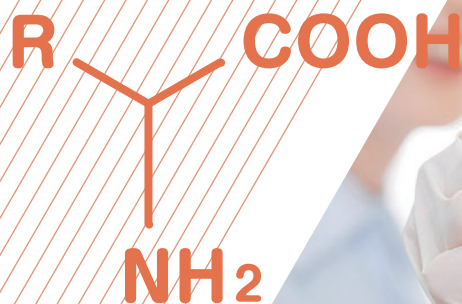




NIPPON RIKA

Lead The Future of Amino Acids  
We support people's lives with the potential of amino acids.



Nippon Rika Co., Ltd.

At Nippon Rika Co., Ltd.,  
we are passionate about developing products and services  
that drive innovation and sustainability.





# Production System

## Our Strengths

### Integrated Production System

**Raw Material Procurement** > **Manufacturing** > **Testing** > **Shipping** > **Quality Assurance**

Established

**1939**

Global  
Support



**Amino  
Acids  
&  
Derivatives**

Electrolysis  
Technology



High-Purity  
Purification



Jet Mill  
Grinding



## Plant Specifications

**33,000m<sup>2</sup>**

Plant Area

**+ Explosion-Proof  
GMP Plant**

**82,000 L**

Total Reactor Capacity

**71**

Ashikaga Plant Staff

**400m<sup>3</sup>/day**

Wastewater Treatment

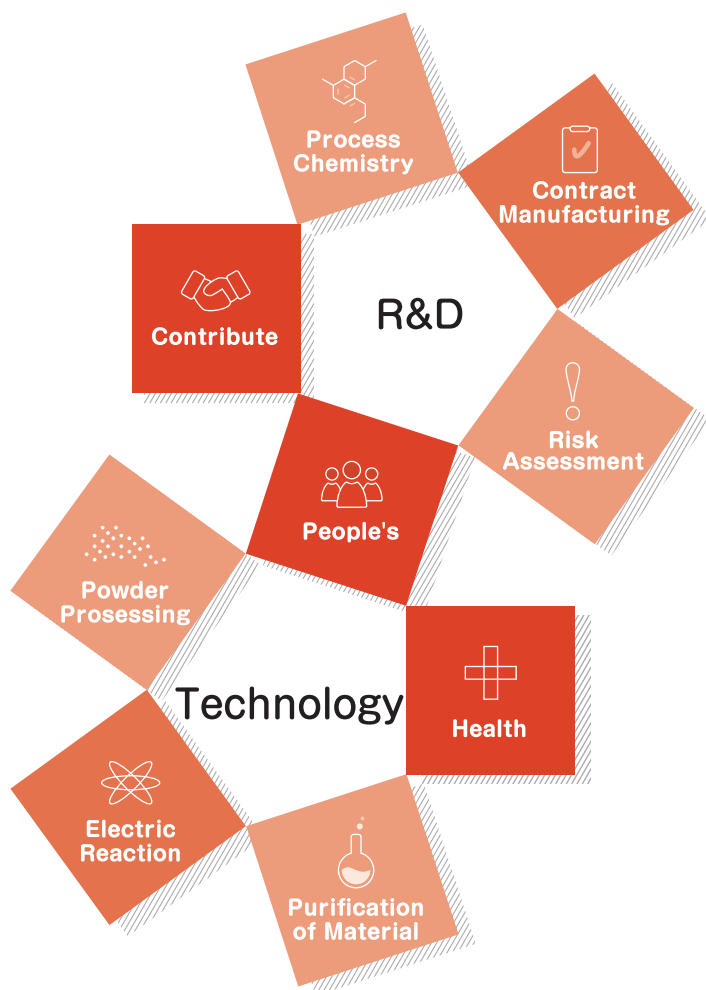
## Global Compliance



### National Drug Regulatory Authorities and Certification Bodies

- PMDA (Pharmaceuticals and Medical Devices Agency, Japan)
- FDA (U.S. Food and Drug Administration)
- NMPA (China National Medical Products Administration)
- EDQM (European Directorate for Drug Quality)

## R&D Mission and Facts



20~30

Process Steps /Year

30~60

Analytical Methods /Year

5

Safety Risk Assessment /Year

Through our innovative R&D approach,  
we bring the best science to our customers.

## R&D Facilities and Equipment



### Process Chemistry Lab

- 0.01-10L Glass Reactor
- 100g Scale Electrolysis Apparatus
- Two Vacuum Shelf Dryers
- Up to 2L/Up to 5L Rotary Evaporators
- 0.1L Pressure Filter
- Up to 0.1L Organic Synthesis Apparatus
- Two Small Centrifuges (for Crystal Separation)

### Kilo Lab

- 50L GL Reactor
- Φ330mm Magnetic Nutsche
- 100L GL Reactor
- 10L/20L Glass Filter Bottles
- Kilogram-Scale Prototype Electrolysis Apparatus

### Physical and Chemical Testing

- Particle Size Distribution Analyzer
- FT-IR
- Karl Fischer Moisture Analyzer
- TOC Analyzer
- GC (Headspace Sampler)
- UV-VIS Spectrophotometer
- Whiteness Analyzer
- Amino Acid Analyzer
- HPLC
- LC-MS
- Atomic Absorption Spectrophotometer
- Automatic Titrator
- Ion Meter
- Kjeldahl Distillation Apparatus
- Automatic Melting Point Apparatus

### Microbiological Testing

- Autoclave
- Safety Cabinet
- Dry Heat Sterilizer
- Microplate Reader
- Clean Bench
- Toxinometer

### Others

- Stability Tester



## Jet Mill Grinders



High-speed jet airflow causes crystals to collide and pulverize.

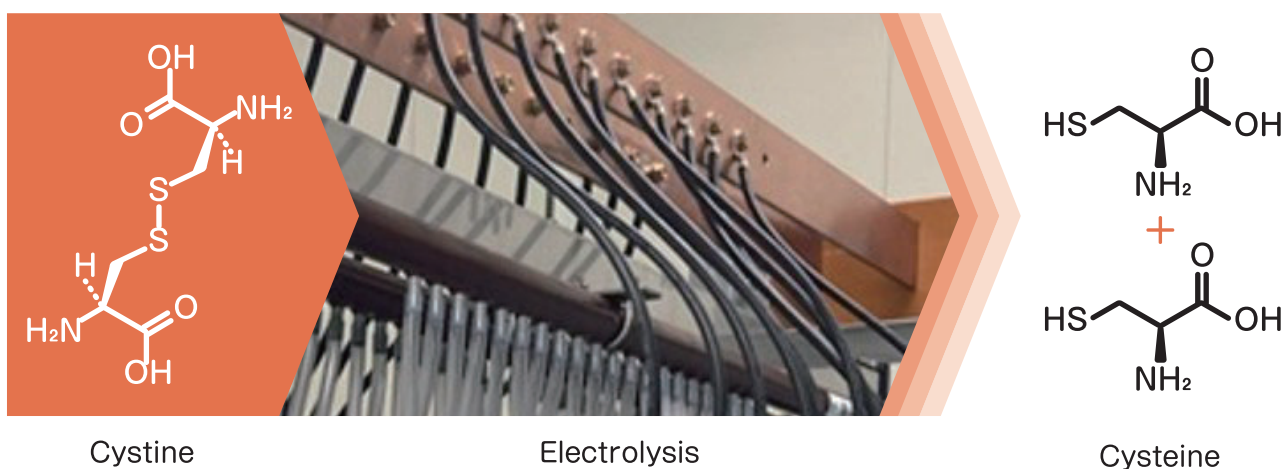
Since the temperature rise is minimal, it is also suitable for pulverizing heat-sensitive materials.



## Electrolyzer



We have the technology to convert cystine to cysteine through electrolysis.



# Pilot Plant

11

Reactors  
in Total

5400L Capacity

10

Glass-Lined  
Reactors

(50 to 600L)

1

Stainless Steel  
Reactor

(500L)

2

Filter Dryers

(400L)

1

Electrolyzer

1

Vacuum Distillation  
Apparatus

(100L, 100Pa)

# Commercial Production Capacity

 SUS Reactor  GL Reactor

15

500 to 1000L



6

1000 to 2000L



11

2000 to 3000L



8

3000 to 4000L



1

4000 to 5000L



3

5000L or more



# Core Technology

## Amino Acids

(especially cysteine and tyrosine)

### Amino Group

Acetylation, Formylation,  
Cbz Derivatization, Boc Derivatization

### Carboxyl Group

Esterification (methyl, ethyl, etc.),  
Reduction (alcohol conversion)

### Side Chain

Alkylation, Methylcarboxylation, Amidation

### Others

Racemization  
Electrolytic reduction (cystine to cysteine)  
Electrolytic desalination (hydrochloride-free)  
High-purity purification  
(increased content, trace metal removal)

## Others

(Reactions)  
Esterification, amidation, acylation, sulfonation,  
NaBH<sub>4</sub> reduction, acid chloride formation  
(Techniques)  
Crystallization, distillation, and air-flow pulverization (microparticulation)





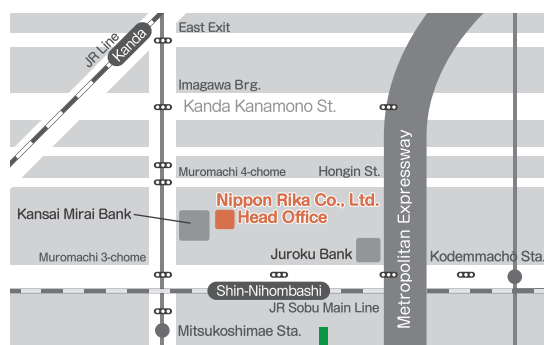
NIPPON RIKA CO., LTD.



[www.nipponrika.co.jp/en/](http://www.nipponrika.co.jp/en/)



## Head Office



4-2-2, Nihonbashi-honcho,  
Chuo-ku, Tokyo 103-0023

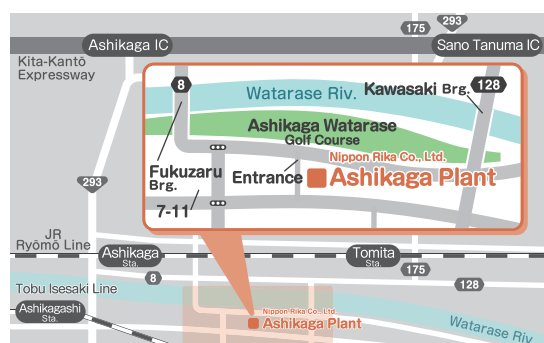
### Sales Department

TEL: 03-3241-3557 FAX: 03-3242-3345

### General Affairs & Human Resources Group

TEL: 03-3241-3682 FAX: 03-3241-5774

## Ashikaga Plant



610, Yanada-cho,  
Ashikaga City, Tochigi Prefecture 326-0321

### ISO 14001 Certified Plant

### Registered Business Location

Nippon Rika Co., Ltd. Ashikaga Plant

## Registered Scope

Manufacture of amino acids (pharmaceuticals, quasi-drugs, food additives, cosmetics, etc.) and chemical products  
Contract manufacturing of amino acid derivatives, peptides, pharmaceutical intermediates, and investigational new drugs