Molecule Gradient Adhesive Tape
3-layer PSA process

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Technical div.

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Design Philosophy 1

★Structure: Multi layer gradation structure

1st layer : low molecular acrylic adhesive layer

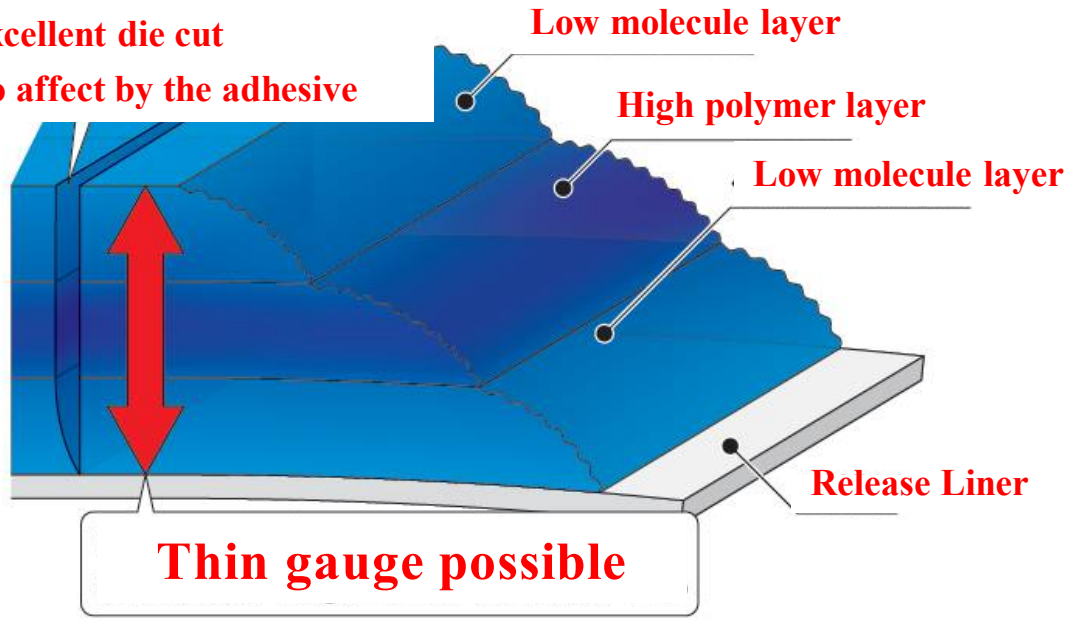
2nd layer : polymer special adhesive layer

3rd layer : low molecular acrylic adhesive layer

Structure :

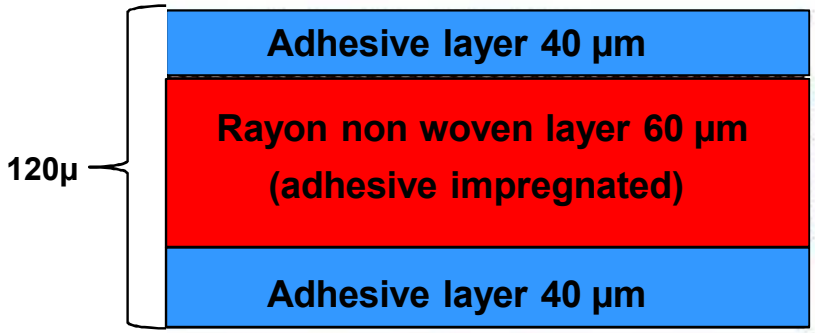
Excellent die cut

No affect by the adhesive

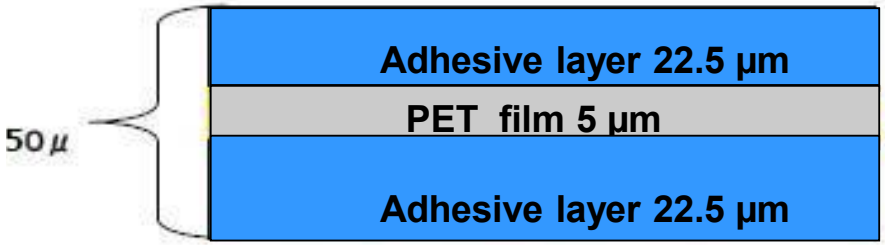


Replacing the typical double adhesive tape

○ Rayon non woven double adhesive tape



○ PET based double adhesive tape



Design Philosophy 2

★Features

1. By applying gradation to the molecular weight with the same kind of resin from the center to the outside, it increases the interlayer strength and creates a very strong bonding force.

2. The outer adhesive layer has selected a special low molecular weight adhesive layer that adheres well to adherends (dissimilar materials).

Applications

★Fixing LCD panel

★Fixing LCD module and the back light

★Fixing digital and Movie camera's Lens

★Fixing Mesh,Non woven and cushion substrates

★Fixing Light shielding film

★Use as a spacer

★Fixing Brand name plate

★Adhering Polyimide film and the copper substrate.

Product Application

★Fixing human machine interface parts

★Fixing human machine interface parts

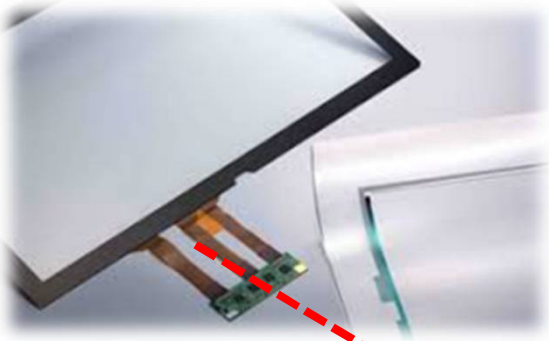
★Fixing of seat heat sensor

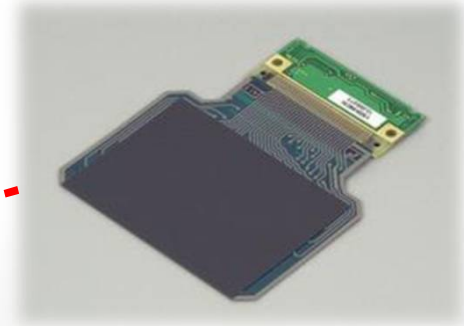
★Waterproof fixing of smartphone / Tablet parts

★Waterproof fixing of digital camera parts

Application for Touch sensor

Display touch sensor





Products & Characteristic

Product	Thickness（t=mm）	Color	Peel adhesive SUS	Heat holding power ℃
200A30（954-3）	0.03	Transparent	9	150
200A50（954-5）	0.05	Transparent	17	150
300Z300B	0.3	Black / White	44	150
400Z300B	0.3	Black / White	28	150

Product dvantage

Molecular gradient Double-coated tape is superior to substrate-less and double-sided tape with substrate.

【Evaluated】

Molecule Gradient tape（300A100/954-10） 0.1mm thickness
PET carrier tape 0.1mm thickness
Non carrier tape 0.1mm thickness

Sample	N	Peel force(180°) N/inch	Shearing force (N/cm²)	Shear creep resistance (mm)	Impact resistance (J/3.2cm2)
300A-100 (954-10)	1	28.6	＞100	0.0	0.04
	2	30.5	＞100	0.0	0.03
	3	29.8	＞100	0.0	0.02
	Ave	29.6	＞100	0.0	0.03
PET Carrier Tape	1	20.1	99.0	0.0	0.02
	2	19.7	95.0	0.0	0.02
	3	21.1	92.0	0.0	0.02
	Ave	20.3	96.0	0.0	0.02
Non Carrier Tape	1	21.4	90.0	1.0	0.01
	2	23.3	90.0	1.0	0.01
	3	23.2	85.0	1.0	0.01
	Ave	22.6	88.0	1.0	0.01

Peel adhesive

Test Parameters		
Materials	SUS plate	
Assembly Procedure-Rolled	Rolled	2-times
	Force	20N
	Speed	300mm/s
Test Conditions	Dwell Time	1h
	Peel Speed	300mm/min
	Temperter	23℃

Shearing force

Test Parameters		
Materials	SUS plate	
Assembly Procedure-Rolled	Rolled	2-times
	Force	20N
	Speed	300mm/s
Test Conditions	Dwell Time	1h
	Peel Speed	200mm/min
	Temperter	23℃

Shear creep resistance

Test Parameters		
Marerials	SUS plate	
Assembly Procedure-Rolled	Rolled	2-times
	Force	20N
	Speed	300mm/s
Test Conditions	Dwell Time	1h
	test time	1h
	Load	1kg
	temperter	23°C

Impact resistance test

①Acrylic plate that was cut like a figure (2.0t) and Lenny plate (1.0t) bonded in the processed sample to 2mm frame.

②The test piece is allowed to stand at room temperature for 24 hours.

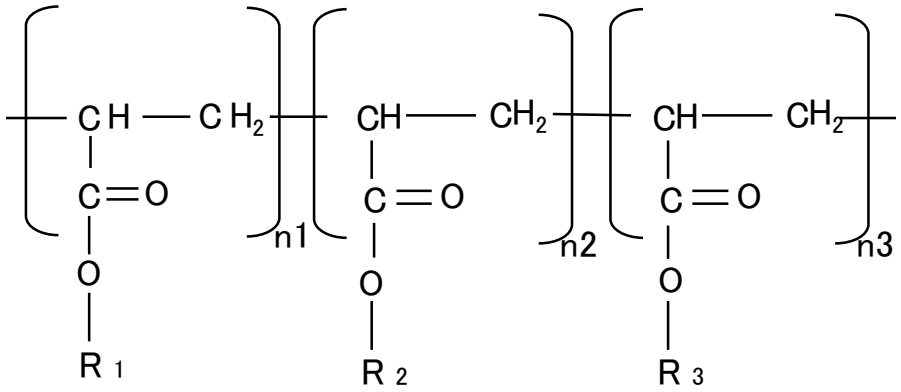
③Weight (100-200g) is dropped, and to check the sample of the dirt.

※ Fall (100-50-5) → (100-100-5) → (100-150-5) → (100-200-5) → (200-150-5) → (200-200-5) carried out of the order.

※ [J / 3.2 cm 2] = weight of weight [kg] × falling height [m] × gravitational acceleration [9.8 m / s 2] × number of times

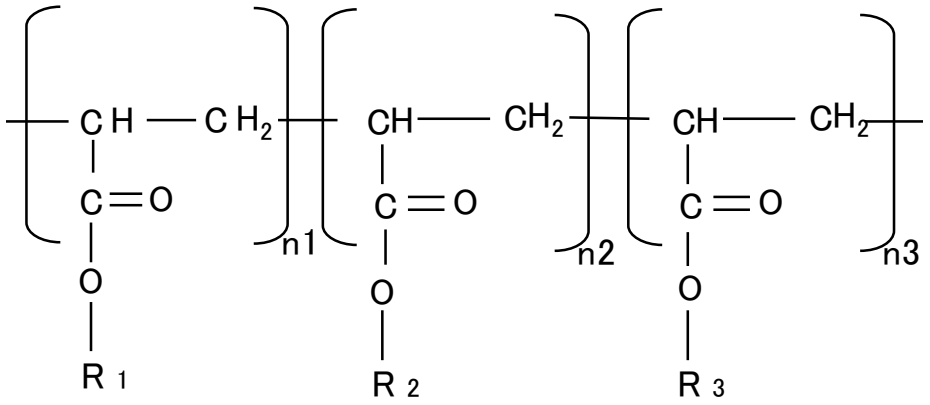
Chemical structure of 3-layer adhesive

Chemical structure of outer layer adhesive



R1= C6-C8 alkyl group R2= butyl group
R3=hydroxy group or amino group

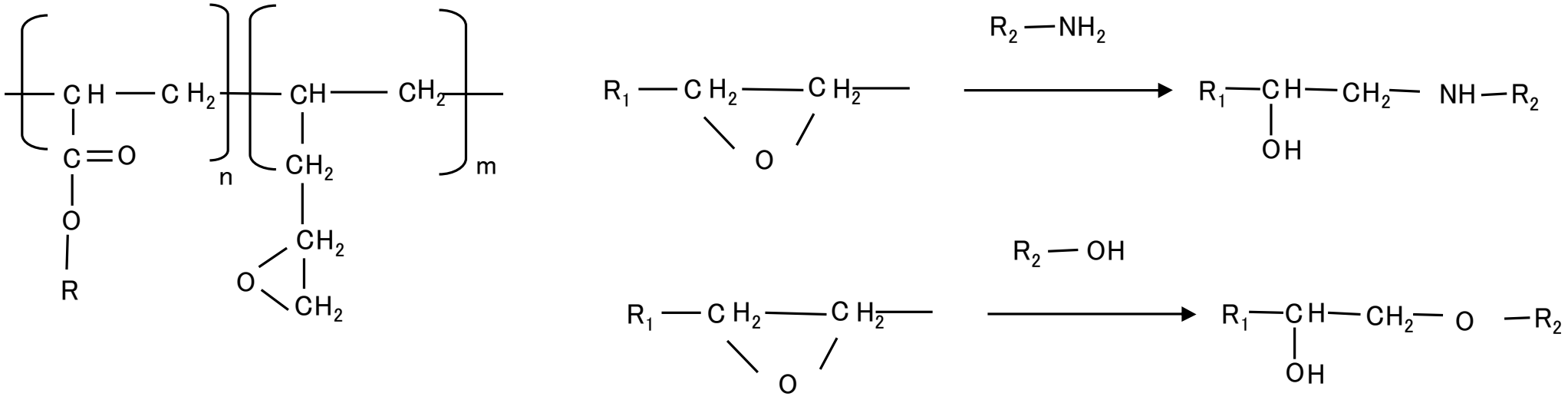
Chemical structure of mid-layer adhesive



R1= C6-C8 alkyl group R2= butyl group
R3=amino or Glycidyl group

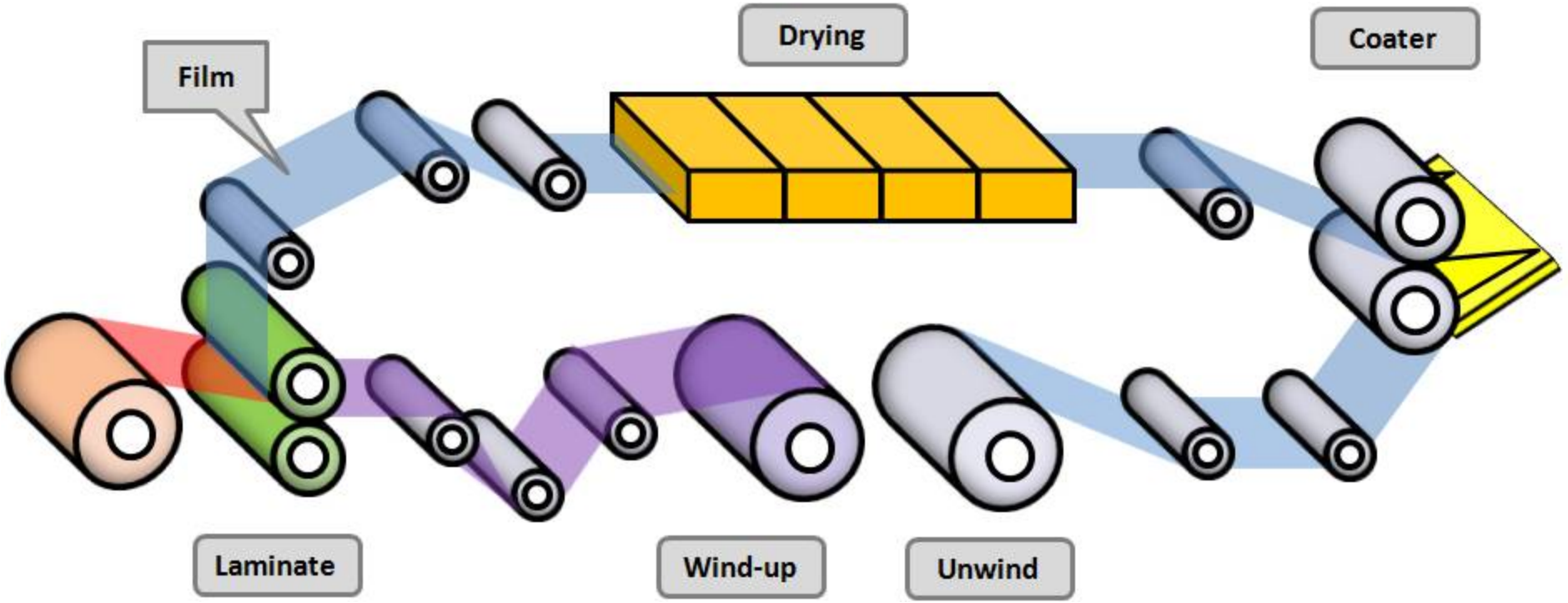
Chemical reaction between outer layer to mid-layer

In case of mid-layer has Glycidyl group



Manufacturing method of adhesive tapes

Coating method



The separator (blue) delivered from "Unwind" is coated with a certain coating thickness with "coater“ (adhesive application part).

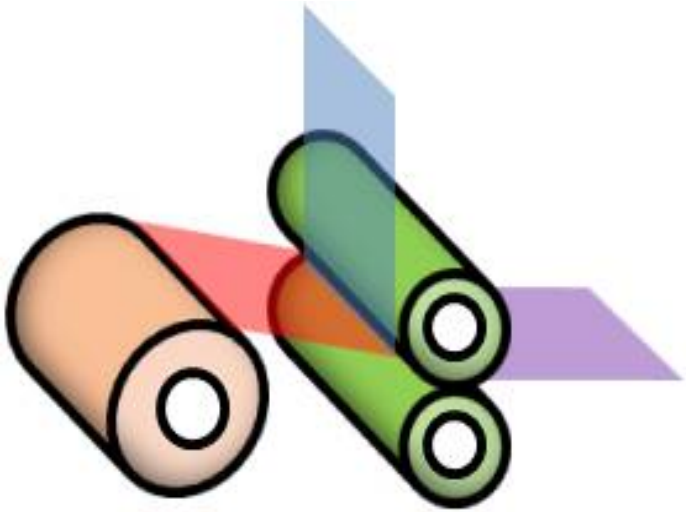
After “Drying” the solvent component of the “Film”, it is “Laminated” with the material (base material etc.) (red) which is fed out from the vicinity of the dryer outlet.

And “Wind-up” them (purple).

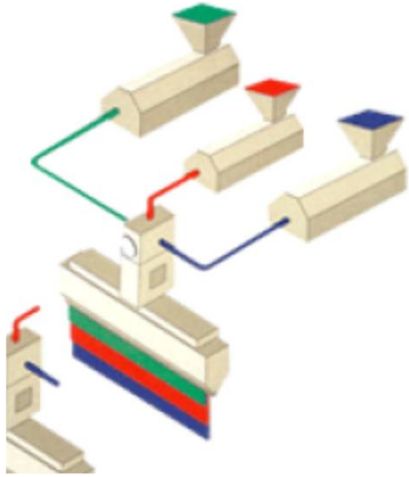
Manufacturing method

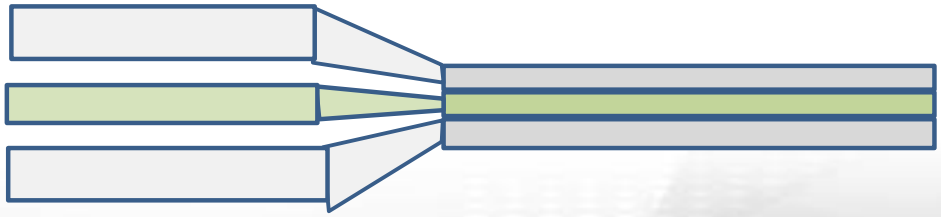
Our technology not only “Lamination"
"Multi layer coating" is also possible.

Lamination

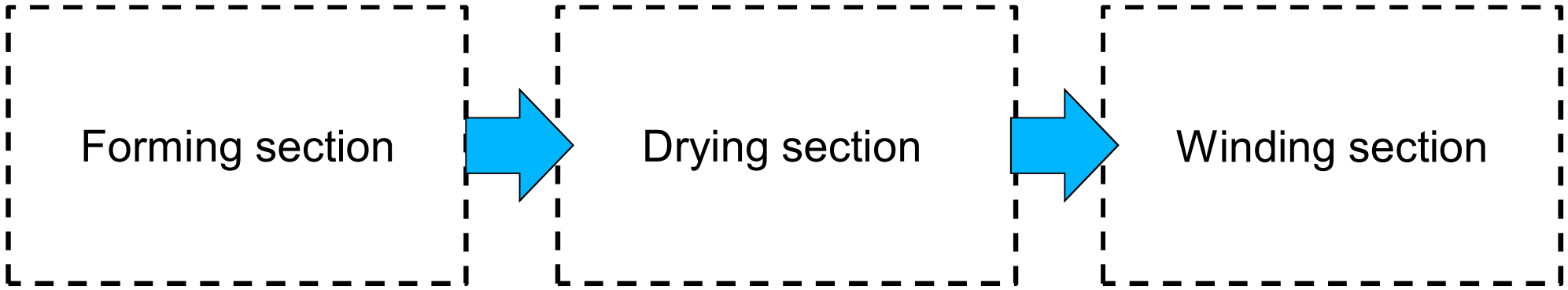


Multi layer coating



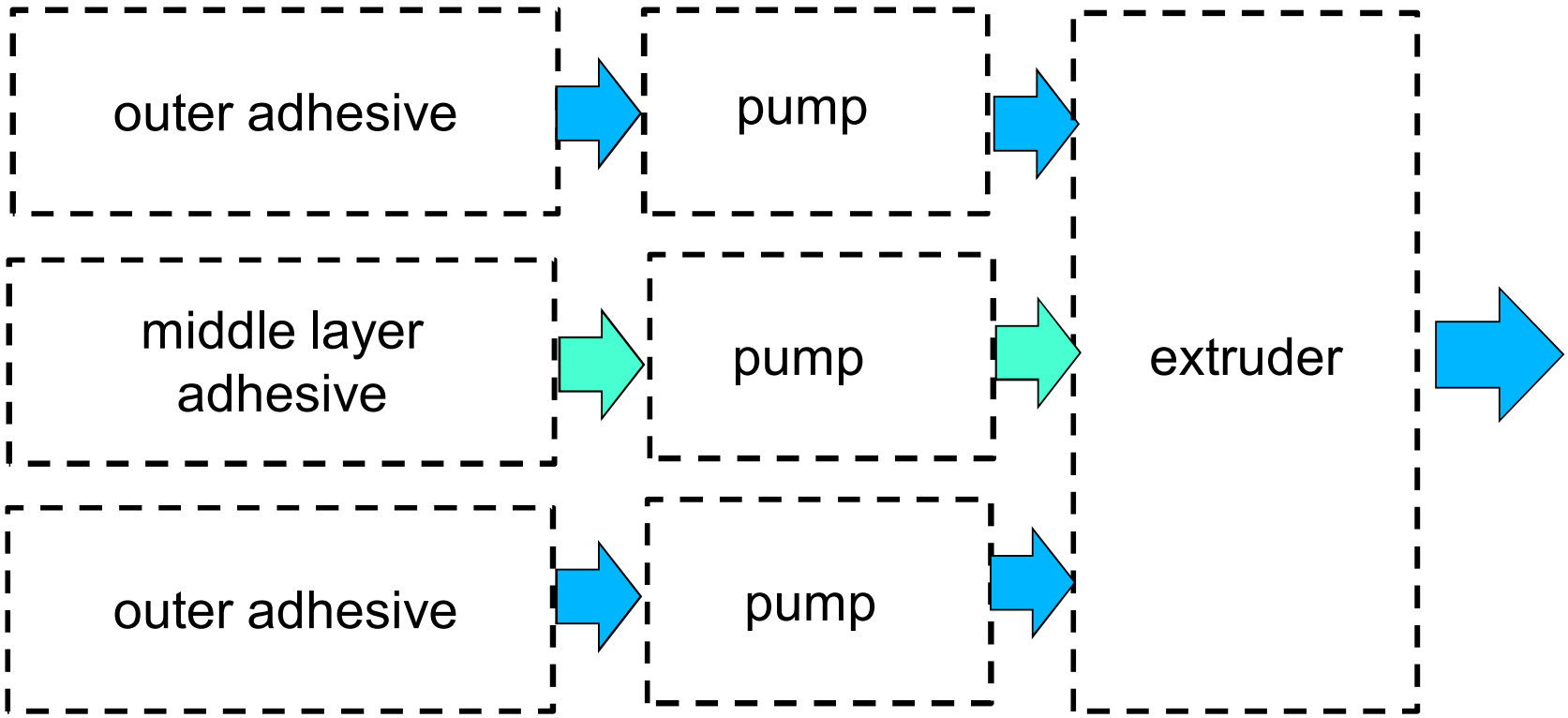


Outline of process



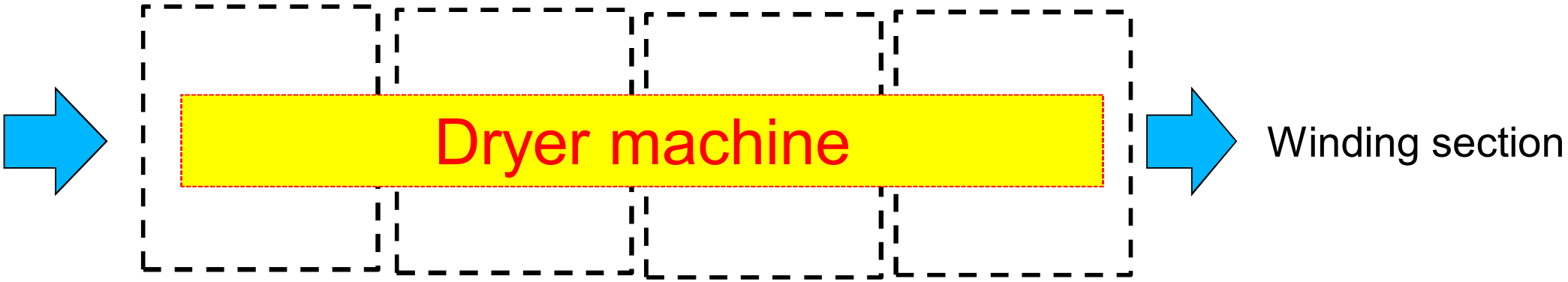
The process consists three sections that forming and drying and winding.

Forming section



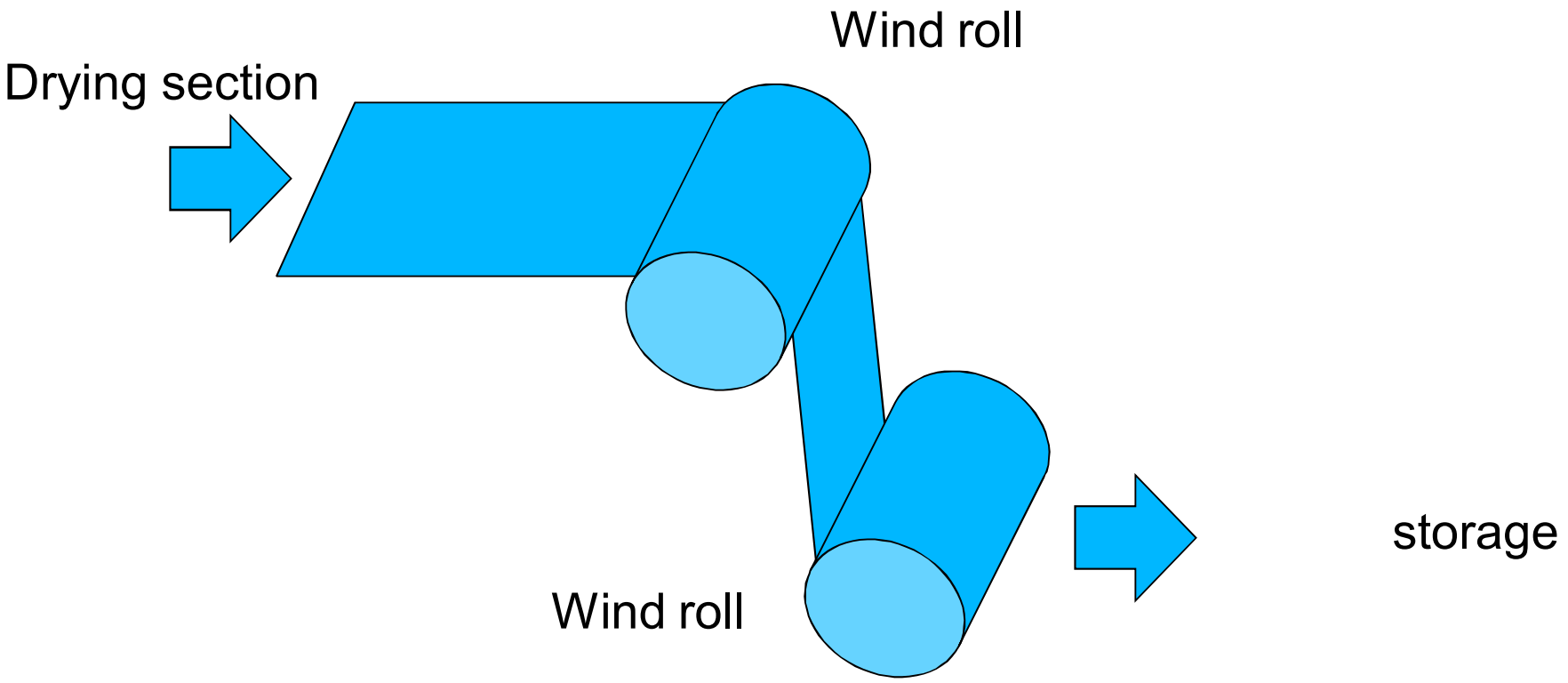
In the forming process three raw materials provide by each pumps to extruder.

Drying section



In the drying section the formed 3-layer dried suitable condition by dryer machines.

Winding section



In the winding section the formed 3-layer winds suitable condition by winding machines.

End of Presentation

•User is responsible for determining whether the KGK product is fit for a particular purposeand suitable
•for user's method of application. Please remember that many factors canaffect the use and performance
•of a KGK product in a particular application. The materials to be bonded with the product, the surface preparation of
•those materials, the product selected for use, the conditions in which the product is used, and the time and environmental conditions in which the product is expected to perform are among the many factors that can affect the use and performance of a KGK product. Given the variety of factors that can affect the use and performance of a KGK product, some of which are uniquely within the user's knowledge and control,
•It is essential that the user evaluate the KGK product to determine
•whether it is fit for a particular purpose and suitable
•for the user's method of application.
•KGK make no warranties on above data.

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