New launched ! !

Was expected !

Did not exist until now !

PSR developing tank cleaning agent

Palmless

Before

Completely removes
the solidified residues accumulated in the PSR developing tank.

SOLSTAR

After !

The one and only product
that enables complete reset cleaning.

Three palms P&A Co .,Ltd

A big challenge to a new cleaning system

Palmless SOLSTAR

We can solve the problem

A new cleaning program has been completed that can completely overcome the problem of sticking residual in the tank..

The long-awaited new product lineup in our cleaning agent series.

Make palmless solstar series debut!
Detergent for complete reset type PSR developing tank.

■ What can palmless solstar do ?

⇒ Palmless SOLSTAR is a tank cleaning product used when cleaning the PSR development line with chemical solution.

⇒ Solstar can completely remove accumulated solidified residues that could not be removed with previous cleaning agent.

■ What is the excellent cleaning effect of solstar ?

◇ **Solstar can maintain and manage a clean developing line by completely resetting the dirt.**

⇒ By removing the residue in the tank, the effect of reducing the incidence of residual defects (For example , gold non-plating) caused by the sediment can be expected. ＊1

◇ **Expect the effect of suppressing the progress of dirt accumulation in the tank.**

⇒ On top of the remaining dirt, precipitates tend to form faster. ＊2

⇒ Expect the effect of suppressing newly formed dirt by removing residual dirt.

◇ **Expect the long-lasting cleaning effect by our direct neutralization technology.**

⇒ The measures to prevent reattachment of dirt are perfect..

⇒ Greatly extend the durability of the cleaning effect.

＊1 The introduction of the PAM Prince series is more effective, which is a dedicated rinse agent that is for the current developing line.

＊2 About one week as our knowledge.

■ What is the difference between solstar and exsisting products ?

⇒ The SOLSTAR has exceptional cleaning performance that surpasses previous products.
That is SOLSTAR
It is not just about improving the cleaning power.
There is a difference in the effect (action) of the cleaning mechanism itself.

⇒ In many of the previous cleaning agents, residual stains on the PSR developing tank were regarded as simple ink product deposit.
For this reason, cleaning has been carried out with products that are biased toward swelling action becoming the mainstream.
The problem that has arisen in this process is the ”residual phenomenon of white solidified substances”.

⇒ **How can solstar deal with these issues?**

⇒ The “dissolving / dispersing action” that corresponds to the constituent substances of dirt effectively demonstrate the cleaning performance.

⇒ Completely remove is possible for white solidified substances that have already accumulated developing tank.

⇒ The continuous operation of the SOLSTAR cleaning program makes it possible to achieve ”residue-free“ maintenance work.

SOLSTAR product composition and product characteristics

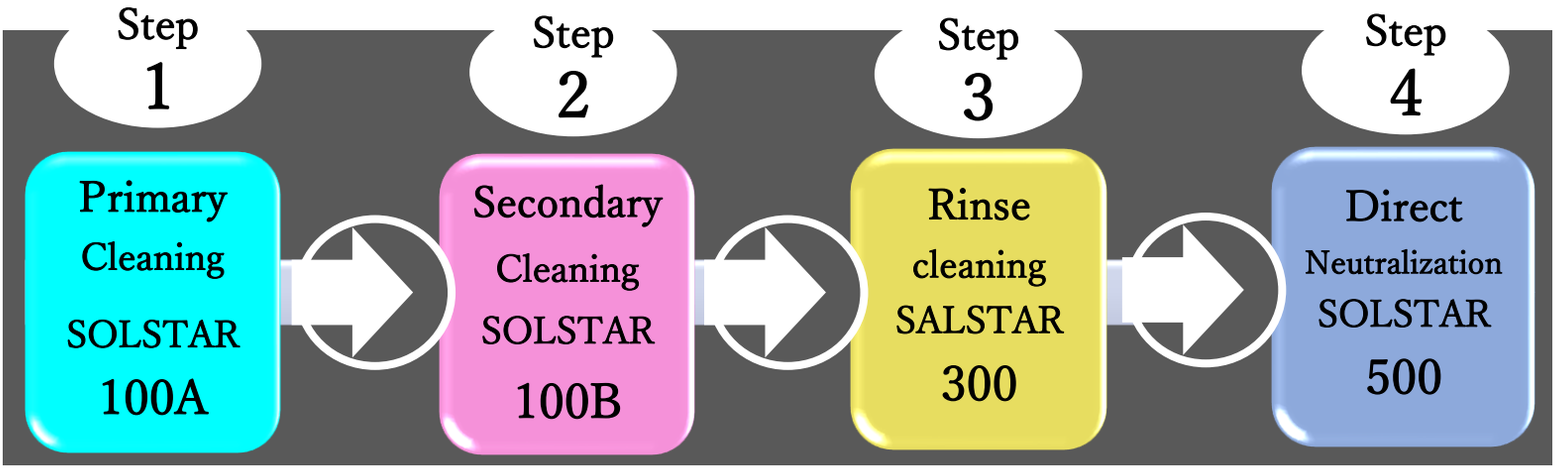
Palmless SOLSTAR

The product composition of the Palmless SOLSTAR series Is as follows

■ Palmless SOLSTAR series consists of the below 4 products.

■ When implementing the SOLSTAR cleaning program.
It is necessary to use all 4 products according to the program.

Products	Selection of Usage	Product role and expected effects
SOLSTAR 100A	The primary cleaning agent Step 1	It has the effect of promoting the swelling and dissolution of the ink resin component by the penetrating action into the layer of dirt (Layer on which development precipitate are accumulated) generated in the developing tank.
SOLSTAR 100B	The secondary cleaning agent Step 2	By efficiently infiltrating the hardened layer (white precipitate) existing under the sediment, it works to divide (roughen) the strong structural morphology by cracking and dispersing action.
SOLSTAR 300	The rinse cleaning agent Step 3	It acts on the dissolution of white crystals (salt precipitates) and separates (separates) the bound ink resin components from the surface.
SOLSTAR 500	The Direct neutralization agent Step 4	It has a neutralizing effect on the # 300 (acidic) treatment liquid, a miscibility when merging with the alkaline waste liquid after discharge, and a cohesive auxiliary effect during the waste water treatment. In addition, the effect of suppressing the reattachment phenomenon of the removed ink resin component can improve the washing efficiency.



Drain developing solution → Step-1 Put in 100A Start cleaning ／ Finish → Drain

→ Step-2 Put in 100B → Start cleaning ／ Finish → Drain

→ Step-3 Put in #300 → Start cleanig → Suspend

→ Step-4 Put in #500 → Restart cleaning ／ Finish → Drain

→ Wash with water × 2

“Complete reset of dirt” will be completed with the above program and process progress !

Introduction of cleaning effect of SOLSTAR

Perfectly and cleanly cleaning is possible of hard residual substances that you were worried about or had given up in the solder resist developing tank cleaning!

By introducing and implementing the SOLSTAR cleaning program.

VS

Fig-1
Image immediately after cleaning with another company's cleaning agent.
Dirt is solid and remains.

Company A
New liquid 100%(Undiluted solution)
Processing time: 8H in total

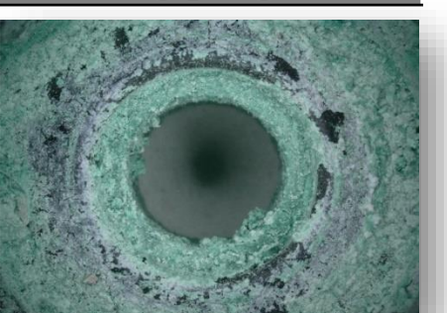
Fig-2
Image immediately after cleaning with the SOLSTAR cleaning program.
Reproduces as an excellent cleaning finish with no residue!

Our product

New liquid 100%(Standard conditions)
Processing time: 6H in total

Be definitely possible to perfect reset.

Even if it is hard and firmly adhered like this sample!
By introducing and implementing the SOLSTAR cleaning program.



Be definitely possible to perfect reset.

Do you select work efficiency and stability？

Do you select comprehensive benefits on the cleaning line？

Only for Three Palms, you can select the cleaning plan that suits your needs！

Selectable the operation program depending on **your needs.**

Plan － A

After introducing the initial cleaning, shift to a simple cleaning program with implementation cycle period of 90 days or less ！

The initial cleaning Program ☆ Disposable plan

Cleaning process	product	Concentration	temperature	time
Primary cleaning	SOLSTAR 100A	50V%	30 ± 5℃	2Hr
Secondary cleaning	SOLSTAR 100B	50V%		1Hr
Rinse cleaning	SOLSTAR 300	20V%		0.5Hr
Direct neutralization	SOLSTAR 500	10V%		0.5Hr

Simple cleaning Program

Concentration	temperature	time
20V%	30 ± 5℃	1Hr
Omit		＊＊＊
10V%		0.5Hr
5V%		0.5Hr

★ **Advantage！** You can get cleaning effect on stable by new solution every time.
No need to manage, collect or store liquids.

Plan － B

After introducing the initial cleaning, shift to a regular cleaning program that reuses the stored undiluted solution ！

The initial cleaning Program ☆ Reuse plan

Cleaning process	product	Concentration	temperature	time
Primary cleaning	SOLSTAR 100A	Undiluted solution	30 ± 5℃	2Hr
Secondary cleaning	SOLSTAR 100B	50V%		1Hr
Rinse cleaning	SOLSTAR 300	20V%		0.5Hr
Direct neutralization	SOLSTAR 500	10V%		0.5Hr

Regular cleaning Program

Concentration	temperature	time
Stored solution	30 ± 5℃	1Hr
Omit		＊＊＊
10V%		0.5Hr
5V%		0.5Hr

★ **Advantage！** Effective for deploying and operating multiple lines.
It can be performed at any time with no restrictions on the cleaning interval.

Remarks)

1) we recommend to run the cleaning cycle within 3 months in order to maintain a continuous, stable and effective cleaning on the implementation line.
2) The secondary cleaning agent # 100B is required for the initial cleaning.
You can select a concentration of 50v% or undiluted solution conditions.
3) It is also possible to omit the secondary cleaning # 100B process for about one year only when the [simple] or [regular] cleaning is performed within 3 months after the initial cleaning.
But please decide the introduction as appropriate.
4) Secondary detergent # 100B can be reused 3 times with 50v% conditions and 5 times or more with undiluted conditions, depending on the concentration.
5) When operating a 100A undiluted solution with the B plan, consider that the amount of the solution decreases with each cleaning.
In plan B, it is essential to adjust the amount of insufficient liquid with 100A undiluted solution.
6) Both plans are typical examples.
It is also possible to plan the operation of the [Simple Cleaning Program] for the second and subsequent cleanings after using the undiluted solution for the initial cleaning of multiple lines.
7) SOLSTAR 300,500 treatment liquid cannot be reused.

Palmless

The Solstar series Product characteristics

SOLSTAR

Three palms P&A Co .,Ltd

Products	Product characteristics			Capacity	Packing
	p H (25℃)	Specific gravity (25℃)	Color・Properties		
SOLSTAR 100A	1 3 <	1.1000 ± 0.02	Pale yellow ～ Orange	20Kg	Polyethylene can
			Alkaline liquid	200Kg	Polyethylene Drum
SOLSTAR 100B	3 ± 0.2	1.080 ± 0.02	Clear ～ pale yellow	20Kg	Polyethylene can
			Acidic liquid	200kg	Polyethylene Drum
SOLSTAR 300	1 >	1.100 ± 0.02	Clear	20Kg	Polyethylene can
			Acidic liquid	200Kg	Polyethylene Drum
SOLSTAR 500	14 <	1.420 ± 0.02	Cloudy color	20kg	Polyethylene can
			Alkaline liquid		Polyethylene Drum

Reference data

- Palmless Solstar targeted surface observation data of white solid residues.
- The appearance is observed without any difference from the common developed residues in a general PSR developing tank.
- However, as a result of detailed observation by the secondary electron image (SEM), it is confirmed that the acicular crystals of salt precipitates are formed in a multi-layered structure.
- Since the permeability was rejected by conventional cleaning chemicals, it was difficult to clean and remove this structure, and it has been left unattended.
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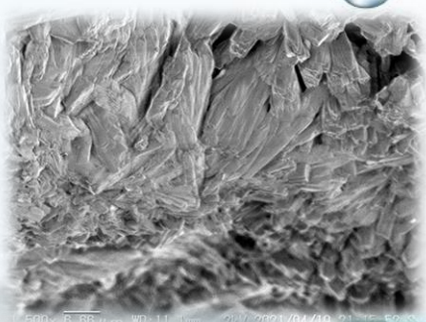

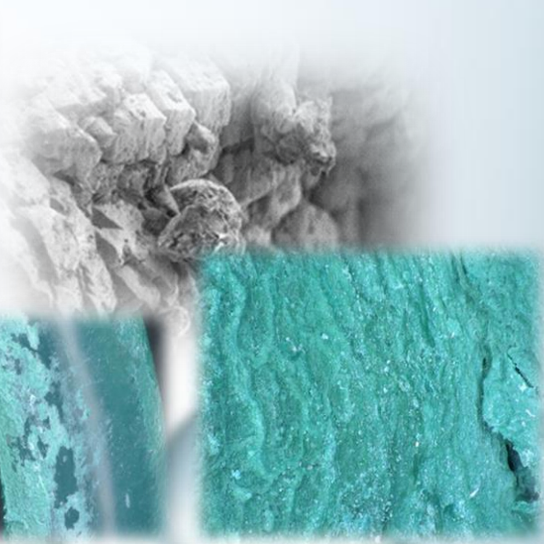

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