

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

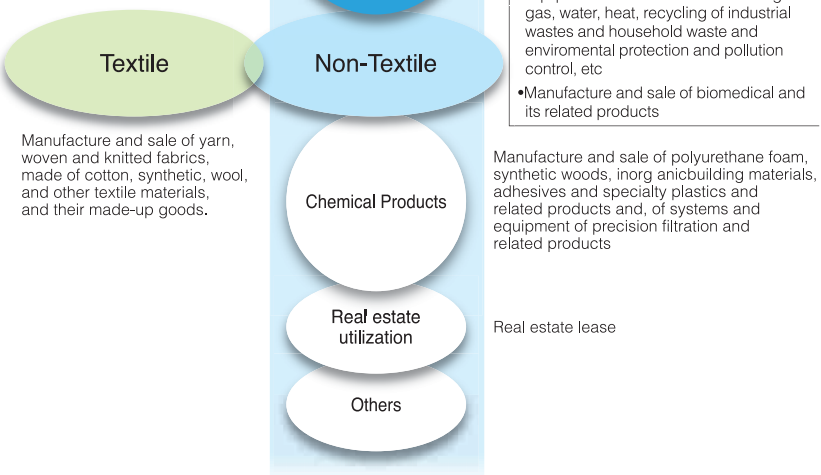


Outline of KURABO

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



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

● Contact us at ...

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MAZERUSTAR®

Planetary Mixer / Deaerator Kurabo MAZERUSTAR

Mixing / Deaerating Revolution



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

Mazerustar contributes to various manufacturing industries.

Electronic Industry

Chemical Industry

**Medical Industry
Cosmetics Industry**

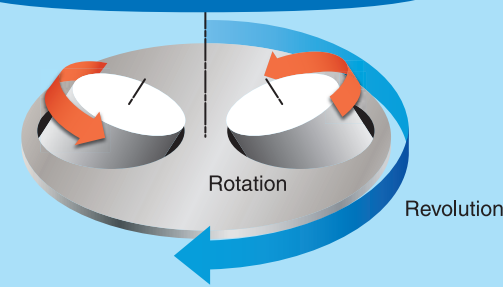
**Auto Industry
Aerospace Industry**

Others Industries

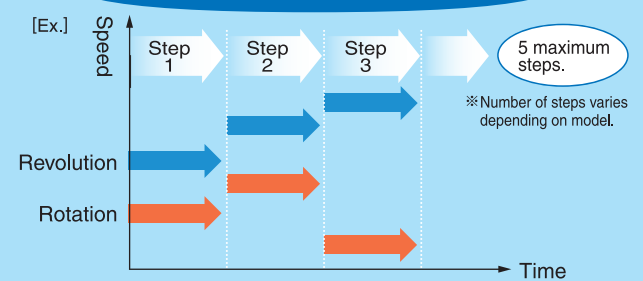
Examples of applied products:

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 / Gel nail / Cream / Foundation / Color matching for printing ink and paint / Various sealing materials

Revolution / Rotation Independent variability

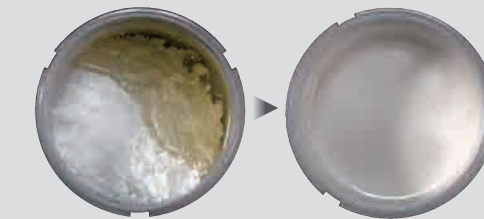


Step action



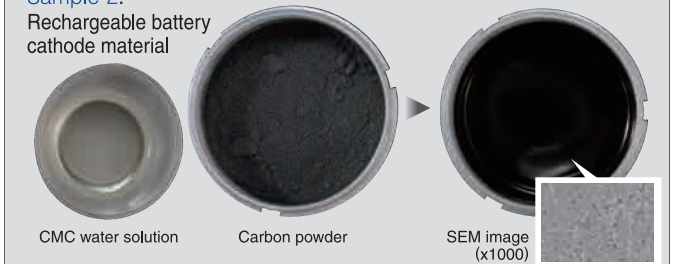
Wide Materials Application

Sample-1:
Thermally conductive sheet material



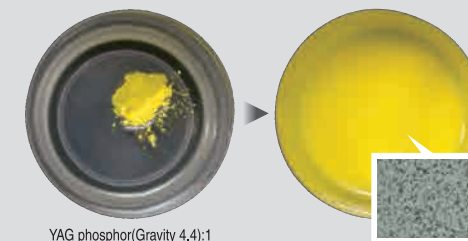
Highly filled alumina powder(Gravity 3.1)
+ Transparent acrylic resin(Gravity 1.2)

Sample-2:
Rechargeable battery cathode material



CMC water solution Carbon powder SEM image (x1000)

Sample-3:
Encapsulating material for LED



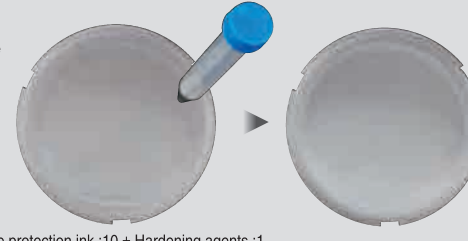
YAG phosphor(Gravity 4.4):1
+ Silicone resin(Gravity 1.05 Viscosity 5 Pa·s):10 Optical microscope image (x200)

Sample-4:
Water based Desiccant Paste for OLED



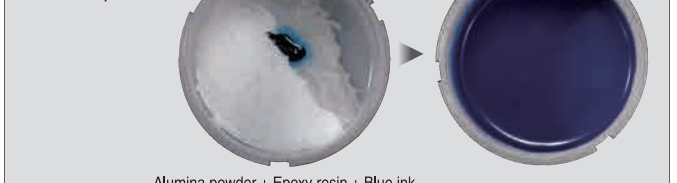
(by Süd-Chemie, DESIPASTE™ Liquid Desiccant for OLED)

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

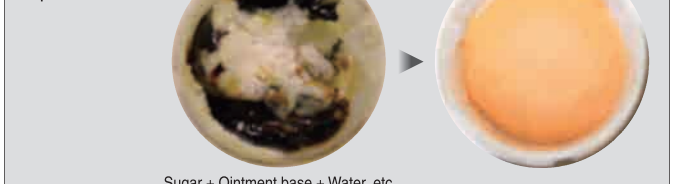


Alumina powder + Epoxy resin + Blue ink

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



Sample-8:
Special ointment



Sugar + Ointment base + Water, etc

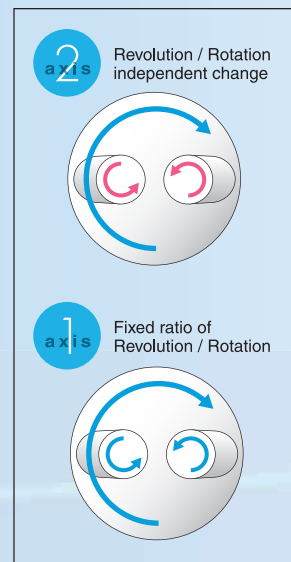
LINE

Choose Mazerustar model depending on processing amount and usage.

UP

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

Standard Models



CE mark declared
2 axis **KK-250S**
(250g × 1 container)
(100V·200V)

processing amount
Small

250g



310g

CE mark declared
1 axis **KK-300SS**
(310g × 1 container)



400g

2 axis **KK-400W**(100V)
CE mark declared
KK-400WE(200V)
(400g × 2 containers)



CE mark declared
2 axis **KK-1000W**
(1kg × 2 containers)



1kg

2kg

2 axis **KK-2000W**
(2kg × 2 containers)



2 axis **KK-5000**
(5kg × 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-V1000**
(1kg × 2 containers)



2 axis

KK-V350W
(350g × 2 containers)



Twist

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

2 axis

KK-V2000
(2kg × 2 containers)

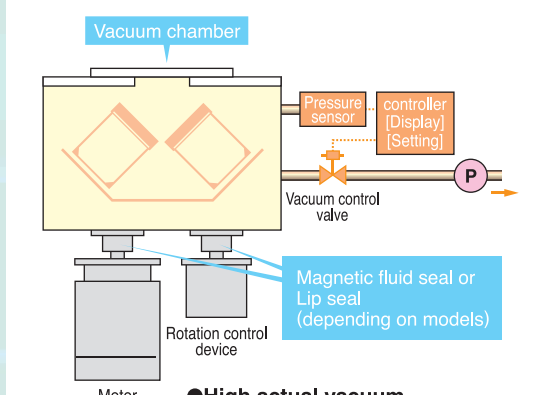


3.5kg

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)

Vacuum Models

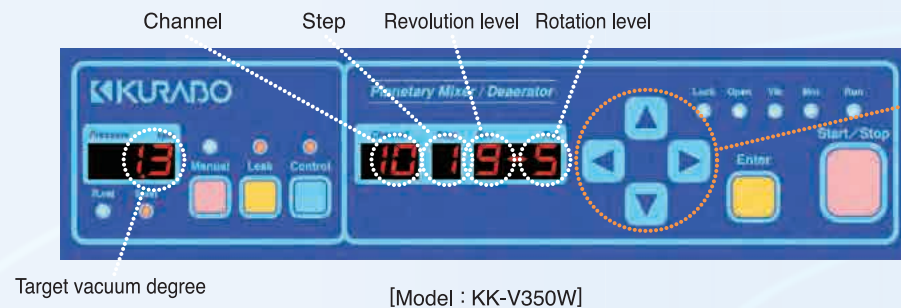
LINE UP

Lineup and Specifications of Standard Models*

Model name	KK-250S	KK-300SS	KK-400W KK-400WE	KK-1000W	KK-2000W	KK-5000	KK-10000
Standard container**	HDPE 250mℓ Standard container	HDPE 300mℓ Standard container	HDPE 370mℓ 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)
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)	9 level variable (1 – 9) (Fixed ratio of rotation / revolution)
Setting time	10-990sec x 3steps Max operating total time 990S(Units of 10sec)	0 – 30 minutes x 9 steps ※Max. operating total time 30 minutes	10-990sec x 3steps Max operating total time 990S(Units of 10sec)	10-300sec x 3steps Max operating total time 900S	10-900sec x 5steps Max operating total time 25 minutes	10 – 300 seconds x 3 steps	
Number of channels	20 (Fixed channel : 10 ; User setting channel : 10)	User setting channel : 10	20 (Fixed channel : 10 ; User setting channel : 10)		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	AC100V AC200 – 240V	AC100V AC200 – 240V	(W) AC100 – 120V (WE) AC200 – 240V	1φ, AC200 – 240V	3φ, AC200 – 240V		
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) mm	340(W) x 315(D) x 370(H) mm	400(W) x 513(D) x 457(H) mm	565(W) x 597(D) x 741(H) mm	646(W) x 663(D) x 851(H) mm	790(W) x 900(D) x 1050(H) mm	950(W) x 1070(D) x 1224(H) mm
Main body weight	Approx.37kg	Approx.24kg	Approx.51kg	Approx.150kg	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

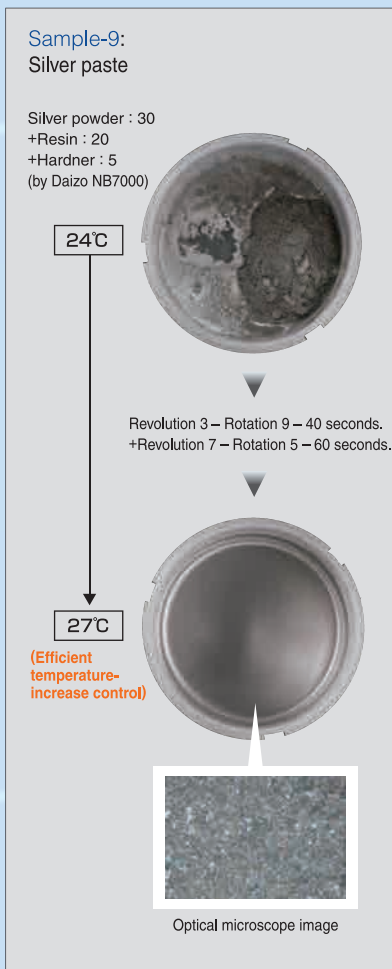
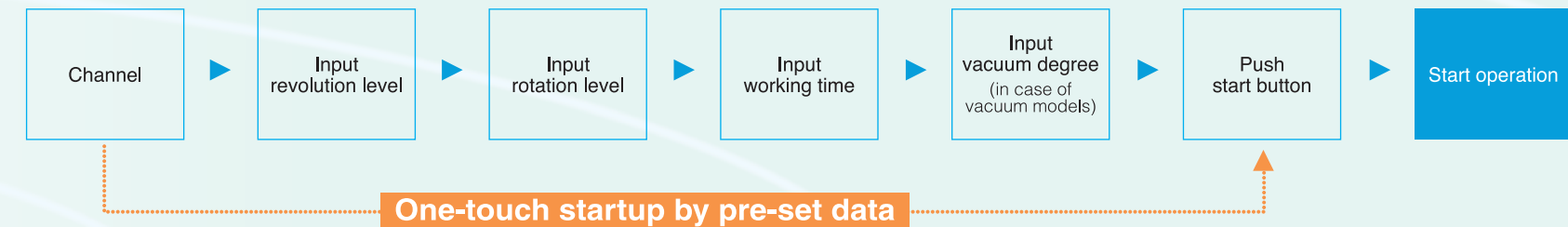
[Model : KK-V350W]

Lineup and Specifications of Vacuum Models*

Model name		KK-V300SS	KK-V350W	KK-V1000	KK-V2000	KK-V3500
Standard container**		HDPE 300㎖ Standard container	HDPE 370㎖ 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 – 0.9 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 : 100Pa Pumping speed : 420 / 500 ℓ / min (50 / 60Hz)	Ultimate pressure : 50Pa Pumping speed : 1167 ℓ / 1400 ℓ / min (50 / 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 – 120V	AC200 – 240V	3φ, AC200 – 240V		
Electricity consumption		Approx. 1.5kW	Approx. 2.0kW	Approx. 3.0kW		Approx. 7.0kW
Outside dimension		685(W) x 602(D) x 490(H)㎜	565(W) x 682(D) x 725(H)㎜	761(W) x 781(D) x 822(H)㎜	805(W) x 775(D) x 897(H)㎜	1095(W) x 995(D) x 1150(H) ㎜
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.

Freely set an operating condition for every material

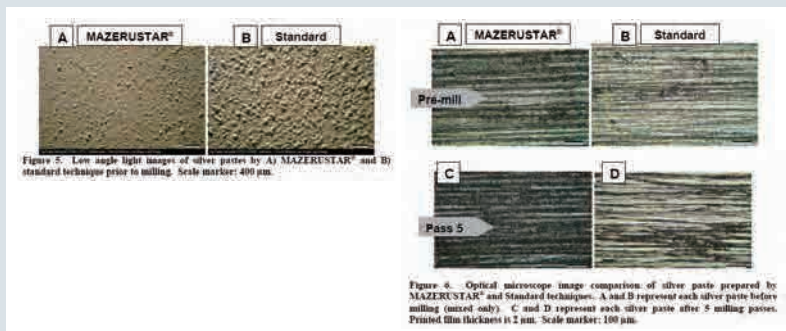


EXPERIMENT

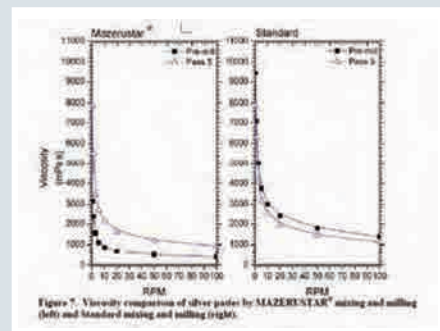
OPTIONS

Experiment
1

Ag paste: Comparison tests between Mazerustar and impellor mixer (an extract from the research by our USA distributor and others)



"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)

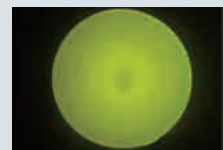
Revolution : 9 + Rotation : 3 → 2min



Much sediment of
phosphor

Rotation speed up

Revolution : 9 + Rotation : 9 → 2min



A few sediment of
phosphor

Revolution speed down

Revolution : 3 + Rotation : 9 → 2min



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-4:300ℓ/h ●BN-8:600ℓ/h
(Explosion-proof models are also available.)