Hastelloy  
 Autoclaves: 1 L to 2000 L / Hastelloy, Glass-Lined, Stainless Steel / 20 kg/cm<sup>2</sup> to 200 kg/cm<sup>2</sup> / 150 °C to 300 °C

### ● Special Reaction Equipment

Continuous Hydrogenation Equipment  
 Electrolysis Equipment  
 Pipe-Reactor



Autoclaves: 100 L to 500 L  
 Glass-Lined, Stainless Steel



Fermentation Tanks:  
 2000 L Stainless Steel

## Processing Equipment



Filter Dryer: 450 L Hastelloy

### ● Main Filters

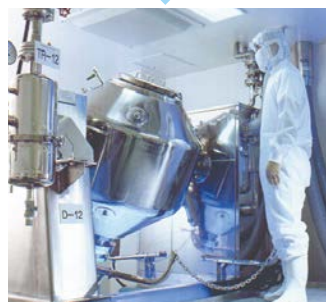
Centrifuges:  
 12-inch to 48-inch / Aflon, Gum, Stainless Steel  
 Sharples Ultra Centrifuge  
 Pressure Filters:  
 0.28 m<sup>2</sup> to 3.15 m<sup>2</sup> /  
 Hastelloy, Polypropylene,  
 Glass-Lined, Stainless Steel



Sulzer-packed Rectification Towers:  
 1000 L Stainless Steel 24 plates,  
 2000 L Stainless Steel 36 plates

### ● Main Distillation Equipment & Main Concentrators

Single Distillation Equipment:  
 up to 1000 L / Pyrex Glass,  
 Glass-Lined, Stainless Steel  
 Rectification Towers:  
 up to 2000 L / Pyrex Glass,  
 Stainless Steel / up to 45 plates  
 Centrifugal Molecular Distillation  
 Equipment  
 Centrifugal-Flow Thin-Film  
 Vacuum Evaporator



Conical Dryers

### ● Main Dryers

Rotary Vacuum Dryers:  
 up to 600 L / Glass-Lined,  
 Stainless Steel  
 Conical Dryers:  
 up to 3000 L / Glass-Lined,  
 Stainless Steel  
 Freeze Dryers:  
 up to 20 L / Stainless Steel  
 Drum Dryers:  
 2 m<sup>2</sup> / Stainless Steel



Centrifugal-Flow Thin-Film Vacuum Evaporator

## Quality Control (Quality Test and Quality Maintenance)

High quality products through well-documented methods and procedures

### Analytical Equipment

- ICP-MS    ● GC-MS    ● LC-MS
- ICP-AES    ● TOF-MS    ● NMR
- UPLC-CAD



ICP-MS



NMR

### Clean Room

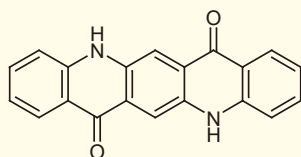


## Sublimation Purification

We offer sublimation purification for both ready-made and customized compounds. Please feel free to contact us.

### Benefits of TCI

- Fully integrated custom synthesis service
- An extensive range of unique sublimation apparatus
  - capable of purifying various compounds by sublimation
  - scalable from milligrams to kilograms
- Ability to analyze residual metals
- Low-moisture and/or low-oxygen packaging options



Comparison between colors of quinacridone before and after sublimation purification

## How to Order Custom Synthesis

### We are ready to cater to your needs. Please contact us!

- Production of bespoke compounds
- Scale-up production of existing materials
- Small-scale synthesis for initial screening
- Continuous multi-ton scale production

Please, feel free to ask any inquiry at the below address.

### Pledge of Confidentiality

TCI is always committed to our confidentiality policy, however, we will also be pleased to sign any non-disclosure or confidentiality agreement if you wish.

### Technical Information

Provided that your synthetic route can be disclosed, we will estimate a total cost based on the disclosed technical information. When additional information or analytical testing is required, we will discuss this with you before adding any extra work to the quotation.

### Quotation

### Customer Acceptance and Commitment of Manufacture

#### Ordering and Customer Service

#### TCI AMERICA

Tel : 800-423-8616 / 503-283-1681  
Fax : 888-520-1075 / 503-283-1987  
E-mail : Sales-US@TCIchemicals.com

#### TCI EUROPE N.V.

Tel : +32 (0)3 735 07 00  
Fax : +32 (0)3 735 07 01  
E-mail : Sales-EU@TCIchemicals.com

#### TCI Deutschland GmbH

Tel : +49 (0)6196 64053-00  
Fax : +49 (0)6196 64053-01  
E-mail : Sales-DE@TCIchemicals.com

#### Tokyo Chemical Industry UK Ltd.

Tel : +44 (0)1865 784560  
Fax : +44 (0)1865 784561  
E-mail : Sales-UK@TCIchemicals.com

#### TCI Chemicals (India) Pvt. Ltd.

Tel : 1800 425 7889 / 044-2262 0909  
Fax : 044-2262 8902  
E-mail : Sales-IN@TCIchemicals.com

#### 梯希爱(上海)化成工业发展有限公司

Tel : 800-988-0390 / 021-67121386  
Fax : 021-6712-1385  
E-mail : Sales-CN@TCIchemicals.com

#### TOKYO CHEMICAL INDUSTRY CO., LTD.

Tel : +81 (0)3-5640-8878  
Fax : +81 (0)3-5640-8902  
E-mail : globalbusiness@TCIchemicals.com

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