Show Room & After Support

Support and Service after the introduction

We have local distributors/agencies in each country or area, who give services to you with our support.
In addition, most of them keep demonstration machines so that you can evaluate performance of Mazerustar with your real materials.

■Overseas customers

Outline of KURABO

Corporate facts

■Established : March 9, 1888
■Capital : JPYen22,040 million
■Number of Employees (Kurabo Group) : 4,563 (As of March 31, 2016)

■Line of Business ·····

- **Textile** — Manufacture and sale of yarn, woven and knitted fabrics, made of cotton, synthetic, wool, and other textile materials, and their made-up goods.
- **Non-Textile**
  - **Advanced Technology Division** (Color manufacturing / Information processing / Inspection Measurement)
    - •Manufacture and sale of information systems and equipment for color control, production control, and of CAD systems, inspection and measuring systems
    - •Manufacture and sale of systems, equipment and machines for treating flue gas, water, heat, recycling of industrial wastes and household waste and enviromental protection and pollution control, etc
    - •Manufacture and sale of biomedical and its related products
  - **Chemical Products** — Manufacture and sale of polyurethane foam, synthetic woods, inorg anicbuilding materials, adhesives and specialty plastics and related products and, of systems and equipment of precision filtration and related products
  - **Real estate utilization** — Real estate lease
  - **Others**

●Ask for latest information at … http://www.kurabo.co.jp/

●Contact us at …
Neyagawa : +81-72-812-5205 Tokyo : +81-3-3639-7087 : dm_cis@ad.kurabo.co.jp

KURABO **Advanced Technology Division**
A T C : 14-30, Shimokida-cho, Neyagawa, Osaka 572-0823
TEL.+81-72-812-5205 FAX.+81-72-812-5261
Tokyo Branch : 2F NOF Nihonbashi-honcho Bldg., 2-7-1 Nihonbashi-honcho, Chuo-ku, Tokyo 103-0023
TEL.+81-3-3639-7087 FAX.+81-3-3639-7097
Neyagawa Office : 14-41 Shimokida-cho, Neyagawa, Osaka 572-0823
TEL.+81-72-812-5205 FAX.+81-72-812-5261

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18.08.D

MAZERUSTAR®

Planetary Mixer / Deaerator Kurabo MAZERUSTAR

Mixing / Deaerating Revolution

KURABO

MAZERUSTAR

About 25 years has passed since Advanced Technology Division began selling small mixers/deaerators for high viscosity printing inks…
Meanwhile, “Mazerustar” has had favorable feedback from customers, which has been repeated in developments and improvements in respond to customers’ issues and market needs.
Now improved general-purpose machine for new development and production, more necessary in the wide industry.
Kurabo aims at further technical improvement of “Mixing” and “Deaeration”.
Please look for it from Mazerustar in the future.

Customers Issues

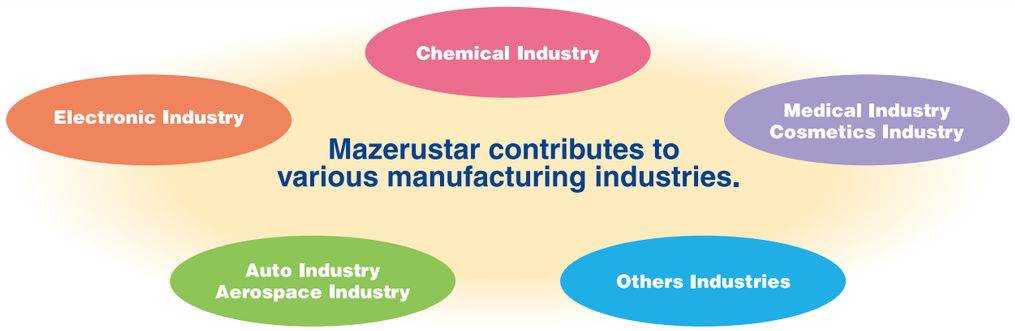
- Air bubbles give product quality bad effect.
- Material ingredient is changed by using vacuum apparatus.
- Strenuous work to uniformly mix materials of different properties.
- Material viscosity is too high to handle.
- Roll mill and mixing impeller break shape of particles.
- Washing container and equipment is troublesome.
- If work is done by hand, individual differences are large and quality is inconsistent.
- When necessary, customers want immediate processing.
- Customers want to process a lot in limited time.

Solve with Mazerustar

- Remove air bubbles without using vacuum by centrifugal force and container rotation adjustment .
- Make it possible to perform uniform mixture between different plural materials of viscosity and specific gravity by speed balance adjustment of revolution and rotation.
- Even materials with high viscosity of hundreds of thousands mPa.s level can be treated by combination of plural number vectors of strong continually generated acceleration of gravity.
- Non-contact method can keep shape of particles.
- Treatment inside the container and wash-free.
- Process without individual difference for a short and constant time, and make easier to plan production schedule.

Examples of applied materials:

Epoxy resin Silicone resin Acrylic resin Urethane resin Polyimide Wax Grease Lubricant Oil Water Various solvents
Silver powder Gold powder Copper powder Carbon Alumina Pigment Phosphor Calcium carbonate Tungsten Titanium
Glass powder Glass fiber Silica Aluminum powder Pearl Various fibers
Silver paste Carbon paste Copper paste UV ink Offset ink Special paint
Diamond Various mineral resources Abrasives

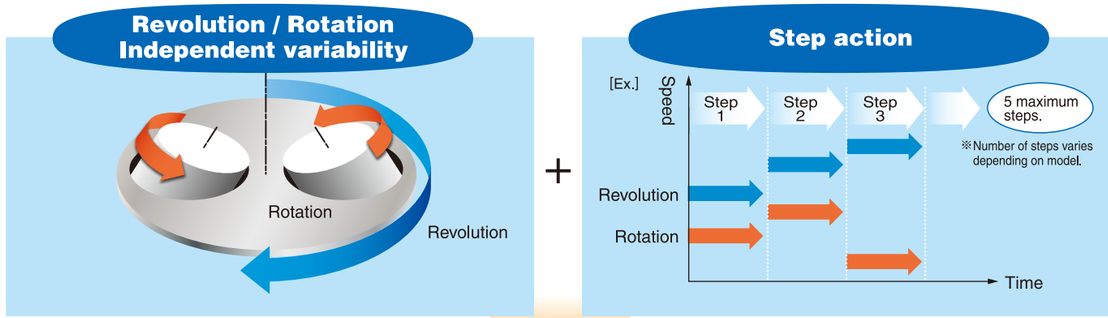


Examples of applied products:

Conductive, resistance and insulating paste / Condenser Resistor Rechargeable battery Fuel battery Solar cell /
Resist and plugging inks for PCB / Green sheet / Thermally conductive sheet / Thermal insulation material /
Optical fiber cable / Slurry / Carbon nanotube / Abrasive material / Abrasion of small precision part

Encapsulating and sealing material for LED / Sealing agent and liquid crystal for LCD / Sealing agent for OLED /
Conductive and sealing material for touch panel / Various paste for PDP / Materials for various films and membranes

Medical, Pharmaceutical and Dental products / Ointments / Coating material for lens /
Lipstick / Mascara / Gelnail / Cream / Foundation / Color matching for printing ink and paint / Various sealing materials



Wide Materials Application

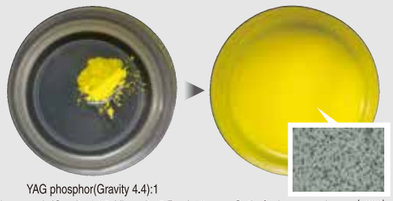
Sample-1:
Thermally conductive sheet material

Highly filled alumina powder(Gravity 3.1)
+ Transparent acrylic resin(Gravity 1.2)

Sample-2:
Rechargeable battery cathode material

CMC water solution | Carbon powder | SEM image (x1000)

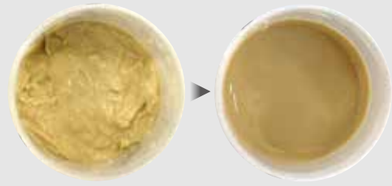
Sample-3:
Encapsulating material for LED



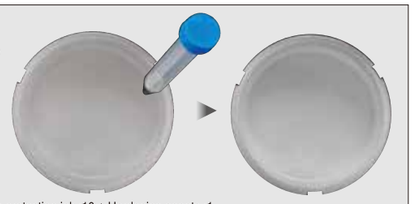
YAG phosphor(Gravity 4.4):1
+ Silicone resin(Gravity 1.05 Viscosity 5 Pa·s):10

Optical microscope image (x200)

Sample-4:
Water based Desiccant Paste for OLED
(by Süd-Chemie, DESIPASTE™ Liquid Desiccant for OLED)

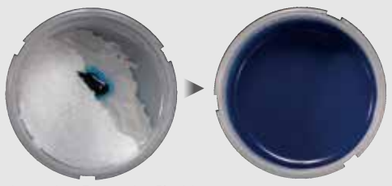


Sample-5:
High reflectance white protection paste for LED metal PCB (2-components)



White protection ink :10 + Hardening agents :1
(by DuPont)

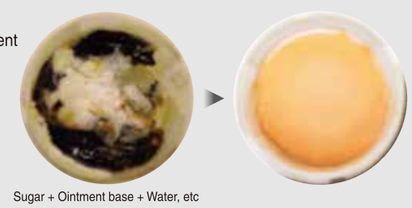
Sample-6:
Ceramic paste



Alumina powder + Epoxy resin + Blue ink

Sample-7:
Lipstick base material
(supplied by one major manufacturer)

Sample-8:
Special ointment



Sugar + Ointment base + Water, etc

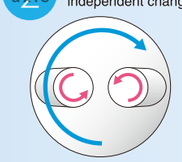
LINE UP

Choose Mazerustar model depending on processing amount and usage.

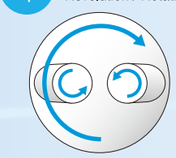
Mazerustar models are designed for similar performance from R & D to mass production.

Standard Models

2 axis Revolution / Rotation independent change



1 axis Fixed ratio of Revolution / Rotation



processing amount Small

250g

KK-250S
KK-250SE (CE marking)
(250g × 1container)

310g

1 axis
KK-300SS
KK-300SSE (CE marking)
(310g × 1container)

400g

2 axis
KK-400W
KK-400WE (CE marking)
(400g × 2 containers)

2 axis
KK-1000W
KK-1000WE
(CE marking)

1kg

2kg

2 axis
KK-2000W
(2kg × 2 containers)

2 axis
KK-5000
(5kg × 2 containers)

5kg

1 axis
KK-10000
(10kg × 2 containers)

10kg

processing amount Large

1 axis
KK-V300SS
(310g × 1 container)
Type-Ⅰ: Revolution / Rotation=2 / 1
Type-Ⅱ: Revolution / Rotation=1 / 1

350g

2 axis
KK-V350W
(CE marking)
(350g × 2 containers)

Twist

2 containers decentration (option)
Increase of material's contacting surface and friction speed with inner wall of container improves mixing and dispersing efficiency.

Vacuum Models

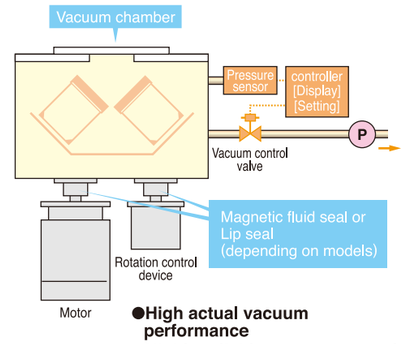
2 axis
KK-V1000
(1kg × 2 containers)

2 axis
KK-V2000
(2kg × 2 containers)

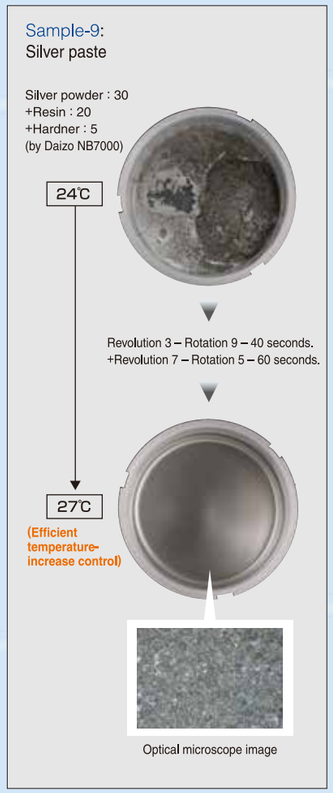
3.5kg

2 axis
KK-V3500
(3.5kg × 2 containers)

Mechanism of Vacuum System



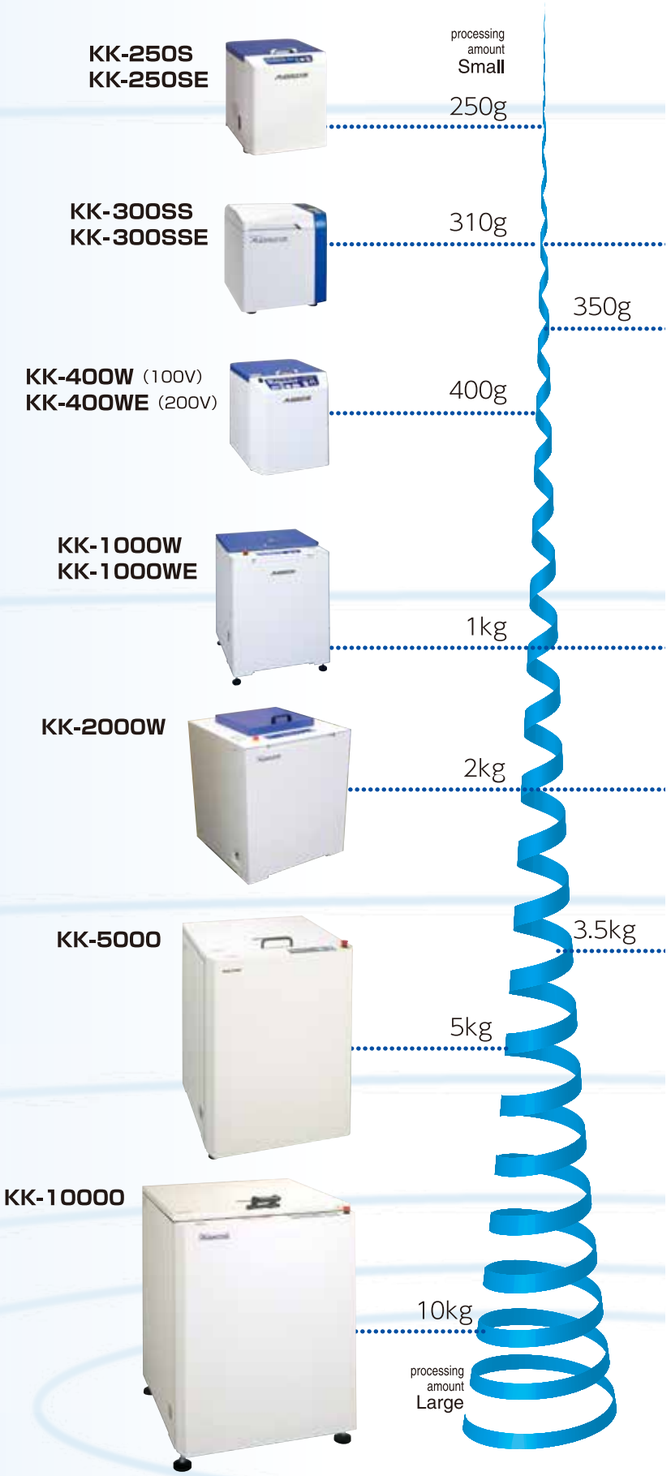
- **High actual vacuum performance**
- **Highly reliable vacuum control**
- **Vacuum insulated structure from motor and electricity system(safe design)**



Lineup and Specifications of Standard Models*

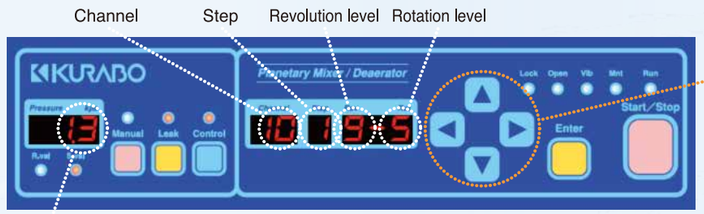
Model name	KK-250S KK-250SE	KK-300SS KK-300SSE	KK-400W KK-400WE	KK-1000W KK-1000WE	KK-2000W	KK-5000	KK-10000
Standard container**	HDPE 250㎖ Standard container	HDPE 300㎖ Standard container	HDPE 370㎖ Standard container	HDPE 1.1 ℓ Standard container	(Specified by customer, Max. 2 ℓ approx.)	HDPE 3.5 ℓ Standard container	HDPE 4 ℓ Standard container
Max. processing quantity***	250g x 1 container	310g x 1 container	400g x 2 containers	1kg x 2 containers	2kg x 2 containers	5kg x 2 containers	10kg x 2 containers
Revolution	10 level variable (1 – 10)	10rpm (Fixed ratio of rotation / revolution) ****	10 level variable (1 – 10)		9 level variable (1 – 9)		9 level variable (1 – 9) (Fixed ratio of rotation / revolution)
Rotation	10 level variable (0 – 9) (0.0 – 1.0 times of revolution speed)		10 level variable (0 – 9) (0.0 – 0.91 times of revolution speed)	10 level variable (0 – 9) (0.0 – 0.94 times of revolution speed)	10 level variable (0 – 9) (0.0 – 0.94 times of revolution speed)	10 level variable (0 – 9) (0.0 – 1.0 times of revolution speed)	
Setting time	10-990sec x 5steps Max operating total time 990S(Units of 10sec)	0 – 30 minutes x 9 steps ※Max. operating total time 30 minutes	10-990sec x 5steps Max operating total time 990S(Units of 10sec)	10-990sec x 5steps Max operating total time 990S	10-900sec x 5steps Max operating total time 25 minutes	10 – 300 seconds x 3 steps	
Number of channels	100 (Fixed channel : 10 ; User setting channel : 90)	User setting channel : 10	100 (Fixed channel : 10 ; User setting channel : 90)		100(Fixed channel:10, User setting channel:90)	20 (Fixed channel : 10 ; User setting channel : 10)	
Main warning device	Unbalance, Upper door and/or maintenance cover open, and overload.						
Main safety function	Automatic shutoff in case of error, Locking door while in operation and preventing system from being used while door open.						
Temperature and humidity for use	10 – 40℃, 20 – 80%RH (No dew condensation)						
Power supply	(S)AC100V±10% (SE)AC200 – 240V	(SS)AC100V±10% (SSE)AC200 – 240V	(W) AC100±10% (WE) AC200 – 240V	1φ, AC200±10%	3φ, AC200±5%		
Electricity consumption	Approx.650W	Approx.400W	Approx.750W	Approx.2kW	Approx.2.5kW	Approx.7kW	Approx.10kW
Outside dimension	350(W) x 420(D) x 415(H) ㎜	340(W) x 315(D) x 370(H) ㎜	400(W) x 513(D) x 457(H) ㎜	565(W) x 597(D) x 700(H) ㎜	646(W) x 663(D) x 851(H) ㎜	790(W) x 900(D) x 1050(H) ㎜	950(W) x 1070(D) x 1224(H) ㎜
Main body weight	Approx.37kg	Approx.24kg	Approx.51kg	Approx.140kg	Approx.225kg	Approx.475kg	Approx.600kg

*) Specifications are subject to change without prior notice.
**) Multiple kinds of containers or syringes can be used by optional adaptors.
***) Includes weight of container and adaptor. It may be reduced depending on character of material and operating condition.
****) Select mode form Mixer mode, Middle mode, Degassing mode, Wave mode.

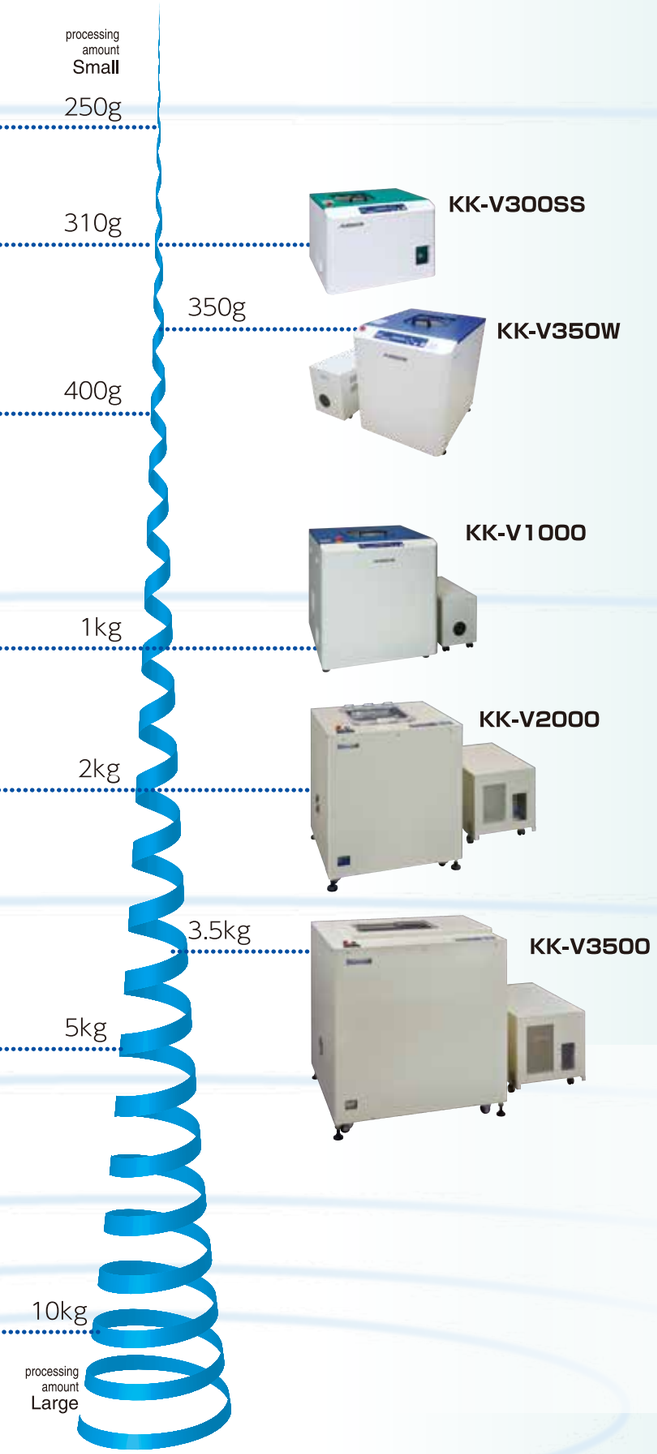


Easy operation at Mazerustar

Simple design, Simple data setting



Easy data setting with four keys



Lineup and Specifications of Vacuum Models*

Model name		KK-V300SS	KK-V350W	KK-V1000	KK-V2000	KK-V3500
Standard container**		HDPE 300mℓ Standard container	HDPE 370mℓ Standard container	HDPE 1.1 ℓ Standard container		HDPE 3.5 ℓ Standard container
Max. processing quantity***		310g x 1 container	350g x 2 containers	1kg x 2 containers	2kg x 2 containers	3.5kg x 2 containers
Revolution		9 level variable (1 – 9)				
Rotation		Type I : 0.5 times of revolution Type II : 1.0 times of revolution	10 level variable (0-9) (0-1.0 times of revolution)	10 level variable (0 – 9) (0.0 – 0.94 times of revolution****)	10 level variable (0 – 9) (0.0 – 1.0 times of revolution****)	10 level variable (0 – 9) (0.0 – 0.78 times of revolution****)
Setting time		10 – 300 seconds x 5 steps			10 – 300 seconds x 3 steps	
Number of channel		100 (Fixed channel : 10 ; User setting channel : 90)			20 (Fixed channel : 10 ; User setting channel : 10)	
Vacuum system	Pump	Ultimate pressure : 200Pa Pumping speed : 133 / 160 ℓ / min (50 / 60Hz)	Ultimate pressure : 100 Pa Pumping speed : 100 ℓ / 120 ℓ / min (50/60Hz)	Ultimate pressure : 6.7Pa Pumping speed : 200 ℓ / 240 ℓ / min (50 / 60Hz)	Ultimate pressure : 50 Pa Pumping speed : 25m³/h(50Hz), 30m³/h(60Hz)	Ultimate pressure : 20 Pa Pumping speed : 49m³/h(50Hz), 59m³/h(60Hz)
	Chamber	Independent of driving and electric system to decompress only sphere of revolution turntable with cup holders.				
	Setting	Set vacuum degree kPa voluntarily for each step			3-mode setting ①②Keep vacuum level-1, 2 ③Continuous vacuum (to max.)	
Main warning device		Unbalance, Upper door and/or maintenance cover open and Overload				
Main safety function		Automatic shutoff in case any error, Locking the door while operation and Preventing the system from while the door open				
Temperature and humidity for use		10 – 40℃, 20 – 80%RH (No dew condensation)				
Power supply		AC100 ±10%	AC200 – 240V	3φ, AC200 ±10%		
Electricity consumption		Approx.1.5kW	Approx. 2.0kW	Approx.3.0kW		Approx.7.0kW
Outside dimension		685(W) x 602(D) x 490(H)mm	565(W) x 682(D) x 725(H)mm	761(W) x 781(D) x 822(H)mm	805(W) x 775(D) x 897(H)mm	1095(W) x 995(D) x 1150(H) mm
Main body weight		Approx.103kg	Approx.160kg except pump	Approx.260kg except pump	Approx.450kg except pump	Approx.550kg except pump

*) Specifications are subject to change without prior notice.
**) Multiple kinds of containers or syringes can be used by optional adaptors.
***) Includes weight of container and adaptor. It may be reduced depending on character of material and operating condition.
****) Number of rotations is reduced at high revolution speed levels.

Sample-10:
Encapsulating material for white LED

Freely set an operating condition for every material

Channel ▶ Input revolution level ▶ Input rotation level ▶ Input working time ▶ Input vacuum degree (in case of vacuum models) ▶ Push start button ▶ Start operation

One-touch startup by pre-set data

EXPERIMENT OPTIONS

Experiment 1 Ag paste：Comparison tests between Mazerustar and impellor mixer

(an extract from the research by our USA distributor and others)

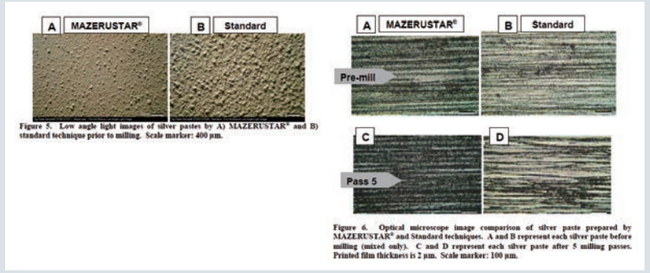


Figure 5. Low angle light images of silver pastes by A) MAZERUSTAR® and B) standard technique prior to milling. Scale marker: 400 µm.

Figure 6. Optical microscope image comparison of silver paste prepared by MAZERUSTAR® and Standard techniques. A and B represent each silver paste before milling (mixed only). C and D represent each silver paste after 5 milling passes. Printed film thickness is 2 µm. Scale marker: 100 µm.

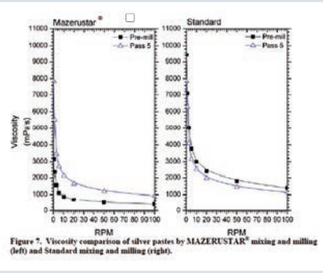


Figure 7. Viscosity comparison of silver pastes by MAZERUSTAR® mixing and milling (left) and Standard mixing and milling (right).

"Low angle light image of paste before milling and optical microscopy images the dried thin film before/after milling. Both show better dispersion can be obtained by Mazerustar for a shorter time than impeller mixer."

Paste by Mazerustar shows a higher-disperse state in earliest stages of paste fabrication not obtained by standard technique.

In detail → http://www.kurabo.co.jp/el/case/pdf/mazerustar_paper.pdf

Experiment 2 LED encapsulating material：Comparison tests under various speed conditions

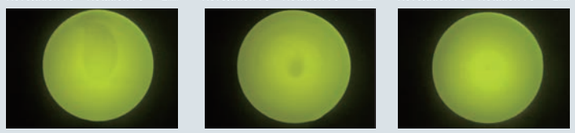
(presented by one manufacturer.)

Combination :
Encapsulating material 20g(2500mPa·s)
+ Phosphor 1.4g (Silicate type)

Mix / Deaerate by Mazerustar
▼
Harden with heat (as a cup)
▼
Take out hardened sample
▼
Photograph the bottom with light from above

Results

Under common mixers' condition (repeat)	Rotation speed up	Revolution speed down
Revolution : 9 + Rotation : 3 → 2min	Revolution : 9 + Rotation : 9 → 2min	Revolution : 3 + Rotation : 9 → 2min



Much sediment of phosphor	A few sediment of phosphor	No sediment of phosphor

Mixing and deaeration can be optimized by an appropriate combination of revolution and rotation speeds.

Proposal An effect by the Mazerustar of the metallic paste (Ag, Al) in manufacturing process of solar battery panel.

Storage	Paste preserved Period	Separation	Sedimentation	Re-agglomeration	Air bubble	Flocculation	Time	Finance
Kurabo Mazerustar	After 1 week	○	○	○	○	○	3 min.	Low Cost
	After 3 weeks	○	○	○	○	○		
Jar roller	After 1 week	○	▽	—	×	○	8-12 hrs.	High Cost
	After 3 weeks	▽	—	—	×	▽		

○ : Good Effect ▽ : Minor Effect × : Bad Effect — : No Effect

Available containers and Optional adaptors

Standard container

Disposable containers and adaptors

Syringes / Cartridges and adaptors

Other related systems

● Automatic Dispensing systems

Outline of system
- Automatic dispensing powder and high-viscosity liquid
- Reduction of material loss by high accurate work
- Data traceability through measuring records
- Design to meet customer's needs

● Syringe filling systems

Outline of system
Fill syringes, etc. with high viscosity material processed by Mazerustar without including air bubbles.

● Inline continuous deaerators

Outline of system
Can remove air bubbles from liquid material by centrifuge system without vacuum device.
Supply it directly into coating line of production by being designed for continuous process.

lineup of system
●BN-2:120ℓ/h ●BN-4:200ℓ/h ●BN-8:400ℓ/h
(Explosion-proof models are also available.)