

# Coating process and validation technique



丸昌産業株式会社

MARUSYO SANGYO CO.,LTD.

# 1. ABOUT MOLDEFEAT



MARUSYOSANGYO

MOLDEFEAT is a formaldehyde emission removal product developed and manufactured in Japan. It is a water-based material that does not contain organic solvents, so it is easy to handle.

This product is a formaldehyde countermeasure product that has passed strict quality standards such as durability and safety tests of the United Nations Industrial Development Organization (UNIDO). Registered on the Sustainable Technology Promotion Platform (STePP) of the Tokyo Investment and Technology Promotion Office (Tokyo Office).



UNIDO Website

[http://www.unido.or.jp/en/technology\\_db/10566/](http://www.unido.or.jp/en/technology_db/10566/)



## 2. TYPE OF MOLDEFEAT



MARUSYOSANGYO

MOLDEFEAT is a water-based formaldehyde emission removal material. Made in Japan.


Model Number	Usage	Where to use/ apply
S-3TRE	Mixed resin	<ul style="list-style-type: none"><li>▪ High concentration</li><li>▪ Used mixed into urea/phenol resin</li></ul>
S-3Ti1	Spraying	<ul style="list-style-type: none"><li>▪ High concentration</li><li>▪ Contains polyurethane resin</li></ul>
S-3TGX	Spraying	<ul style="list-style-type: none"><li>▪ High concentration</li><li>▪ Non-resin used</li></ul>

Functions and Applications	Container
<p>Wood chips, plywood, MDF, various wood products, and wooden panels</p> <p>Wallpaper, furniture, various wood products, building materials</p>	<div><p>20L BIB</p></div> <div><p>18L Steel can</p></div>

# 3-1. Confirm the MDF processing equipment



MARUSYOSANGYO

Equipment	Applicable product	Advantage/Disadvantage	Image Photos: equipment
Mixed resin Spray coating	Wood chips (Before press molding)	<ul style="list-style-type: none"><li>• Possible for mass processing</li><li>• Stable quality</li><li>• Less production loss</li></ul>	

Mixed resin / Spraying with MOLDEFEAT

Using MOLDEFEAT type

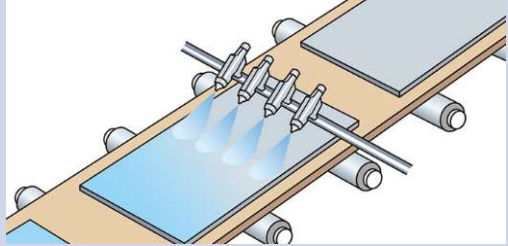
- S-3TRE
- S-3TGX
- S-3Ti1



## 3-2. Confirm the MDF processing equipment



MARUSYOSANGYO

Equipment	Applicable product	Advantage/Disadvantage	Image Photos: equipment
Spray coating	All products	<ul style="list-style-type: none"><li>• Possible for mass processing</li><li>• Stable quality</li><li>• Easy to make production loss</li><li>• Double-side application</li></ul>	 A technical diagram showing a spray coating system. It includes a spray gun assembly mounted on a frame, with blue lines indicating the spray pattern onto a rectangular workpiece. The workpiece is supported by rollers.

▪ Release agent and moisturizing with MOLDEFEAT

Using MOLDEFEAT type

- S-3TGX
- S-3Tx1






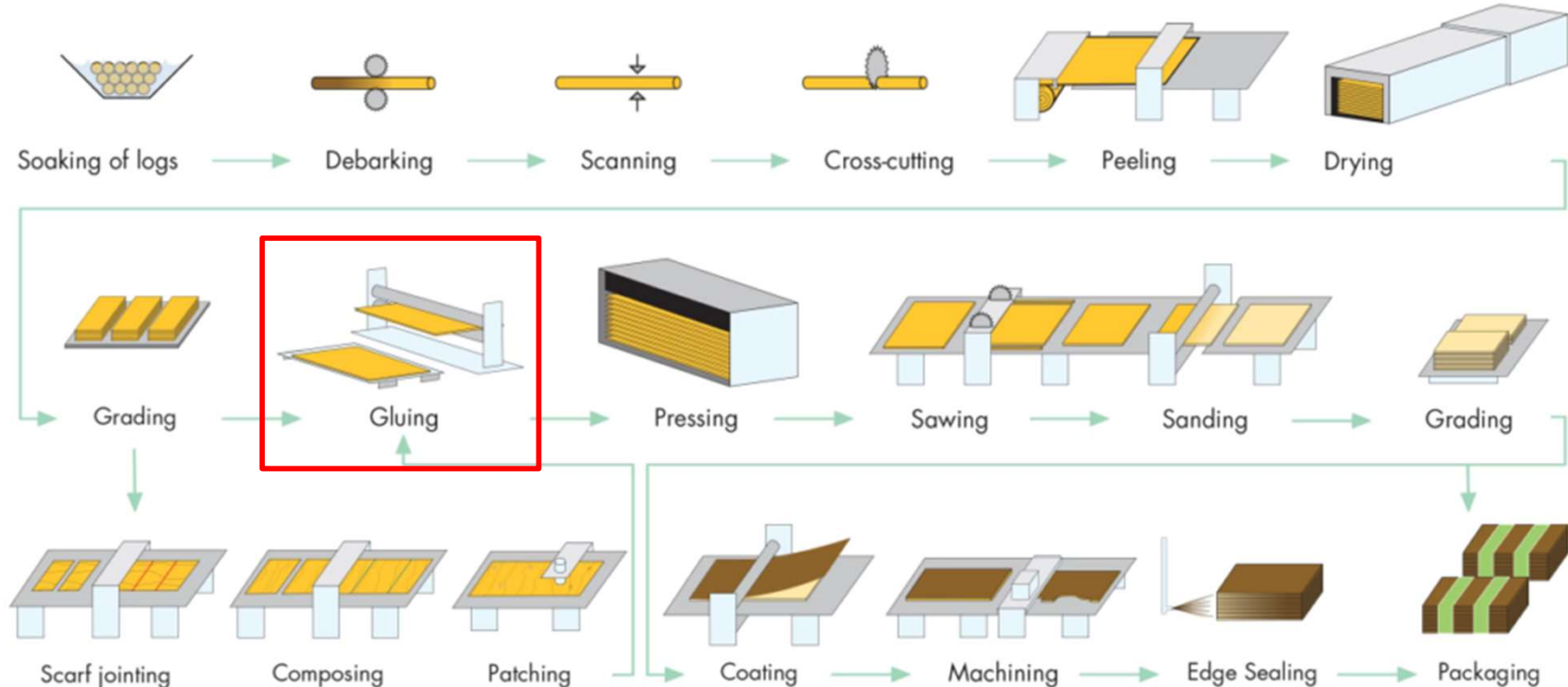
# 4-1. Plywood using a process with mixed resin



MARUSYOSANGYO

Equipment	Applicable product	Advantage/Disadvantage	Image Photos: equipment
Mixed Glue	All products	<ul style="list-style-type: none"> <li>• Don't need any other equipment</li> <li>• Possible for mass processing</li> <li>• Stable quality</li> <li>• Easy to make production loss</li> </ul>	

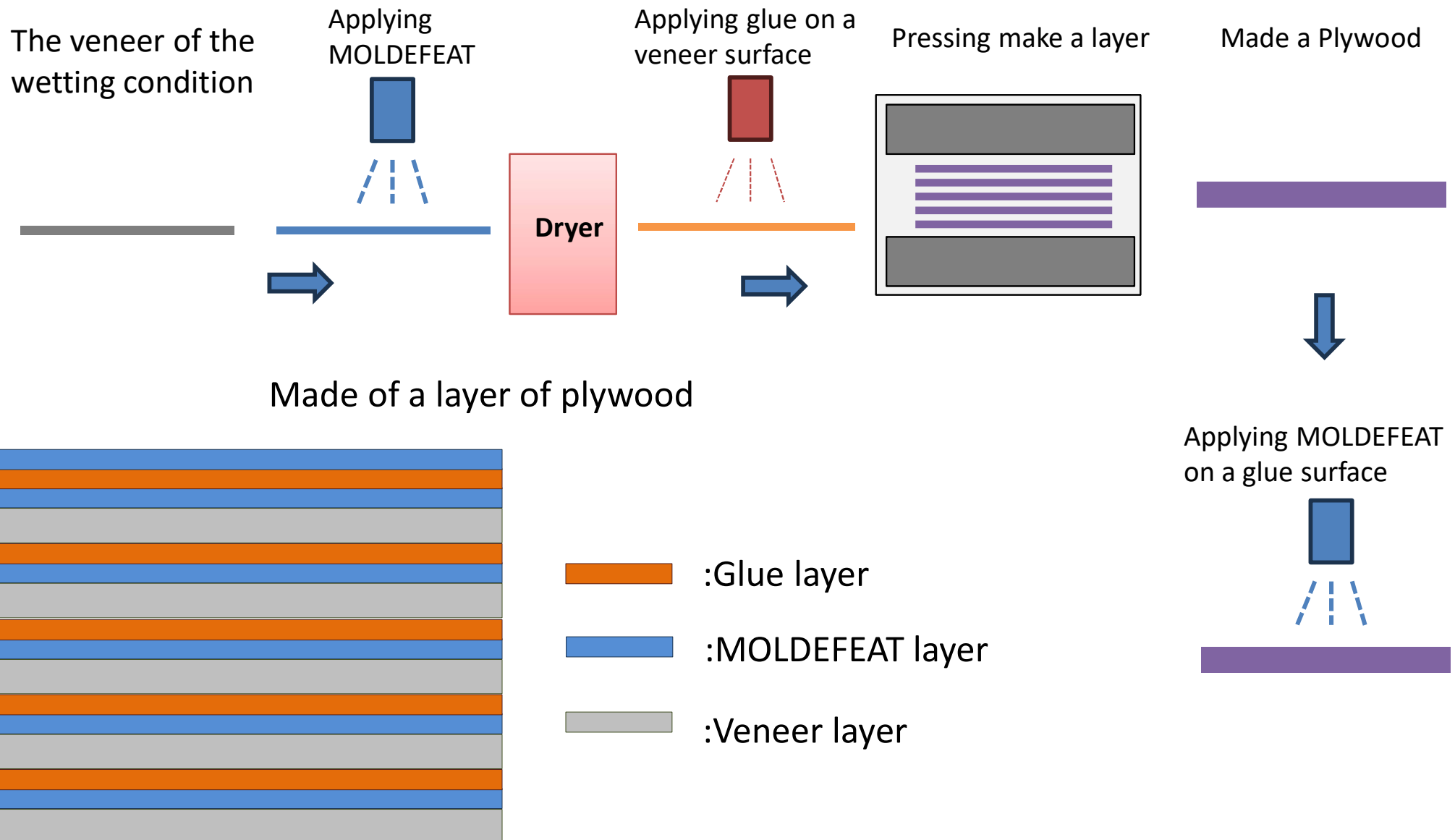
Use a glue (urea resin-based type or a phenol resin-based type) mixed with MOLDEFEAT.  
Using MOLDEFEAT type: S-3TRE



## 4-2. Plywood Using a process of spraying



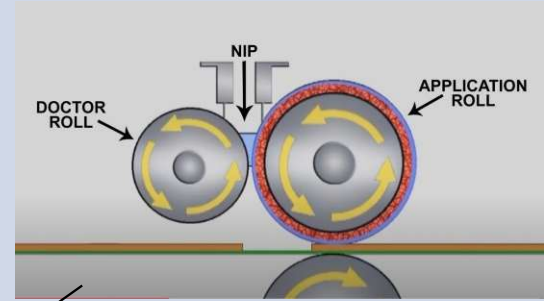
MARUSYOSANGYO



# 5. Confirm the processing equipment



MARUSYOSANGYO

Equipment	Applicable product	Advantage/Disadvantage	Image Photos: equipment
Roll coater	Only for flat surface product	<ul style="list-style-type: none"><li>• Possible for mass processing</li><li>• Stable quality</li><li>• Low lost a coating material</li></ul>	 A schematic diagram of a roll coater. It shows two large horizontal rollers. The left roller is labeled 'DOCTOR ROLL' and the right roller is labeled 'APPLICATION ROLL'. A material web is fed from the left, passes between the rollers at the 'NIP' point, and then continues to the right. The diagram illustrates the coating process where material is applied between the rollers and then smoothed by the doctor roll.

Using MOLDEFEAT type

- S-3TGX
- S-3Tx1









# 6. Confirm the processing equipment



MARUSYOSANGYO

Equipment	Applicable product	Advantage/Disadvantage	Image Photos: equipment
Spray coating (By workers)	All products	<ul style="list-style-type: none"> <li>• Low cost for equipment</li> <li>• Available any products, such as uneven surfaces</li> <li>• Easy to make production loss</li> <li>• Quality depends on the technique of workers</li> </ul>	 
Dedusting processing	All products	Remove dust before coating application	
Plasma processing	Laminate surface or Painted surface	Improve to adhere on coated surface	

# 7. Performance Test



MARUSYOSANGYO

No	Test process	Contents
1	Trial Processing (Internal)	First, check the actual usage amount at the production line operation, and after that apply same quantity to the test specimen. Confirm the coating quality, drying time and appearance after coating with using test specimen.
2	Performance test (Internal)	Performance test, peeling test by using gas detection tube.
3	Prototype test (Production line)	Check about Coating quality , Drying time, Appearance after coating with prototype
4	Performance test of prototype (Internal)	Performance test, peeling test by using gas detection tube (Check if the same result as test specimen)
5	Performance test (External)	Obtain the test result for public release

# 8-1. Internal trial processing



MARUSYOSANGYO

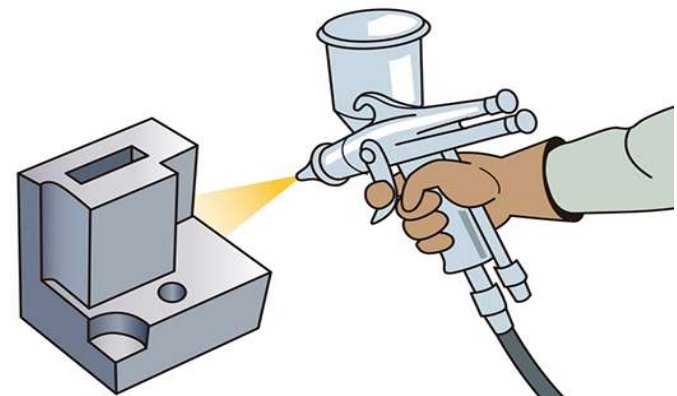
- ① Apply Moldefeat by applicator or spray gun.
- ② Dry out

## Check Points

1. Usage amount at the production line
2. Applying Moldefeat at same quantity and at the same application method
3. Coating quality
4. Is the usage amount enough to coat all surfaces?
5. Drying temperature and time
6. Finishing appearance



If the existing production line is a coater type, please confirm application quality by bar coater/ applicator.



If the existing production line is based on spraying type, please use spray guns.

## 8-2.The performance test by gas detection tube



MARUSYOSANGYO

You can check the formaldehyde removal performance by placing a measuring plate in a bag, injecting formaldehyde gas at a specified concentration, and measuring at optional time.



Gas detection tube for Formaldehyde



Tools : Gas detection tube, inspirator, plastic bags, formaldehyde gas



Formaldehyde gas is injected into the bag containing the test piece and the bag not containing the test piece.



Measurement the gas level by the detection tube after placing those bags at optional time.



Compare the formaldehyde gas level between blank and test piece.