

**Planetary centrifugal mixers  
contribute to society**



**Planetary centrifugal mixers / Syringe chargers**

**THINKY MIXER**

For requests concerning demonstrations  
and evaluation testing, please contact  
THINKY CORPORATION

Email : [info@thinkymixer.net](mailto:info@thinkymixer.net)

or the sales agent below

For the latest information about products  
and exhibitions, visit:

<http://www.thinkymixer.net>

Sales agent

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# Planetary Centrifugal System: Bringing Innovation to Technology of Mixing, Defoaming, Filling, Pulverizing, Deagglomerating and Dispersing



*Prototype of a planetary centrifugal system mixer*

*In 1987*

## THINKY MIXER: A key player in the industrial field

- Next-generation energy technology (fuel cells, solar cells, secondary cells)
- Car electronics
- Next-generation energy saving technology (FPD, LED, OLED)
- Communications technology
- Printed electronics, nano printing applications
- Aerospace industry
- Semiconductor industry
- Sensor technology, robotics
- Chemical products
- Dental engineering, bioengineering, bio-related technology
- Drug development, pharmaceuticals, reagents
- Food products
- Testing and analysis techniques etc.

## THINKY MIXER: Purpose and material examples

### [Mixing + Defoaming]

- Two-part resin materials (epoxy, silicone, urethane)
- UV ink
- Foundations, lipsticks, lotions

### [Dispersion + Defoam]

- Functional adhesives
- Insulating pastes
- Metal pastes (gold, silver, platinum)
- Glass pastes
- Ceramic pastes
- LCD sealants + spacers
- Fluorescent materials
- Pharmaceuticals, cosmetics
- Production

### [Deagglomeration + Defoam]

- Inorganic nanomaterials
- Metallic nanomaterials (Titanium oxide/aluminum oxide)
- Carbon nanomaterials (Carbon black etc.)

### [Emulsification]

- Food products
- Cosmetics
- Inks
- Peptide vaccine

### [Antifoaming]

- Quality inspection of medical fluids
- Dispensing, formulation

### [Pulverizing / Dispersion + Defoam]

- Water-insoluble compounds (preparation of suspensions, e.g. phenitoin, indomethacin, nifedipine)

### [Pulverizing]

- Aluminum oxide\*
- Titanium oxide\*
- Glass\*
- Carbon black\*

\*Pulverization is achieved with THINKY Nano Pulverizer.

## THINKY MIXER planetary centrifugal mixer used in the world

- |                 |                    |               |                 |                  |                     |
|-----------------|--------------------|---------------|-----------------|------------------|---------------------|
| 1. USA          | 11. France         | 21. Bulgaria  | 31. Taiwan      | 41. New Zealand  | 51. South Africa    |
| 2. Canada       | 12. Italy          | 22. Norway    | 32. Korea       | 42. India        | 52. Morocco         |
| 3. Brazil       | 13. Czech Republic | 23. Finland   | 33. Mongolia    | 43. Sri Lanka    | 53. Egypt           |
| 4. England      | 14. Slovakia       | 24. Sweden    | 34. Singapore   | 44. Kazakhstan   | 54. Japan           |
| 5. Ireland      | 15. Spain          | 25. Denmark   | 35. Malaysia    | 45. Uzbekistan   | and other countries |
| 6. Belgium      | 16. Portugal       | 26. Russia    | 36. Thailand    | 46. Saudi Arabia |                     |
| 7. Netherlands  | 17. Croatia        | 27. Lithuania | 37. Indonesia   | 47. UAE          |                     |
| 8. Germany      | 18. Poland         | 28. Latvia    | 38. Vietnam     | 48. Qatar        |                     |
| 9. Austria      | 19. Hungary        | 29. Estonia   | 39. Philippines | 49. Israel       |                     |
| 10. Switzerland | 20. Romania        | 30. China     | 40. Australia   | 50. Turkey       | no particular order |

## Quality and reliability supported by customers

### Tsutomu Miyasaka

Professor, Doctor of Engineering, Toin University of Yokohama



*Without THINKY MIXER, the required time would be ten times or longer and costs would increase.*

### Hidehiro Kamiya

Professor, Doctor of Engineering, Institute of Engineering, Tokyo University of Agriculture and Technology



*The mixer is effective in preparing a stable suspension and mixture.*

### Hirobumi Ushijima

National Institute of Advanced Industrial Science and Technology



*THINKY Vacuum Mixer is essential for printed electronics that require highly precise resin printing plates.*

### Chiaki Sato

Associate Professor, Doctor of Engineering, Tokyo Institute of Technology



*THINKY products are essential in the study of adhesion.*

# "7 features" and "3 foundations" to bring innovative development and production of cutting-edge materials

## 7 features

- Feature 1 Simultaneous process of uniform mixing, dispersing, and defoaming
- Feature 2 From low to high viscosity
- Feature 3 No change in material characteristics
- Feature 4 Easy operation and definite reproducibility
- Feature 5 Non-contact, intra-container mixing for a significant improvement in efficiency
- Feature 6 Compatible with commercially available containers
- Feature 7 Numerous applications

## 3 foundations

- Foundation 1 Over 20 years as a pioneer in the industry
- Foundation 2 Outstanding reliability represented by the highest record of adoptions in the world
- Foundation 3 Thorough technical support before implementation

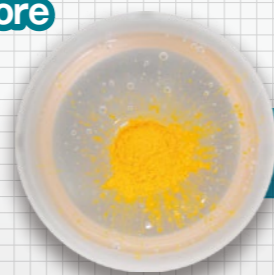


### Simple Operation



Material mixed and defoamed in a THINKY MIXER or a solder paste mixer can be filled by the syringe charger.

Before



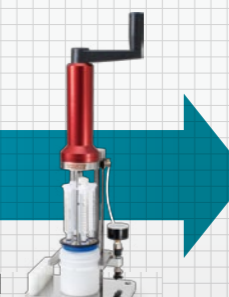
ARE-310



After



ARC-40H



# Principle of "Planetary Centrifugal System"

## Mechanism of planetary centrifugal system

Set the container with materials into the cup holder which is angled at 45 degrees to the revolution axis.

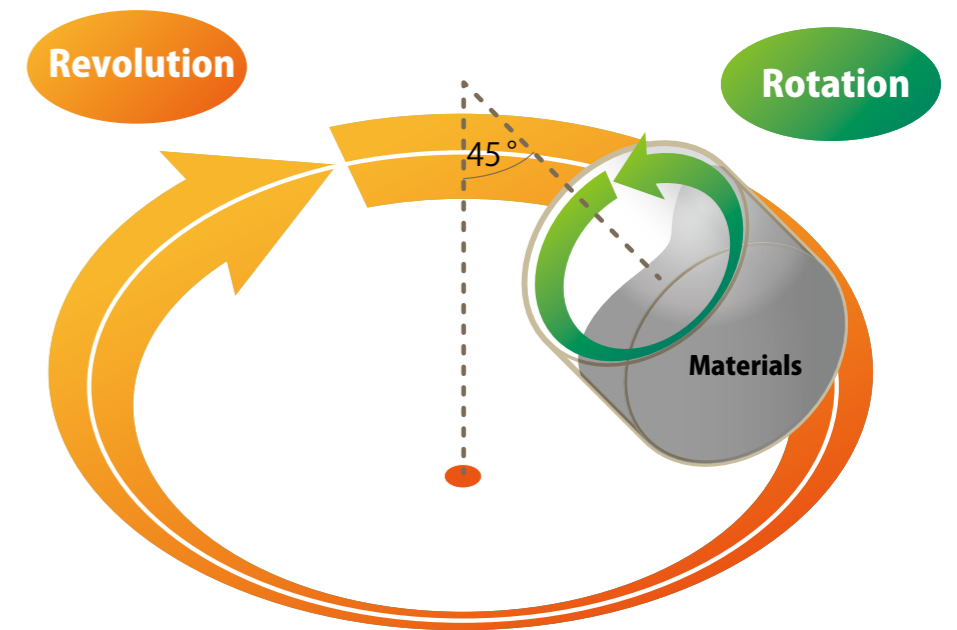
Revolution

Power to accelerate defoaming

Rotation

Power to accelerate mixing

The interaction between rotation and revolution generates a spiral flow and rising and falling currents. Air bubbles within the material are efficiently pushed out to the surface, enabling mixing and dispersion without generating air bubbles.



## Vertical convection demonstrated by oil-based clay

Start



Two layers of high viscosity oil-based clay.



After 7 minutes



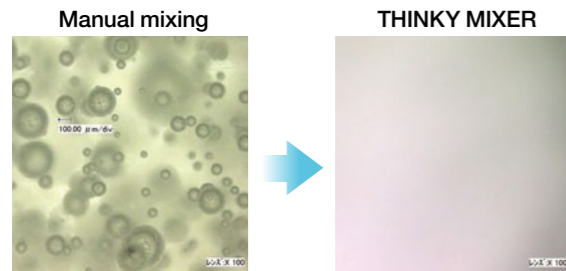
In just 7 minutes, uniform mixing is completed. No air bubbles are found.

# Material Processing

## Examples of material processing

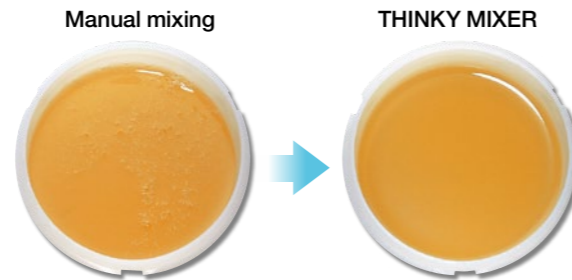
### Mixing and defoaming of resin + resin

#### 2-part epoxy resin



No bubbles. Uniformly mixed.

#### Polyimide

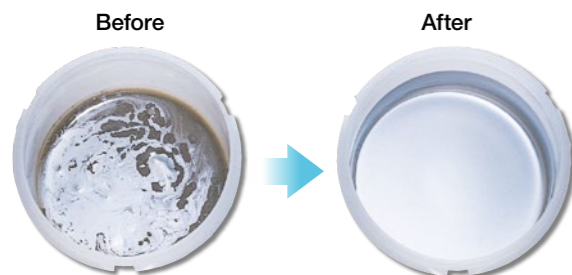


No bubbles. Uniformly mixed.

### Mixing and defoaming of resin + powder

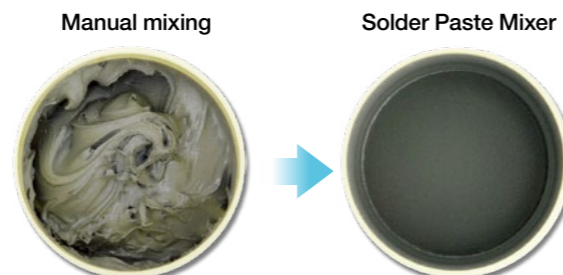
Uniform dispersion can be achieved without sedimentation.

#### Silver Paste



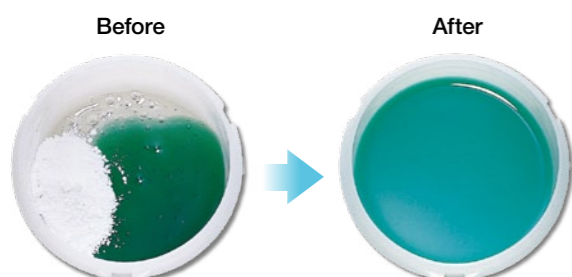
Silver particles are uniformly dispersed throughout the resin base, giving a smooth surface with no air bubbles.

#### Solder Paste (solder powder and flux)



Smooth surface. No bubbles.

#### Epoxy Resin (base + hardener) and alumina powder



2-part resin and white alumina powder are uniformly mixed to a solid green color.

#### Silicone Resin and Calcium Carbonate (volume ratio 1:5)



No lumps. Uniformly mixed.

### Mixing and defoaming of pastes

High viscosity materials that are difficult to mix manually can be easily processed.

#### Cosmetic Foundation (wax and three types of iron oxides)

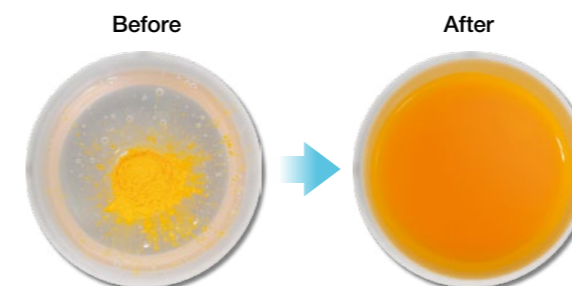


Four types of materials are uniformly mixed to a smooth cream consistency. Air bubbles are eliminated, giving vibrant color and a smooth feel.

### Resin + high specific gravity powder

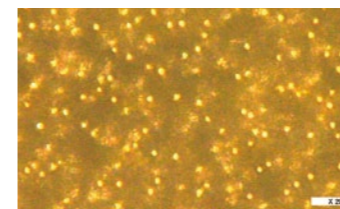
Materials with different specific gravity are dispersed without sedimentation.

#### Low Viscosity Silicone Resin and Silicate Fluorescent Material



The fluorescent material is uniformly dispersed without sedimentation in low viscosity silicone resin (about 3 Pa s (3,000 cP)).

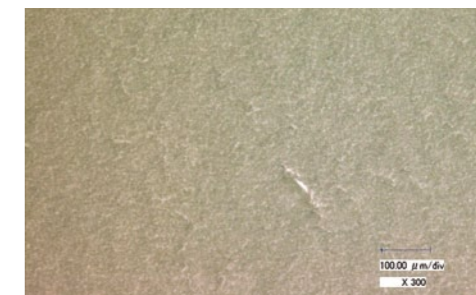
#### Au Ball



■ ARV-3000TWIN Dispersion of Au powders (3µm) and LCD sealant (400 Pa s)

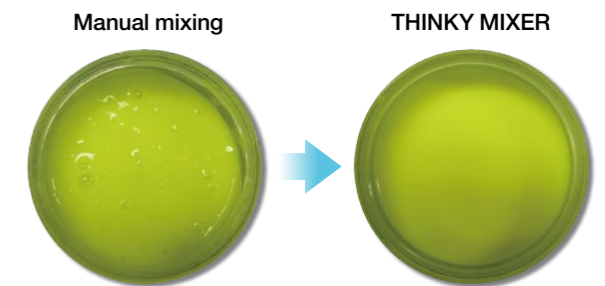
### Low viscosity liquid + powder (Slurry)

#### Nano Ceramics and Water 70 V%

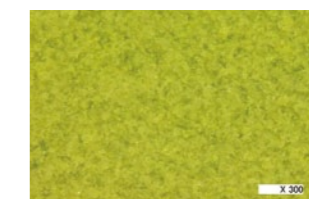


■ ARE-310 Dispersion of ceramic powders

#### Sealant for White LED (silicone resin and fluorescent material)



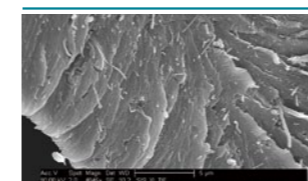
The fluorescent material with high specific gravity is uniformly dispersed without sedimentation in low viscosity silicone.



■ ARV-310LED Dispersion of orthosilicate fluorescent material (phosphor with about 15 µm particle diameter) and low viscosity silicone resin (3 Pa s) for LED

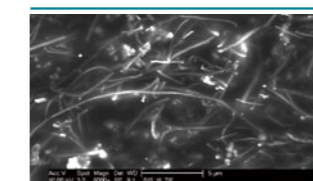
### Processing nano materials

#### CNF 5 V%



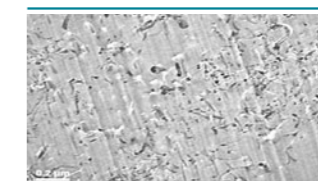
■ ARE-310 Carbon nano fiber is uniformly dispersed in epoxy. SEM photo by George Hansen, Metal Matrix Composites Company

#### CNF 10 V%



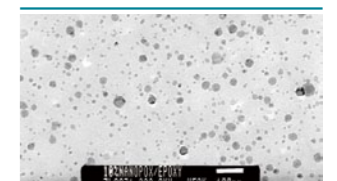
■ ARE-310 Carbon nano fiber is uniformly dispersed in polymer. SEM photo by George Hansen, Metal Matrix Composites Company

#### MWNT



■ ARE-310 MWNT is uniformly dispersed in 2-part thermosetting resin. SEM photo by Dr. J.H. K.oo University of Texas at Austin

#### Nano-silica



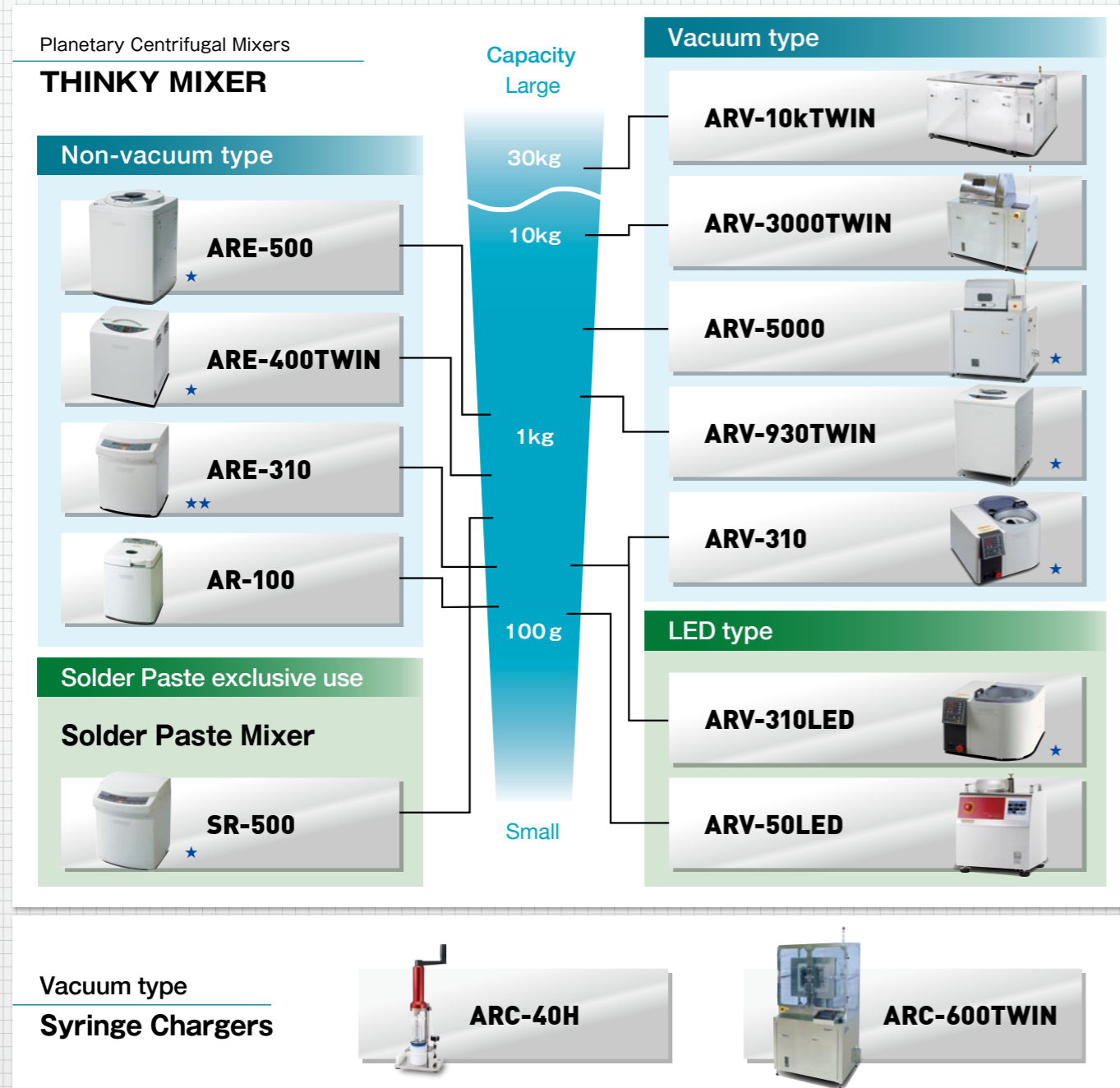
■ ARE-310 Nano-silica is uniformly dispersed in epoxy resin. SEM photo by Dr. J.H. K.oo University of Texas at Austin

# THINKY MIXER

## Large selection of products meets customer needs

The planetary centrifugal **THINKY MIXER** is divided into two groups: "non-vacuum type" that provides simultaneous process of mixing, dispersing and deaerating/defoaming under atmospheric pressure; and "vacuum type" that provides submicron level defoaming with a vacuum function. Each type provides product scale up from small to large models for laboratory use and products that support mass production lines.

Also, there are **Solder Paste Mixer** and LED type for high specific gravity powders, such as LED phosphor. The vacuum **Syringe Charger** can easily feed materials with high viscosity and high thixotropy processed by THINKY MIXER or Solder Paste Mixer into syringes. Select the best model for your purpose, application or materials.



## THINKY MIXER Non-vacuum type

# ARE-310 / ARE-250 CE

### User-friendly & highly versatile standard type

- Over 400 G of acceleration generated by rotation and revolution speed allows powerful simultaneous mixing and defoaming
- A powerful 510 G in defoaming mode
- Outstanding rigidity and durability; vibration sensor and door locking function secure a high degree of safety
- Lightweight, compact body with maximum capacity of 310 g
- Optimal mixing for any material can be achieved by adjusting RPM
- 10 memories (STD x 5, STP x 5) can be set for operation
- Each memory can process up to 5 steps for continuous operation (STP mode)
- Equipped with an original air cooling mechanism
- Different types of containers can be utilized with THINKY adapters

<b>Unit Dimensions</b>	H390 × W300 × D340 (mm)
<b>Unit Weight</b>	Approx. 21 kg



ARE-310

**310g**  
Maximum capacity

**300ml resin container**  
Standard container



ARE-250 CE

CE CE-certified model  
Product name: ARE-250 CE

Optional **ENS-10**  
Heat discharger table dedicated for planetary centrifugal mixers  
Cooling system for THINKY MIXER

## AR-100



**140g**  
Maximum capacity

**100ml disposable container**  
Standard container

### Our most compact portable planetary centrifugal mixer

- The space saving, compact design is best for fundamental experiments by researchers and engineers
- Have been utilized at universities and laboratories
- Specialized for low volume. Mixing capacity from a few grams
- Optimal mixing for any material can be achieved by adjusting RPM
- 5 memories can be set for timer operation
- Easy to open and close the sliding lid
- Mounted stroboscope allows observation of the material during operation
- Different types of containers can be utilized with THINKY adapters

\*This product is not suitable for continuous operation or frequent use; this is recommended for R&D purposes.

<b>Unit Dimensions</b>	H328 × W250 × D250 (mm)
<b>Unit Weight</b>	Approx. 15 kg

## ARE-400TWIN



**400g x2**  
Maximum capacity

**300ml resin container**  
Standard container

### State of the art twin system that can vary the rotation-revolution ratio

- Independent variable mechanism for rotation and revolution
- Twin system, maximum capacity of 400 g x 2
- Capable of mixing high viscosity material such as viscous grease
- Sensor unit that can detect temperature of materials being mixed in real time (optional)
- Effective in setting memories for materials that are vulnerable to temperature rise
- Can display memory settings, rotations and material temperature in real time (USB Type B standard equipment) by connecting to PC
- Different types of containers can be utilized with THINKY adapters

CE CE-certified model  
Product name: ARE-400TWIN CE

<b>Unit Dimensions</b>	H560 × W460 × D480 (mm)
<b>Unit Weight</b>	Approx. 70 kg

## ARE-500



**1100g**  
Maximum capacity

**650ml resin container**  
Standard container

### Many cases of adoption for production applications

- Successful introduction to production applications
- The high durability drive system was developed for manufacturing production
- Optimal mixing for any material can be achieved by adjusting RPM
- Easy operation with membrane switches
- 10 memories (STDx5, STPx5) can be set for operation
- Different types of containers can be utilized with THINKY adapters

CE CE-certified model  
Product name: ARE-500 CE

<b>Unit Dimensions</b>	H692 × W500 × D500 (mm)
<b>Unit Weight</b>	Approx. 95 kg

# ARV-310

**310g** Maximum capacity  
**300ml** Standard resin container

## Remove submicron level air bubbles without spillage

- Unlike conventional vacuum defoaming devices, the planetary centrifugal system and the vacuuming pressure reduction function prevents spillage during operation and achieves submicron level air bubbles removal and dispersion in a short time
- Optimal mixing for any material can be achieved by adjusting RPM
- 9 memories can be set for timer operation
- 5 steps can be registered in each memory
- Different types of containers can be utilized with THINKY adapters



Unit Dimensions	H450 × W555 × D645 (mm)
Unit Weight	Approx. 90 kg

CE CE-certified model  
 Product name: ARV-310 CE

Explosion protection can be added

# ARV-930TWIN

**930g ×2** Maximum capacity  
**750ml** Standard resin container

## Manufacturing model with two-container system & 1.8 kg (930 g × 2) maximum vacuum processing

- Over 400 G of acceleration generated by rotation and revolution speed allows powerful simultaneous mixing and vacuum defoaming
- Defoaming mode generates powerful acceleration of 670 G at maximum for accurate defoaming of volatile materials
- Maximum capacity 1860 g / Removal of submicron level air bubbles
- Unlike conventional vacuum defoaming devices, the planetary centrifugal system and the vacuuming pressure reduction function prevents spillage during operation and achieves submicron level bubble removal and dispersion in a short time
- Optimal mixing for any material can be achieved by adjusting RPM
- THINKY's original cup holder vacuum system minimizes the vacuum volume and significantly shortens the required time to achieve the set vacuum level and atmosphere releasing
- ARV-930TWIN has the same performance as ARV-310 with greater capacity
- Different types of containers can be utilized with THINKY adapters



Unit Dimensions	H900 × W660 × D670 (mm) (not including handle)
Unit Weight	Approx. 220 kg

CE CE-certified model  
 Product name: ARV-930 TWIN CE

# ARV-5000

## Uniform mixing and removal of submicron level air bubbles for up to 5 kg of materials

- Mass production model of ARE-310 and ARV-310 with maximum capacity of 5 kg
- Unlike conventional vacuum defoaming devices, the planetary centrifugal system and the vacuuming pressure reduction function prevents spillage during operation and achieves submicron level bubble removal and dispersion in a short time
- Optimal mixing for any material can be achieved by adjusting RPM
- Excellent operability with touch panel
- THINKY's original cup holder vacuum system minimizes the vacuum volume and significantly shortens the required time for vacuuming and atmosphere releasing
- Equipped with an original air cooling mechanism
- Various containers can be used
- Different types of containers can be utilized with THINKY adapters

Unit Dimensions	H1650 × W1050 × D925 (mm)
Unit Weight	Approx. 500 kg



**5kg** Maximum capacity  
**4L** Standard resin container

CE CE-certified model  
 Product name: ARV-5000 CE

Explosion protection can be added

# ARV-3000TWIN

## Uniform mixing and removal of submicron level air bubbles for up to 10 kg (5 kg × 2) of materials

- Mass production model of ARE-310 and ARV-310 with maximum capacity of 10 kg
- Unlike conventional vacuum defoaming devices, the planetary centrifugal system and the vacuuming pressure reduction function prevents spillage during operation and achieves submicron level bubble removal and dispersion in a short time
- Optimal parameter settings for materials can be achieved with the variable rotation/revolution ratio mechanism
- Excellent operability with touch panel
- Improved efficiency, e.g. increased process volume, standardized operations, stabilized quality, and reduction of material loss
- THINKY's original cup holder vacuum system minimizes the vacuum volume and significantly shortens the required time for vacuuming and atmosphere releasing
- Capable to operate continuously during mass production with the unique heat dissipating mechanism
- Capable to process ODF sealant defoaming applications and adopt to major ODF sealant processes
- Clean room class 1000
- Different types of containers can be utilized with THINKY adapters

Unit Dimensions	H1600 × W1330 × D1015 (mm)
Unit Weight	Approx. 700 kg



**5kg ×2** Maximum capacity  
**4L** Standard resin container  
**Specially designed SUS container**

Explosion protection can be added

# ARV-10kTWIN

## Mass production model up to 29 kg (14.5 kg × 2) capacity while achieving the performance of laboratory models

- Mass production model of ARE-310 and ARV-310 with maximum capacity of 29 kg
- Unlike conventional vacuum defoaming devices, the planetary centrifugal system and the vacuuming pressure reduction function prevents spillage during operation and achieves submicron level bubble removal and dispersion in a short time
- Removal of submicron level air bubbles
- Excellent operability with touch panel
- THINKY's original cup holder vacuum system minimizes the vacuum volume and significantly shortens the required time for vacuuming and atmosphere releasing
- Capable to process at atmospheric pressure for processing materials with volatile components
- Capable to operate continuously during mass production with the unique heat dissipating mechanism
- Different types of containers can be utilized with THINKY adapters

Unit Dimensions	H1280 × W1900 × D1370 (mm)
Unit Weight	Approx. 1500 kg



**14.5kg ×2** Maximum capacity  
**Specially designed 10L SUS container**

Optional Raku-Raku Hand



Explosion protection can be added

※Raku-Raku Hand is the registered trade mark of AIKOKU ALPHA CORPORATION.

# ARV-310LED

Dispersion of high specific gravity powder such as LED fluorescent substances without sedimentation

- A vacuum pressure reduction function removes submicron air bubbles and gives outstanding dispersion performance
- No spillage of material during operation
- Optimal mixing for any material can be achieved by adjusting RPM
- 9 memories can be set for timer operation
- 5 steps can be registered in each memory

310g Maximum capacity  
300ml resin container Standard container



Unit Dimensions	H450 × W555 × D645 (mm)
Unit Weight	Approx. 90 kg

CE CE-certified model  
Product name: ARV-310LED CE

# ARV-50LED

113g Maximum capacity  
150ml resin container Standard container



Ultracompact vacuum mixer: dispersion of high specific gravity powder without sedimentation

- A small amount of material (50 ml) can be dispersed and defoamed in a short time
- Space-saving vacuum mixer
- Stainless-steel specification
- Excellent operability with touch panel
- Multilingual language (Japanese, English, Chinese and Korean)
- Universal power supply (AC85-265 V)
- Low power consumption (Maximum 150 VA)
- Auto-balance feature

Unit Dimensions	H380 × W300 × D233 (mm)
Unit Weight	Approx. 20 kg

# Solder Paste Mixer SR-500

680g Maximum capacity  
150ml resin container Standard container



Temperature and viscosity adjustment & defoaming in only a few minutes

- Capable to mix with uniformity and defoam in just a few minutes
- 5 steps can be registered in each memory to ensure optimal temperature and viscosity adjustment
- Materials from the refrigerator can be mixed and warmed to room temperature in a short time
- Capable to mix and defoam with commercially available 500 g containers
- Capable to mix and defoam less than 500 g solder paste
- By using an optional adapter, solder paste filled in a syringe can be mixed

CE CE-certified model  
Product name: SR-500 CE

Unit Dimensions	H390 × W300 × D340 (mm)
Unit Weight	Approx. 18 kg

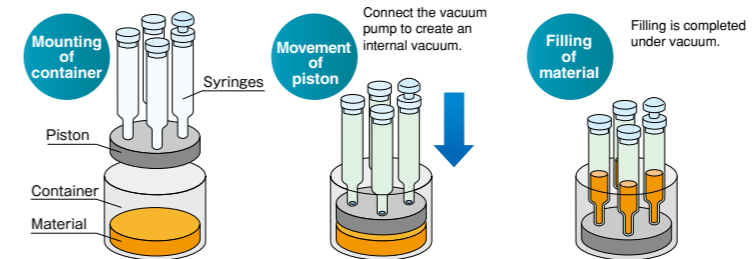
# ARC-40H

Improved filling efficiency for small capacity syringes

- Capable to fill materials into 3, 5, and 10 ml syringes, which are too small to fill manually
- Capable to fill low to high viscous materials
- Up to 4 syringes can be filled at one time
- With THINKY MIXERS, work efficiency from mixing/defoaming to filling is increased
- Capable to operate in both vacuum and atmospheric pressure

Unit Dimensions	H550 × W200 × D140 (mm) (Up to the handle height)
Unit Weight	Approx. 7.5 kg
Max processing volume	10 ml Syringes × 4 * Consult us for 20, 30, and 50 ml syringes. We will provide customization.

Illustration of operation



3~10ml Standard syringe size  
Non-Vacuum Vacuum Pressure  
4 syringes Max number of syringes



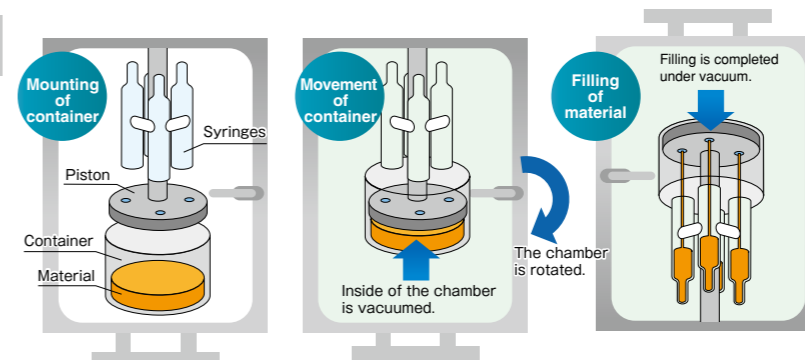
# ARC-600TWIN

Automatic filling control for large capacity syringes

- No air bubbles. No dripping
- Simultaneously filling up to 16 syringes. Supports large capacity syringes
- Reduced filling time. Easy to clean after use
- Few cleaning parts and few consumables
- Excellent capability for filling high viscous materials such as ODF (One Drop Fill) process sealant
- Automated operations: filling process and vacuum pressure are all automated and systematized

Unit Dimensions	H2170 × W1125 × D1045 (mm)
Unit Weight	Approx. 650 kg
Max processing volume	Customizable

Illustration of operation



60ml Standard syringe size  
Vacuum Pressure  
Customizable Max number of syringes



# Introduction Examples

## Users' voice

### THINKY MIXER has been loved by the leading authority in the field of powders



#### Hidehiro Kamiya

Dean, Doctor of engineering  
Graduate School of Bio-Applications & Systems Engineering (BASE)  
Professor, Institute of Engineering,  
Tokyo University of Agriculture and Technology

#### Research overview

When I received my doctorate about thirty years ago, my professor told me that the subjects from now should be nano particles and powder adhesion in high temperatures, and I started to examine those subjects. I began the study of nanotechnology before the Clinton administration advocated the targets of the national strategic research plan in 2001. As for the adhesion of fine particles at high temperatures, it was revealed

that the phenomenon of high-temperature ash adhesion caused technical difficulties in power generation from coal or biomass, and companies have offered joint research projects repeatedly. PM 2.5 has been studied for more than ten years, and I think it is important to initiate an investigation before the boom.

#### Using THINKY MIXER for 20 years

I first heard of the THINKY MIXER 20 years ago. I remember it was soon after MX-201 was introduced to the market, my associate mentioned the product to me. The equipment had excellent capability to knead and defoam a small amount of samples in the laboratory. At the time, it was also used for premixing to prepare ceramic slurry with added trace components and for preparatory surface modification to blend hard-to-wet particles in an organic solvent.

#### The simplicity of THINKY MIXER makes it easy to do trials

Major purposes of recent use are dispersion of fine particles in a solvent to produce polymer composites and preparation of electrode material

slurry for lithium ion batteries. The equipment is also effective in dry premixing of fine particles. The simplicity of THINKY MIXER makes it easy to do trials, so I don't even remember all experiments I've done. The operation is simple and everything works well. Short-time processing is also attractive. The equipment is effective to prepare stable suspension and mixture. Last year, the latest model ARE-310 was purchased to replace MX-201 that had been used for years.

#### Possible application to 3D printers

My recent research is to clarify the mechanism of fine particle dispersion with surface modification and the primary challenge is arbitrary dispersion and aggregation of fine and nano particles. Moreover, I am thinking about development and mechanism explanation of application and molding methods after dispersion and, in particular, applicability to 3D printers using fine ceramic particles.

### Guaranteed by the expert of adhesives – THINKY products are essential



#### Chiaki Sato

Associate Professor, Doctor (Engineering)  
Area of ultimate materials,  
Advanced Materials Division,  
Precision and Intelligence Laboratory  
Tokyo Institute of Technology

#### THINKY MIXER and Syringe Charger are useful for preparation of tensile test specimens of cured adhesives

I study the boundary region between mechanics and chemistry, and the specific research themes are development of lightweight vehicle bodies with the use of CFRP (carbon fiber reinforced plastic

composite), development of removable adhesive containing thermally expansive microcapsules, and study of shrink and residual stress generation mechanisms during the curing process of ultraviolet-curable adhesives.

The most important element in understanding the mechanical properties of adhesives is the tensile test of the cured matter. However, it is surprisingly troublesome to create good specimens. The high viscosity of adhesive creates many bubbles during mixing which leads to foamy specimens. You cannot measure high strength with them. Therefore, my laboratory creates specimens using THINKY products.

Let me give you an example of two-component adhesives, such as epoxy adhesives. A liquid adhesive base component and a curative component are placed in a cup-type container and kneaded by THINKY MIXER. This process also removes bubbles, and a vacuum defoaming type is suitable (ARV-310). At the time of kneading completion, you can obtain a uniformly mixed liquid adhesive with few bubbles. This is not taken out from the cup-type container but directly injected into syringes

with the Syringe Charger ARC-40\*. It is difficult to transfer adhesives into syringes without bubbles, so Syringe Charger is extremely useful. After filling, the adhesive is pneumatically ejected from the syringes to specimen dies. (The trick is to slightly warm the hot plate to control the viscosity of the adhesive.) Then, the specimen dies are heated to cure the adhesive before completion of the tensile test specimen of the cured adhesive. This method enables creation of good test specimens with few bubbles. THINKY products play a significant role in our laboratory and essential for the study of adhesives.

ARC-40\* sales discontinued (Successor: ARC-40H)

#### His book below also introduces THINKY ARV-310.

#### Design of Adhesive Joints Under Humid Conditions (Advanced Structured Materials)

Co-authored by Lucas F. M. da Silva and Chiaki Sato  
Publisher: Springer

# Total Support System

## We provide excellent customer support with our total support system

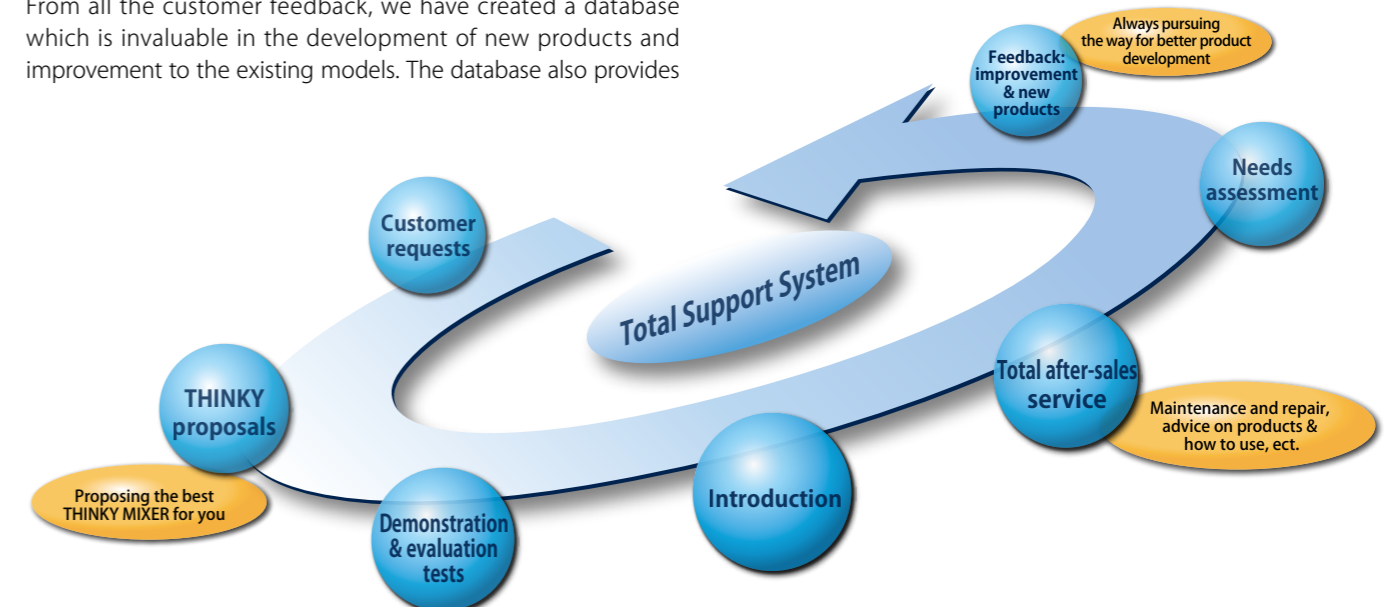
For the total life cycle of your THINKY MIXER, our customer service team will respond to your requests.

We listen to your requirements, purpose and conditions of use, and then suggest the optimal model. As a part of our service, not only do we ask you to evaluate our unit with your material, but we also help develop recipes suitable for the material and our technical experts offers advices on operation. After the installation of THINKY MIXER, we welcome any queries and comments. We can also offer in-depth advice of material processing that are different from your initial evaluation, and advise you on any plans for scaling up.

From all the customer feedback, we have created a database which is invaluable in the development of new products and improvement to the existing models. The database also provides

us with a wide range of technical data from which to draw upon and improve our response to customers and deliver increased customer satisfaction.

THINKY is firmly committed to our original pioneering spirit, and continues to make every effort to develop customer-oriented products and strengthen our customer service system. We look forward to hearing your opinions and requests concerning our products and services.



## Our Support System

### Two secure support systems

#### After-sales support

If you have any problems with a product, please contact us.

#### Application engineering

THINKY's professional application team supports parameter settings for customers. Before demonstration of pulverization, implementation of preliminary examination enables smooth presentation of the demonstration. Contact THINKY CORPORATION listed on the back cover.

Please contact THINKY CORPORATION  
Email: [info@thinkymixer.net](mailto:info@thinkymixer.net)

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**THINKY continues to assist customers with our full support system.**

# Original THINKY adapters

Containers and adapters are the key factors to achieve maximum performance!  
 THINKY designs original containers and adapters for planetary centrifugal mixers.

We create adapters especially suited for your containers.







THINKY provides the proper containers for optimum material processing.  
 Moreover, we consider material characteristics, customers' issues, and operating environment, etc. to create the one and only adapter for your material.  
 Fine response and attentive service are our strengths as a pure play company.

\*For details, order from the list of containers/adapters.

# Product Specification List / THINKY MIXER Non-vacuum type









Product appearance/specifications may change without notice.



		Planetary Centrifugal Mixers THINKY MIXER (Non-vacuum type)			
Model		AR-100	ARE-310**	ARE-400TWIN***	ARE-500***
		 p.8 ▶	 p.8 ▶	 p.8 ▶	 p.8 ▶
System		Planetary, propeller-less mixing	Planetary, propeller-less mixing	Planetary, propeller-less mixing	Planetary, propeller-less mixing
Operation Time Setting		Timer setting range: 0 s to 30 min in 1 s increments	Timer setting range: 0 s to 30 min in 1 s increments	Timer setting range: 0 s to 30 min in 1 s increments	Timer setting range: 0 s to 30 min in 1 s increments
Continuous Operation Time		Max 30 min	Max 30 min	Max 30 min	Max 30 min
Programming Function		5 memories	10 memories: STD mode: 5 memories with 1 step STEP mode: 5 memories with 5 steps	20 memories with 5 steps	10 memories: STD mode: 5 memories with 1 step STEP mode: 5 memories with 5 steps
Revolution/ Rotation Speed (rpm)	Mixing Mode	Revolution: 400 to 2000 rpm (adjustable) Rotation: Approx. 1 : 2.5 revolution-to-rotation ratio	Revolution: STD mode 2000rpm(fixed) STEP mode 0, 200 to 2000 rpm (adjustable) Rotation: Approx. 1 : 2.5 revolution-to-rotation ratio (STD and STEP modes)	Revolution: 0, 200 to 1600 rpm (adjustable) Rotation: 0, 200 to 1600 rpm (adjustable) Max up to 1 : 1 revolution-to-rotation ratio (When 600 rpm of revolution, minimum rotation speed is 200 rpm.)	Revolution: 400 to 1000 rpm (adjustable) Rotation: Approx. 1 : 1 revolution-to-rotation ratio
	Defoaming Mode	Revolution: 2200 rpm (fixed) Rotation: 0 rpm (fixed)	Revolution: STD mode 2200 rpm (fixed) STEP mode 0, 400 to 2200 rpm (adjustable) Rotation: Approx. 1 : 36.7 revolution-to-rotation ratio (STD and STEP modes)	—	Revolution: 400 to 2000 rpm (adjustable) Rotation: Approx. 1 : 32 revolution-to-rotation ratio
Maximum Capacity *1		140 g	310 g	400 g × 2	1100 g
Standard Container *2		100 ml disposable container	300 ml resin container	300 ml resin container	650 ml resin container
Power Supply		Voltage: Single-phase AC 120 V ± 10 %, 50/60 Hz Power consumption: Approx. 50 VA (standby) Max 800 VA (operation)	Voltage: Single-phase AC 120 V ± 10 %, 50/60 Hz Power consumption: Approx. 50 VA (standby) Max 900 VA (operation)	Voltage: Single-phase AC 100 V ± 10 %, 50/60 Hz Power consumption: Approx. 50 VA (standby) Max 1400 VA (operation)	Voltage: Single-phase AC 100 V ± 10 %, 50/60 Hz Power consumption: Approx. 50 VA (standby) Max 1400 VA (operation)
Operating Environment		10 to 35 °C, 35 to 85 % RH (without condensation)	10 to 35 °C, 35 to 85 % RH (without condensation)	10 to 35 °C, 35 to 85 % RH (without condensation)	5 to 35 °C, 35 to 85 % RH (without condensation)
Safety Mechanism		Lid sensor, Vibration sensor, Speed sensor	Lid locking sensor, Lid sensor, Vibration sensor, Speed sensor	Lid locking sensor, Lid sensor, Vibration sensor, Speed sensor	Lid sensor, Vibration sensor, Speed sensor, mixing/defoaming clutch sensor
Transport Locking Mechanism *3		1 on the bottom and 1 on the rear	1 on the internal rotation body surface and 1 on the rear	1 on the rear	1 on the rear, and 1 on the right inside and 1 on the left inside
Others		Equipped with a stroboscope	ARE-250 CE Power Supply: Single-phase AC230 V ± 10 %, 50/60 Hz	Real-time temperature monitoring function *4 (used with dedicated sensor unit), LED lightstack *4, Emergency stop switch *4, RS485 connector *4, 150 ml container *4, 201 adapter *4, replacement rubber rings *4 ARE-400TWIN CE Power Supply: Single-phase AC230 V ± 10 %, 50 Hz	ARE-500 CE Power Supply: Single-phase AC230 V ± 10 %, 50 Hz
Unit Dimensions		H328 × W250 × D250 (mm)	H390 × W300 × D340 (mm)	H 560 × W460 × D480 (mm)	H692 × W500 × D500 (mm)
Unit Weight		Approx. 15 kg	Approx. 21 kg	Approx. 70 kg	Approx. 95 kg
Accessories 1		Instruction Manual × 1 AC cable (including 3P adapter) × 1, ABS container × 3, PP 100 ml disposable container × 10	Instruction Manual × 1 AC cable (including 3P adapter) × 1, HDPE 300 ml container × 3, 150 ml container × 1, Adapter for 150 ml container × 1 (including 1 rubber ring)	Instruction Manual × 1 AC cable (including 3P adapter) × 1, HDPE 300 ml container × 6,PC Management Software (Allows you to easily set / manage number of revolutions / number of rotations / operating time.) (Allows you to check the number of revolutions / processing / temperature on a PC in real time.) USB cable (TypeB) × 1	Instruction Manual × 1 AC cable (including 3P adapter) × 1, HDPE 550 ml container × 3, 300 ml container × 3, Adapter for 300 ml container × 1 (including 3 types of O-ring (1 each))
Accessories 2		—	Key to unlock door during power failure (unit rear) × 1	L-shaped wrench (for M6) × 1, Key to unlock door during power failure × 1	Phillips screwdriver × 1, L-shaped wrench large × 1, L-shaped wrench small × 1, Spanner × 1, Hexagon head bolt M16 × 200 (for carrying the unit) × 4

\*1: Total mass to mount on the cup holder, including materials, containers, and adapters. \*2: Contact us because the actual volume of mixing may vary depending on the containers, materials, and conditions. \*3: Products are shipped and delivered in a locked state. Release the lock before use. \*4: Option †: Please contact THINKY about specification for explosion proof.  
 \*\*: CE-certified model / Product name: ARE-250 CE \*\*\*: CE-certified models / Product name: ARE-400TWIN CE, ARE-500 CE, ARV-310 CE, ARV-930TWIN CE, ARV-5000 CE, SR-500 CE

# Product Specification List / THINKY MIXER Vacuum type / LED type / Solder Paste Mixer / Vacuum Syringe Chargers

Product appearance/specifications may change without notice.

		Planetary Centrifugal Mixers THINKY MIXER (Vacuum type)					THINKY MIXER (Vacuum LED type)		Solder Paste Mixer
Model		ARV-310***	ARV-930TWIN***	ARV-5000***	ARV-3000TWIN	ARV-10kTWIN	ARV-50LED	ARV-310LED***	SR-500***
									
		p.9 ▶	p.9 ▶	p.10 ▶	p.10 ▶	p.10 ▶	p.11 ▶	p.11 ▶	p.11 ▶
System		Vacuum-type, planetary, propeller-less mixing	Vacuum-type, planetary, propeller-less mixing	Vacuum-type, planetary, propeller-less mixing	Vacuum-type, planetary, propeller-less mixing	Vacuum-type, planetary, propeller-less mixing	Vacuum-type, planetary, propeller-less mixing	Vacuum-type, planetary, propeller-less mixing	Planetary, propeller-less mixing
Operation Time Setting		Timer setting range: 0 s to 30 min in 1 s increments	Timer setting range: 0 s to 30 min in 1 s increments	Timer setting range: 1 s to 30 min in 1 s increments	Timer setting range: 1 s to 30 min in 1 s increments	Timer setting range: 1 s to 30 min in 1 s increments	Timer setting range: 0 s to 10 min in 1 s increments	Timer setting range: 0 s to 30 min in 1 s increments	Timer setting range: 0 s to 30 min in 1 s increments
Continuous Operation Time		Max 30 min	Max 30 min	Max 30 min	Max 30 min	Max 30 min	Max 10 min	Max 30 min	Max 30 min
Programming Function		9 memories with 5 steps	9 memories with 9 steps (Standard mode, High function mode)	10 memories with 10 steps	20 memories with 10 steps	20 memories with 10 steps	9 memories with 5 steps	9 memories with 5 steps	10 memories: STD mode: 5 memories with 2 steps STEP mode: 5 memories with 5 steps
Revolution/Rotation Speed (rpm)	Mixing Mode	Revolution: 0, 200 to 2000 rpm (adjustable) Rotation: Approx. 1 : 2 revolution-to-rotation ratio	Revolution: 0, 200 to 1400 rpm (adjustable) Rotation: Approx. 1 : 2 revolution-to-rotation ratio	Revolution: 0, 200 to 800 rpm (adjustable) Rotation: Approx. 3 : 4 revolution-to-rotation ratio	Revolution: 0, 250 to 850 rpm (adjustable) Rotation: Differs depending on gear ratio	Revolution: 200 to 800 rpm Rotation: 0 to 350 rpm (Rotation RPM ≤ Revolution RPM)	Revolution: 0, 200 to 1500 rpm (adjustable) Rotation: Mainly optimized for mixing, dispersing and defoaming the LED materials.	Revolution: 0, 200 to 1200 rpm (adjustable) Rotation: Mainly optimized for mixing, dispersing and defoaming the LED materials	Revolution: STD mode (STEP1 1000 rpm fixed, STEP2 500 rpm fixed), STEP mode (0, 200 to 1200 rpm adjustable) Rotation: Approx. 1 : 3 revolution-to-rotation ratio
	Defoaming Mode	_____	Revolution: 0, 200 to 1800 rpm (adjustable) Rotation: Approx. 1 : 33.3 revolution-to-rotation ratio	_____	_____	_____	_____	_____	_____
Maximum Capacity *1		310 g	930 g × 2	5 kg	5 kg × 2	14.5 kg × 2	113 g	310 g	680 g
Standard Container *2		300 ml resin container	750 ml resin containers	4 liter resin container	Specially designed SUS containers / 4 liter resin containers	Specially designed 10 liter SUS containers	150 ml resin container	300 ml resin container	150 ml resin container
Vacuum System		Rotation section vacuum chamber system	Vacuum system within container holder	Vacuum system within container holder	Vacuum system within container holder	Vacuum system within container holder	Rotation section vacuum chamber system	Rotation section vacuum chamber system	_____
Ultimate Vacuum		0.67 kPa	0.67 kPa	0.67 kPa	0.1 kPa	0.1 kPa	2.6 kPa	0.67 kPa	_____
Vacuum Trap Connection		Connectable (optional)	Depending on specifications	Connectable with external connection joint (optional)	Depending on specifications	Depending on specifications	Depending on specifications	Connectable (optional)	_____
Vacuum Pump Capability		Pump capacity: 100 liters/minute	Pump capacity: 100 liters/minute	Pump capacity: 100 liters/minute	Pump capacity: 200 liters/minute	Pump capacity: 200 liters/minute	Pump capacity: 5 liters/minute	Pump capacity: 100 liters/minute	_____
Power Supply		Voltage: Single-phase AC 100 V ± 10 %, 50/60 Hz Power consumption: Approx. 50 VA (standby) Max 1200 VA (operation)	Voltage: Three-phase AC 220 V ± 10 %, 50/60 Hz Power consumption: Approx. 120 VA (standby) Max 4400 VA (operation)	Voltage: Three-phase AC 200 V ± 10 %, 50/60 Hz Power consumption: Approx. 35 VA (standby) Max 4500 VA (operation)	Voltage: Three-phase AC 200 V ± 10 %, 50/60 Hz 30 A Power consumption: Approx. 138.6 VA (standby) Max 10.4 kVA (operation)	Voltage: Three-phase AC 200 V ± 10 %, 50/60 Hz 100 A Power consumption: Approx. 170 VA (standby) Max 30 kVA (operation)	Voltage: Single-phase AC 85 V to 265 V (47 Hz-63Hz) Power consumption: Approx. 50 VA (standby) Max 150 VA (operation)	Voltage: Single-phase AC 100 V ± 10 %, 50/60 Hz Power consumption: Approx. 50 VA (standby) Max 1200 VA (operation)	Voltage: Single-phase AC 120 V ± 10 %, 50/60 Hz Power consumption: Approx. 50 VA (standby) Max 900 VA (operation)
Operating Environment		10 to 35 °C, 35 to 85% RH (without condensation)	10 to 35 °C, 35 to 85% RH (without condensation)	10 to 35 °C, 35 to 85% RH (without condensation)	5 to 35 °C, 35 to 85 % RH (without condensation)	5 to 35 °C, 35 to 85 % RH (without condensation)	10 to 35 °C, 35 to 80 % RH (without condensation)	10 to 35 °C, 35 to 85 % RH (without condensation)	10 to 35 °C, 35 to 85 % RH (without condensation)
Safety Mechanism		Lid locking sensor, Vibration sensor, Speed sensor	Lid locking sensor, Vibration sensor, Speed sensor	Lid locking sensor, Lid sensor, Vibration sensor, Speed sensor	Lid locking sensor, Lid sensor, Vibration sensor, Speed sensor	Lid locking sensor, Lid sensor, Vibration sensor, Speed sensor	Lid locking sensor, Vibration sensor, Speed sensor	Lid locking sensor, Vibration sensor, Speed sensor	Lid locking sensor, Lid sensor, Vibration sensor, Speed sensor
Transport Locking Mechanism *3		1 on the unit front and 1 on the rear	1 on the internal rotation body surface and 1 on the rear	1 on the right inside and 1 on the left inside	Depending on specifications	Depending on specifications	_____	1 on the unit front and 1 on the rear	1 on the internal rotation body surface and 1 on the rear
Others		ARV-310 CE Power Supply: Single-phase AC 230 V ± 10 %, 50 Hz	Equipped with a stroboscope. A forced-air-cooling compressor can be connected.	External host communication function**	External remote operation available**	Program: TWIN OS (Japanese/English)	_____	ARV-310LED Power Supply: Single-phase AC 230 V ± 10 %, 50 Hz	SR-500 CE Power Supply: Single-phase AC 230 V ± 10 %, 50 Hz
Unit Dimensions		H450 × W555 × D645 (mm)	H900 × W660 × D670 (mm)	H1650 × W1050 × D925 (mm)	H1600 × W1330 × D1015 (mm)	H1280 × W1900 × D1370 (mm)	H380 × W300 × D233 (mm)	H450 × W555 × D645 (mm)	H390 × W300 × D340 (mm)
Unit Weight		Approx. 90 kg	Approx. 220 kg	Approx. 500 kg	Approx. 700 kg	Approx. 1500 kg	Approx. 20 kg	Approx. 90 kg	Approx. 18 kg
Accessories 1		Instruction Manual × 1, AC cable (including 3P adapter) × 1, HDPE 300 ml container × 3 (Inner lid with hole×3, Outer lid with hole × 3) 150 ml Container × 1 (Inner lid with hole × 1, Outer lid with hole × 1, Adapter × 1, and 1 spare rubber ring)	Instruction Manual × 1, Power cable × 1, HDPE 750 ml container × 6 (O-ring × 4, Inner lid without hole × 2, Outer lid without hole × 2, Inner lid with hole × 4, and Outer lid with hole × 4) 550 ml container × 6 (Adapter × 2 and all the above lids)	Instruction Manual × 1, Power cable × 1, Containers and others: Depending on specifications, Vacuum tube × 1 pair	Instruction Manual × 1, Power cable × 1, Containers and others: Depending on specifications	Instruction Manual × 1, Power cable × 1, Others: Depending on specifications	Instruction Manual × 1, AC cable (including 3P adapter)×1, HDPE 150 ml Container × 3 (Inner lid without hole × 3, Outer lid without hole × 3, Inner lid with hole × 2, Outer lid with hole × 2) Rubber washer × 1	Instruction Manual × 1, AC cable (including 3P adapter) × 1, HDPE 300 ml container × 3 (Inner lid with hole×3, Outer lid with hole×3) 150 ml Container × 1 (Inner lid with hole × 1, Outer lid with hole × 1, Adapter × 1, and 1 spare rubber ring)	Instruction Manual × 1, AC cable (including 3P adapter) × 1, 150 ml container × 3, Adapter for HDPE 150 ml container × 1 (including 1 O-ring) Silicon rubber sheet × 1, O-ring for fine adjustment × 1
Accessories 2		Box wrench × 1, Hexagon wrench × 1, Pliers × 1, Vacuum pump oil, Waste oil receiver × 1, Funnel × 1	Phillips screwdriver × 1, Hexagon wrench × 1, Pliers × 1, Bolt × 2, Vacuum pump oil, Waste oil receiver × 1, Funnel × 1	Vacuum pump oil, Others (depending on specifications)	Vacuum pump oil, Others (depending on specifications)	Vacuum pump oil, Others (depending on specifications)	T-shaped hexagon bar wrench × 1	Box wrench×1, Hexagon wrench×1, Pliers × 1, Vacuum pump oil, Waste oil receiver × 1, Funnel × 1	1 metal fitting is attached to the unit rear to release the lid lock, in case of power failure.

		Vacuum Syringe chargers	
Model		ARC-40H	ARC-600TWIN
			
		p.12 ▶	p.12 ▶
System		Manual Operation	Automatic Operation
Syringe Manufacturers		Nordson Corp. (EFD), Musashi Engineering, Inc., and other manufacturers *1	Supports syringes depending on specifications
Syringe Volume		3ml, 5ml 10ml *2	30 ml to 120 ml (Standard: 60 ml) *4 (Customizable)
Standard Container		Specially designed containers 300 ml	Specially designed SUS containers (Customizable)
Max Processing		Simultaneous filling of four 10 ml syringes * Consult us for 20, 30, and 50 ml syringes. We will provide customization	Customizable
Number of Syringes per Process		1 to 4 syringes (Joint stopper used)	Simultaneous filling of 16 syringes *4 (Customizable)
Connection with Vacuum Pump		By a 6 mm outer diameter tube (Vacuum pump is sold separately)	Built-in
Syringe Ultimate Vacuum		Depending on vacuum pump capability *3	_____
Chamber Ultimate Vacuum		_____	0.1 kPa or less (no filler)
Vacuum Pump Flow Rate		Depending on vacuum pump capacity	200 liter/minute
Operating Environment		10 to 35 °C, 35 to 85 % RH (without condensation)	5 to 35 °C, 35 to 85 % RH
Power Supply		None	Voltage: Three-phase AC 200 V ± 10 %, 50/60 Hz 20A Power consumption: Approx. 138.6 VA (standby) Max 6.9 kVA (operation)
Unit Dimensions		H 550 × W 220 × D 140 (mm) (Up to the handle height)	H2170 × W1125 × D1045 (mm)
Unit Weight		Approx. 7.5 kg	Approx. 650 kg
Accessories		Instruction Manual × 1 Specially designed container 300 ml (Container × 2, Inner lid × 2, Outer lid × 2) Vacuum head × 1, Plug × 3 Piston × 2, Syringe cap 3 of each Syringe cap with check valve 3 of each Cleaning container set (Cleaning container × 2, lid × 2, rubber ring × 2)	Depending on specifications

- \*1: Supports syringe made by above companies.
- \*2: For other sizes, please contact us.
- \*3: Do not reduce the pressure to a lower level than the saturated vapor pressure of water and organic solvent included in the material.
- \*4: The syringe mount will need to be built to custom specifications, so depending on the syringe capacity, it may not be possible to fit 16 syringes in some cases.

\*1: Total mass to mount on the cup holder, including materials, containers, and adapters. \*2: Contact us because the actual volume of mixing may vary depending on the containers, materials, and conditions.  
\*3: Products are shipped and delivered in a locked state. Release the lock before use. \*4: Option †: Please contact THINKY about specification for explosion proof.  
\*\* : CE-certified model / Product name: ARE-250 CE \*\* : CE-certified models / Product name: ARE-400TWIN CE, ARE-500 CE, ARV-310 CE, ARV-930TWIN CE, ARV-5000 CE, SR-500 CE