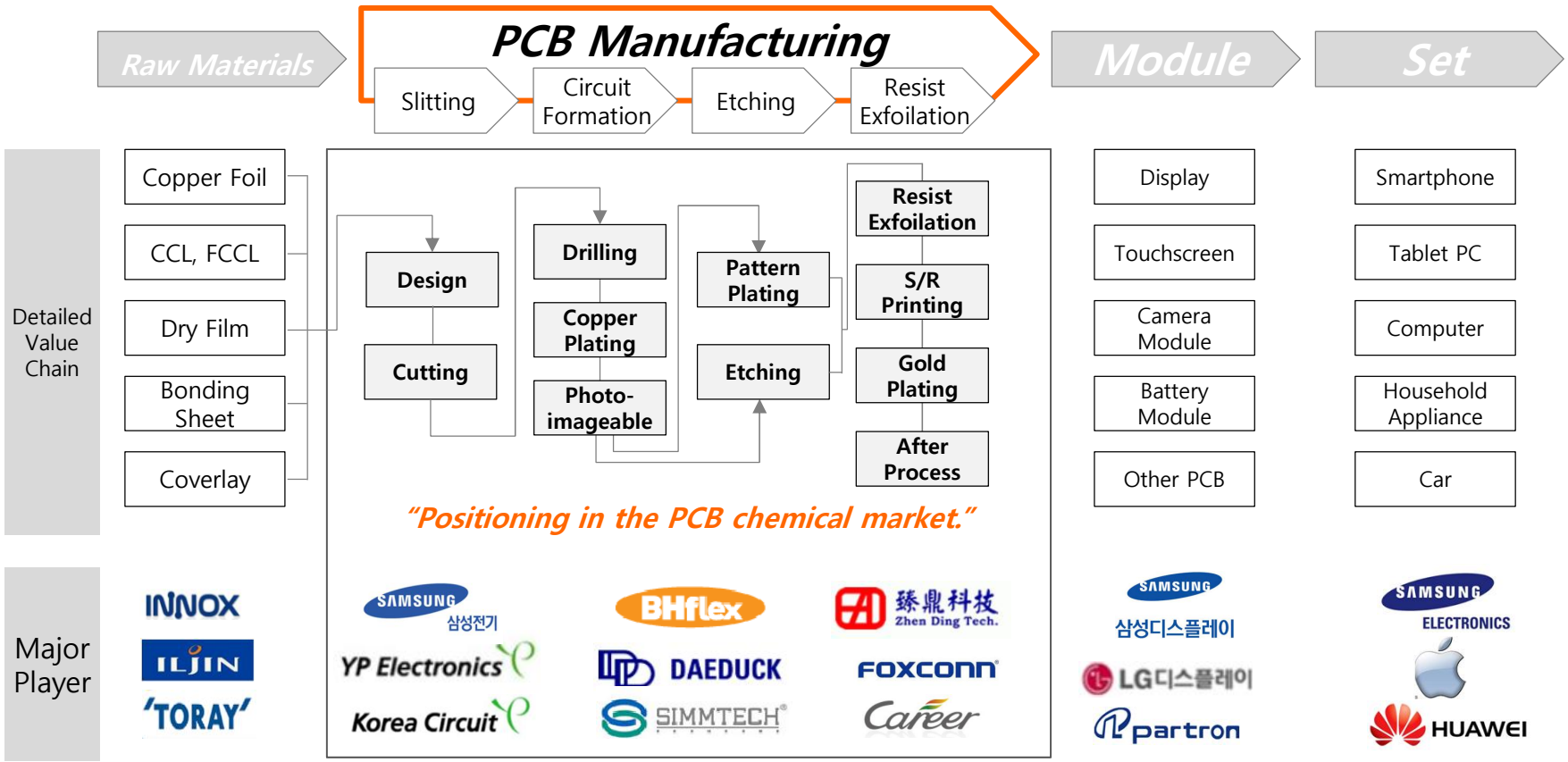
INVESTOR RELATIONS

2020 YMT IR BOOK

Your Most trustworthy

ymt
Specialty Chemicals

PCB Industry value chain



YMT has been focusing on the PCB chemical materials
and the major sales are generated from the highly valued Finish Plating and the Copper Plating segments.

Global YMT

YMT Co.,Ltd. (KOREA, Head Quarter)

- Incheon, Korea.
- Chemical Division, Materials Division.
- 3 Factories in Nam-Dong Industry area.
- 2 R&D Center.
- Main Manufacturing location

YMT Co.,Ltd. Taiwan Branch

- Taoyuan, Taiwan
- Sales and Promotion for Chinese and Taiwanese customer

YMT China (Shenzhen) Co.,Ltd.

- Shenzhen, China
- 2 Branches : Pinhong, Kunshan Branch
- Constructing Factory in Zhuhai (Pinhong, Branch)

YMT Vina Co.,Ltd.

- Bac-ninh, Vietnam
- Chemical Division, Plating outsourcing
- Vin-Phuc Branch : Manufacturing Location.

YPT Co.,Ltd.

- Ansan, Korea
- Plating Outsourcing : ENIG, ENEPIG, Via-Fill
- R&D Center

Beyond Solution

- Ansan, Korea
- Plating Machine R&D
- Equipment management service

Total Solution for Customer

YMT possesses specialty chemical technologies applicable to the entire process including cleaning, etching, and finish plating

Final Finishing Chemical

Soft ENIG Process
- ✓ CF 300 Series
- ✓ MIKO Series

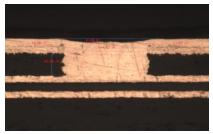
ENIG Process
- ✓ PEN Series
- ✓ MIKO Series

ENEPIG Process
- ✓ PEN Series
- ✓ ELP or ZEP Series
- ✓ IR Gold Series

EPIG process
- ✓ ZEP Series
- ✓ IR Gold Series

Immersion process
- ✓ PROTIN Series

Electrolytic gold process
- ✓ HG 300 series
- ✓ SAU 10 series



Copper Plating Chemical

Electroless Copper plating
- ✓ HVF Series
- ✓ MJH series

Electrolytic Copper plating
- ✓ BJ series
- ✓ HBJ Series(Half-fill)
- ✓ FSBJ Series(flash plating)
- ✓ ZEUS Series(Via-fill)

Process Chemical

DES Chemical
- ✓ MSAP/SAP DFR Stripper
- ✓ MSAP/SAP Cu seed Etchant
- ✓ GMZ Series
- ✓ HWA Series

Cleaner
- ✓ FXC Series
- ✓ EQ Series

Gold Recover

UBM Etchant

LAZ Process

New product for 5G

No etching and roughness laminating pretreatment

Ultra low profile detachable thin copper foil

Positive Cu roughening Process Nanotus®

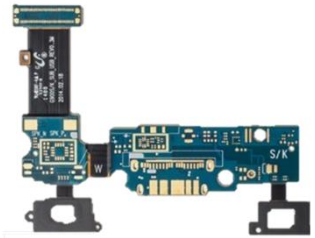
Electroless Copper plating for LCP

Business Area | Products Introduction – Finish Plating

Finish Plating | Copper Plating | Process Chemical | Electronic Materials

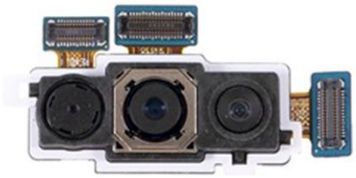
Soft ENIG Process ensures finish plating to prevent oxidation of copper and protect surface of circuit board & semiconductor, and boasts the world-class technology with #1 in global market share among gold plating process for materials

Soft ENIG Process



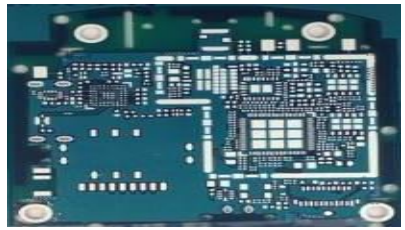
- ✓ Gold plating process dedicated solely for FPCB
- ✓ #1 in global market share and technology level
- ✓ Applicable for ultra-fine circuits
- ✓ Excellent anti-bending to resolve nickel crack issue
- ✓ Samsung and Apple products adopted the processed materials

ENEPIG Process



- ✓ Finish plating for fine circuits suitable to camera module
- ✓ Leading global market share
- ✓ Cost efficiency and technological competitiveness

Other Finish Plating

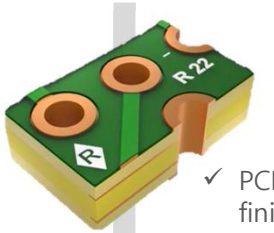


ENIG / Silver / Tin Plating

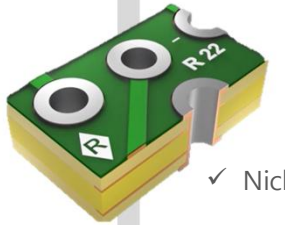
- ✓ Securing superior solderability
- ✓ Process simplification
- ✓ No appearance issues (discoloration, etc.)
- ✓ Superior Flexure
- ✓ Cost efficiency

Business Area | Products Introduction – Finish Plating

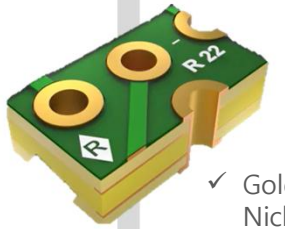
Finish Plating | Copper Plating | Process Chemical | Electronic Materials



✓ PCB in the final finishing stage : circuit formation / lamination.



✓ Nickel plating

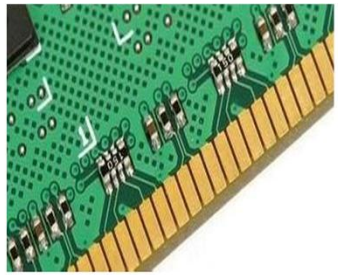


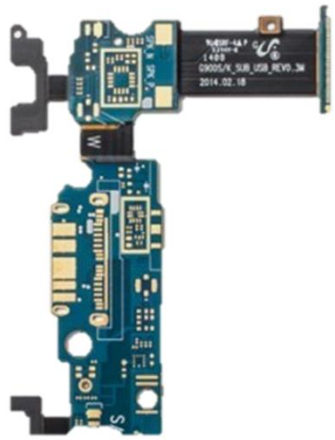
✓ Gold Plating on Nickel

✓ Plating in order of copper->nickel->gold after several processes including cleaning, soft etching and pre-dip.

✓ YMT supply gold-plating chemicals and additives to customers. [Gold is purchased directly by the PCB manufacturer.]

The PCB after gold plating



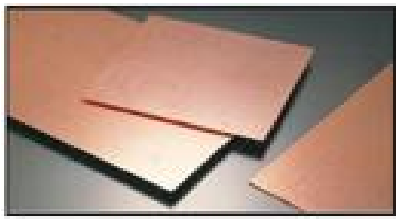


Business Area | Products Introduction – Copper Plating Chemical

Finish Plating | **Copper Plating** | Process Chemical | Electronic Materials

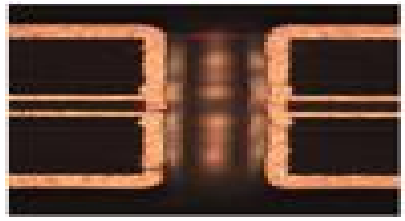
Specialty chemicals for processing which allows electric connectivity between layers through copper plating of processed holes by drill – increasing demand for multi-layer and miniaturization of circuit boards to drive demand for high-end copper plating chemicals

Electroless copper plating



- ✓ World-class technology
- ✓ Process to provide nonconductor with chemical conductivity
- ✓ Revenue expected to grow substantially starting 2017

Electrolytic copper plating



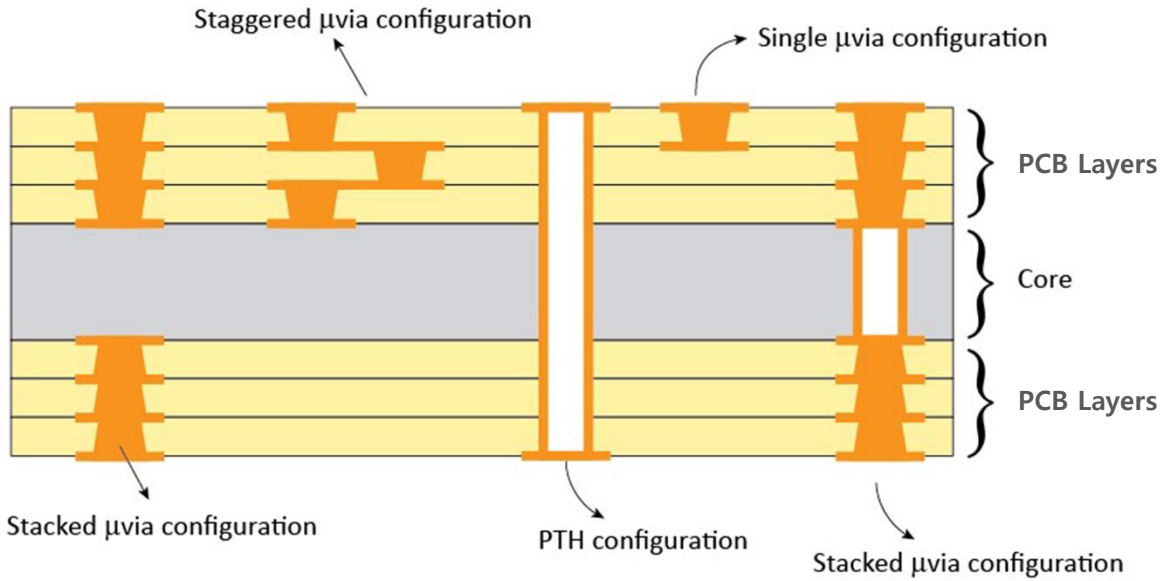
- ✓ Process for copper plating of desired width by extraction of the copper
- ✓ Suitable for forming the desired location and width
- ✓ Excellent in maintaining uniformity of plating width than the competitors
- ✓ Cost advantage due to high yield

Plastic copper plating

- ✓ Process for giving chemical conductivity to nonconductive materials
- ✓ Electroless plating by converting Pd ions to metal ions.
- ✓ Secures adhesion and allowing chemical plating in the desired area.
- ✓ Used for IT internal antenna applications

Business Area | Products Introduction – Copper Plating Chemical

Finish Plating | **Copper Plating** | Process Chemical | Electronic Materials



Drilling

- ✓ Making a hole on PCB board by laser and by other methods.

De-Smear

- ✓ Remove the smear from the hole

PTH

- ✓ Forming a thin copper film on the outer wall of the hall

Electric copper plating

- ✓ Forming a thin copper film on the outer wall of the hall

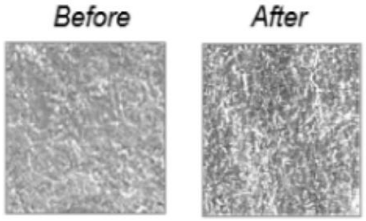
Business Area | Products Introduction – Process Chemical

Finish Plating | Copper Plating | **Process Chemical** | Electronic Materials

Specialty chemicals used in PCB manufacturing process and electric parts materials process – diverse product portfolio ranging from releasing agents for DRY FILM to flux remover

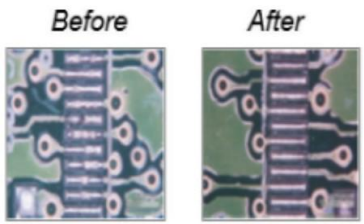
DR Series (Releasing)

- ✓ Diverse releasing agents suitable to products by different clients
- ✓ Fast releasing effects and high yields



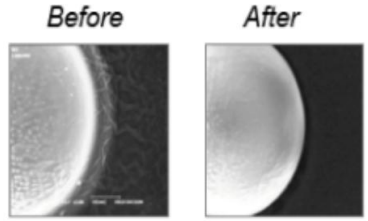
SE Series (Soft Etching)

- ✓ Allows consistent copper roughness
- ✓ High yields by better grip of D/F and PSR



Gold Recover

- ✓ Removal of contaminants on gold surface after surface processing
- ✓ Excellent cleaning capacity compared to the competitors



Cleaner

- ✓ Two types of deflux cleaners (water, organic)
- ✓ Reduces defection by removal of dust inside the equipment
- ✓ Eco-friendly products without toxic substances such as methanol

Business Area | Products Introduction – Electronic Materials

Finish Plating | Copper Plating | Process Chemical | **Electronic Materials**

The world's first Ultra-thin Copper Foil produced by using the technology of Electroless Copper Plating Process is available in various forms like EMI shielding, FCCL and heat-proof film. We expect its continuing sale growth in the market in which is currently dominated by foreign products.

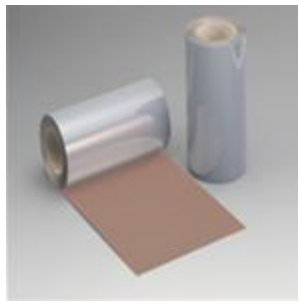
RTR Facility

- ✓ A facility where the parent material is wrapped around a rotating roll and applied chemical to produce copper foil.
- ✓ Current CAPA : 15,000m^2 per month

Ultra-thin Copper Foil

- ✓ A very thin, 2㎛ to 6㎛, copper foil which is a raw material for the EMI shield sheet and the FCCL.
- ✓ The world's first Copper Foil produced by using Electroless Copper Plating process.

EMI Shield Sheet



- ✓ A thin copper foil consisted of aluminum carriers and copper.
- ✓ Material that is highly expected for future growth for its electromagnetic blocking and heat blocking.

PET CCL

- ✓ FCCLs produced by YMT's own copper foil
- ✓ Massive growth is highly expected due to the market trend of "light, thin, short and small".

For 5G Technology

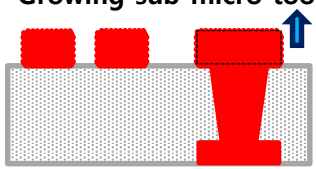
Nanotus®

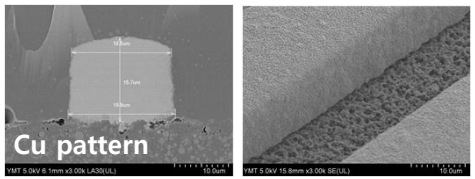
Non etching & Ultra low fine profile pretreatment Nanotus®
PSR pretreatment, Lamination pretreatment For High frequency application.

New Products for 5G technology

Nanotus®

Growing sub-micro tooth

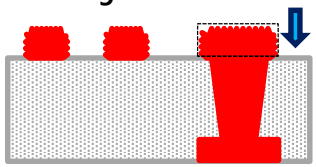


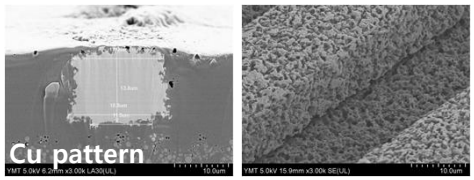


Extremely low profile: R_a ~0.15 µm, R_z ~0.35 µm

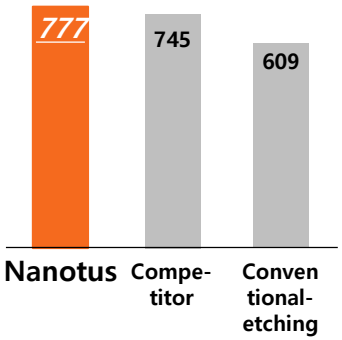
Conventional etching

Etching Cu to form tooth



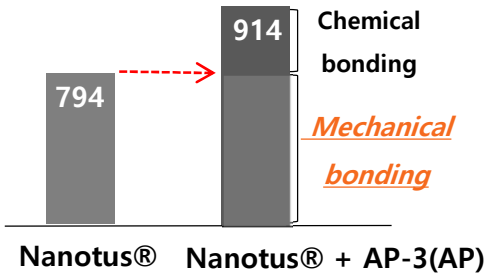


Peel strength with PSR (g_f/cm)

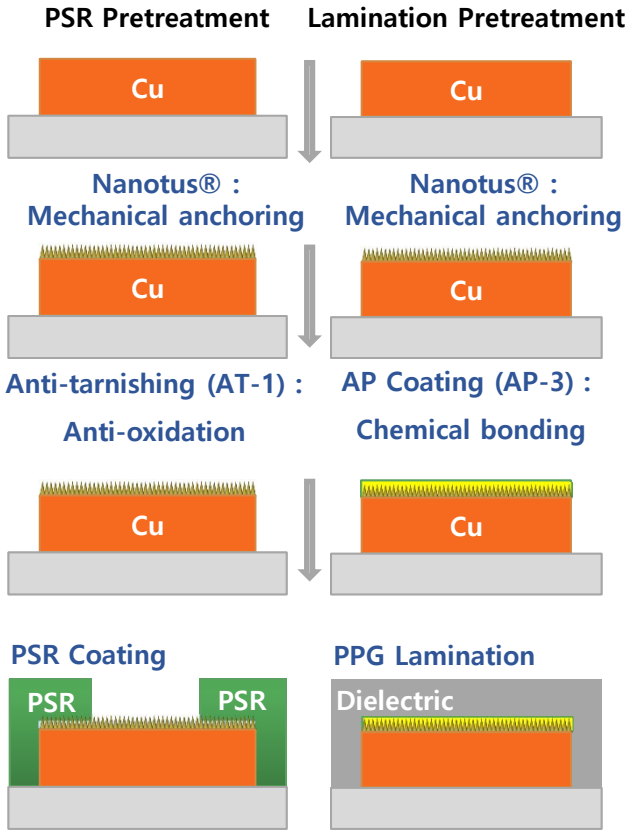


Peel strength with Pre-preg (g_f/cm)

1 oz-Cu foil, DS-7402



Process of Nanotus



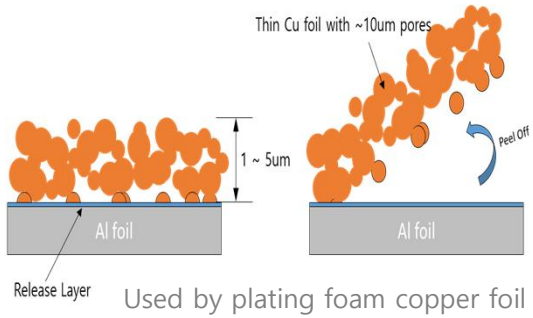
Thin Copper Foil for 5G

Foam Sponge thin copper foil for 5G high frequency EMI shield film

Production Technology : Hybrid Copper plating on metal carrier
Available Copper foil Thickness : 2 ~ 6um
Porosity Rate : < 20%
Over 80db of Db of excellent EMI effectiveness under 5G Frequency 10~28GHz
Excellent electrical properties
Most effective heat-resistance on high-temperature

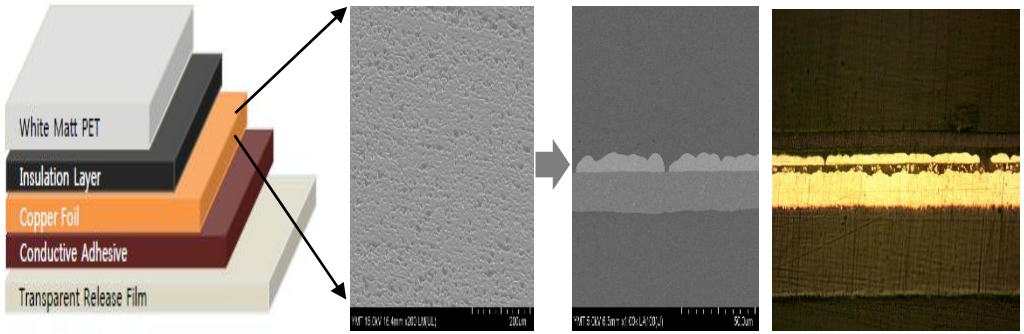
Property & Strength

- Improvement of heat resistance
  - Reflow : > 265℃
  - Solder float : > 300℃
- Surface Roughness : < Ra 0.5um
- Thickness uniformity : < ±3%
- Shielding Effectiveness(over 10GHz) : >80dB
- Signal loss rate : < -8%
- Peel Strength >1.0kgf / cm



Used by plating foam copper foil for Al carrier Surface

Core Technology [Structure & Characteristics]



- Foam sponge thin cu foil material used in high frequency EMI shielding materials
- Excellent electrical properties and thermal resistance
- Signal transmission speed is excellent and signal loss rate is low

Domestic Market situation

New Business Field

Existing Business Field

			"Existing Business Area"	*"New Entry Area in 2020"*		
			FPCB, RFPCB	***PKG***	***HDI***	***RIGID***
Major player	Domestic		• *SEMCO* • *BH Flex* • *Youngpoong* • *Daeduck*	• *SEMCO* • *Daeduck* • *SIMTECH* • *Korea Circuit*	• *Daeduck* • *LG Innoteck* • *Korea Circuit*	• *Hyunwoo* • *SEIL*
	Global		• *Zhending Technology* • *Career* • *Unimicron* • *Mektron*	• *AT&S* • *Zhending Technology* • *Ibiden*	• *AT&S* • *Zhending Technology* • *Ibiden*	• *Various*
Process Chemical			• Expanding market share • Promotions chemicals for fine pattern	• Entering the market with the first sales to major customers in the 2nd half of 2019	• Increasing sales related to stripping/etching chemicals.	• -
Cu Plating	Elctroless		• High domestic share (Estimate at least 40%)	• First sales expected in 1Q of 2020	• Gain a high level of market share within the S company.	• -
	Electro		• New Business area - 100% foreign production share	• Sales generated with outsou-rcing in the 2nd half of 2019 and its expansion in 2020	• Developing	• -
Finish Plating	Elctroless		• The World's Top Share (more than 50%)	• Test by customer	• Developing	• Selling to some domestic customers
	Electro		• Developing	• Developing	• Developing	• Developing

2020 Business Forecast

Market Forecast

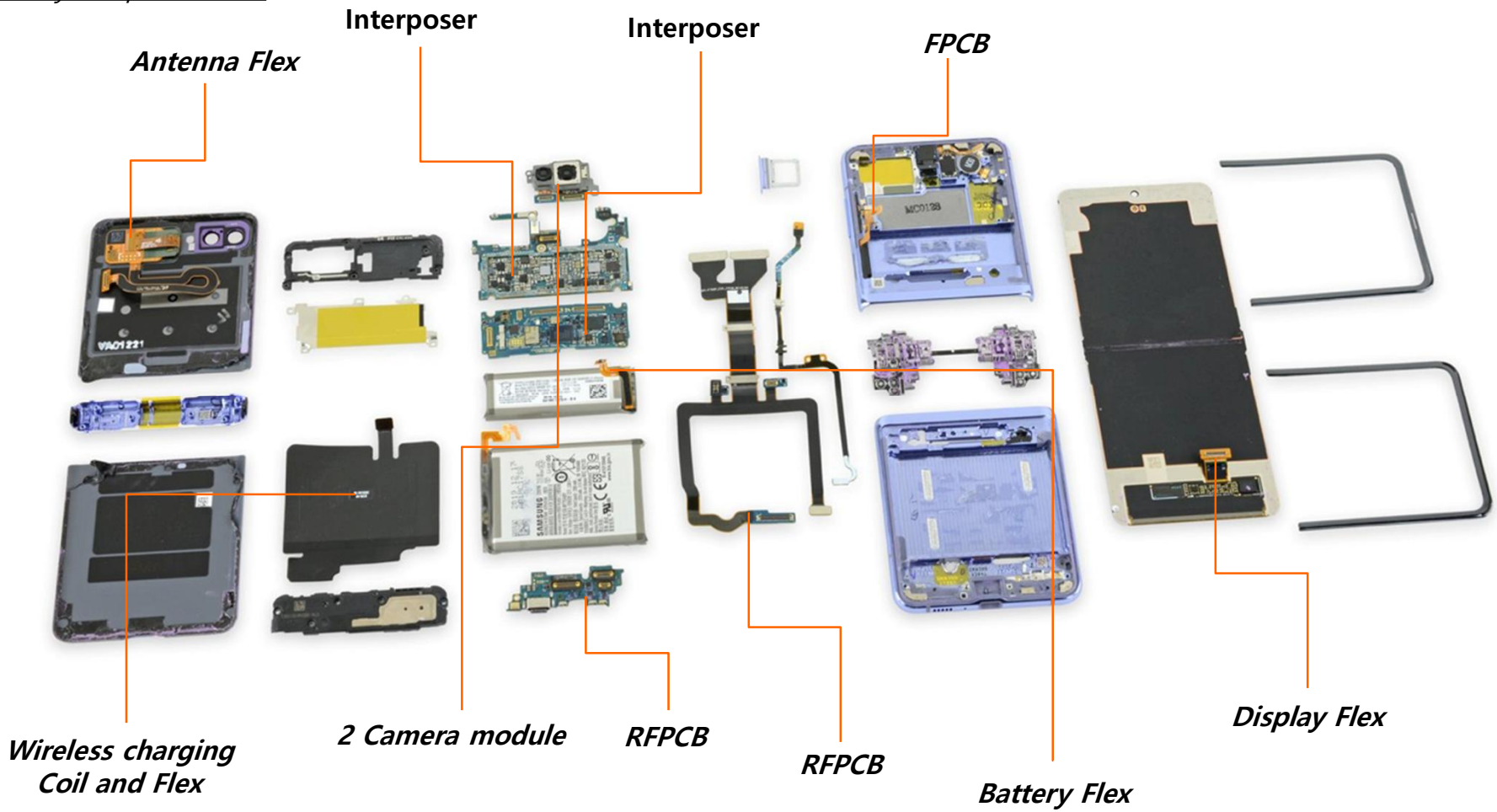
- Continuous increase in RFPCB production for camera modules
- Increasing OLED adoption models of North American and Chinese smartphone makers
- Increasing demand on the application of 5G based on the new processes
- Korean PKG substrate's economic boom are highly expected

	Finish Plating(Gold Plating)	Copper Plating	Process Chemical	Outsourcing & New Business
Domestic	✓ **Korean FPCB manufacturer's output increases due to increased OLED-mounted models.** ✓ Increased chemical consumption due to increased camera modules in Korea ✓ Attempts to enter the gold-plated market of PKG Substrates beyond the FPCB	✓ Increase the volume of copper plating (MJH series) with OLED RFPCB ✓ **Entering the Via-fill electric copper plating market for FPCB, RFPCB** ✓ **Electroless copper plating chemical launching for PKG substrates**	✓ Enhance promotion of circuit-process chemicals for fine circuit patterns in FPCB and RFPCB ✓ **Expansion of PKG substrates chemicals launched in the second half of 2019**	✓ Maintaining outsourcing sales of PCB for camera modules (YPT) ✓ Increasing outsourcing sales of Via-fill electrostatic copper plating (YPT) ✓ **Promote 5G EMI Shield for domestic Smartphone Brand.**
Global	✓ ENEPIG volume is increased according to the expansion of camera modules by Chinese local customers ✓ Growth in sales due to operating rate of local customers in Vietnam and the expansion of relocation of Korean companies	✓ Expand sales of electroless copper plating in the Vietnamese market (SEMCO, BH, etc.) ✓ Launching and local manufacturing of copper plating chemicals in China at the end of 2020	✓ Promotion of circuit process chemicals for Vietnamese and Chinese local companies	✓ Promote 5G EMI Shield materials for Chinese local companies, supply after NDA contract with a Chinese local company ✓ Expanded outsourcing sales of gold-plating for FPCB in Vietnam

2020 CAPEX Major Schedule

Ultra-thin copper foil manufacturing facility extension	• EMI Shield materials: Supplying to Korean S company's customers and attracted large attentions from China. • Primary extension scale : 70,000㎡ per month / Insufficient Capa because of the co-using RTR outsourcing currently. • Area : Ansan, Gyeonggi Province, Korea • Primary investment scale : about 3 billion won
Establishment of a Chemical Manufacturing Plant in China	• A weak share in general chemical market compared to the high-priced market in China. • Higher price competitiveness in general chemical market through production/sales in China, local production of copper-plated chemical materials with high demand • Area : securing about 13,000㎡ of land in Zhuhai and began building the plant within the year. • Total investment scale : about 7 billion won
Expansion of plating line in Vietnam	• The estimate of the increase in outsourcing sales in Vietnam due to its transfer of domestic customer's production base • Finished setting-up 2 gold plating lines. 1 line is currently in setting. • Considering additional plating lines due to its demand of local outsourcing • Additional investment scale : about 2 billion won
Expansion of Chemical Manufacturing Facility for PKG	• An increase in supplying size of chemicals for PKG's is expected. • Operating small clean rooms and manufacturing facilities now. • Considering expanding clean rooms and facilities due to its demand. • Additional investment scale : about 3 billion won

Galaxy Z flip teardown



Traditional HDI changes to a form of multiple HDIs and RFPCBs due to its bigger display and the battery expansion. The growth of RFPCB adoption is very noticeable and this trend is expected to continue in the future.

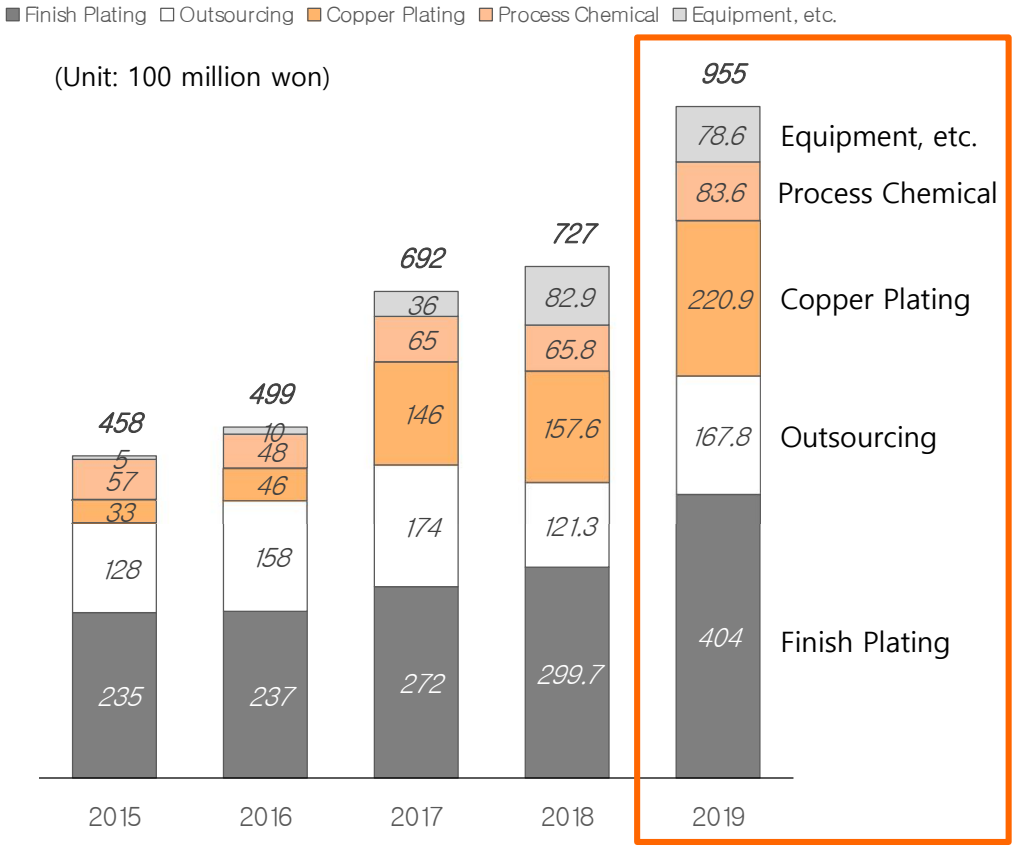
Applications

i Phone 11 pro teardown

Airpod Pro Teardown

Like the Galaxy, Apple is also equipped with a variety of RFPCB modules due to the expansion of the battery area, while mobile accessories such as Bluetooth earphones have become a trend to carry high-end RFPCBs.

Sales Result



- **Achieve record sales of 95.5 billion won in 2019**
  - ✓ 22.8 billion won (31.3 percent) higher than 2018
- **A steady increase in Finish Plating Chemical (gold plating, palladium plating)**
  - ✓ An increase of 10.4 billion won YoY
  - ✓ Increased demand for ENEPIG for camera module PCB
- **Continuous growth in Copper Plating Chemical sales**
  - ✓ Volume Expansion of RF-PCB for OLED Display
  - ✓ Increased share of customers' copper plating lines
- **Outsourcing (YPT) sales increase by 4.7 billion won YoY**
  - ✓ Increase in outsourcing of Gold plating of the camera module PCB
  - ✓ Full-scale mass production of Via-fill copper plating outsourcing

Income Statement

(Unit : 100 million won)

	2019	%	2018	%
Ⅰ. Sales	954.9	100%	727.4	100%
Ⅱ. Cost of sales	588.7	61.7%	447.9	61.6%
Ⅲ. Gross profit	366.2	38.3%	279.5	38.4%
Sales and administrative expenses	145.1	15.2%	135.6	18.6%
Ⅳ. Operating income	221.1	23.2%	143.9	19.8%
Finance income	20.8	2.2%	13.5	1.9%
Finance costs	20.1	2.1%	23.5	3.2%
Other gains	10.4	1.1%	8.9	1.2%
Other losses	16.5	1.7%	23.9	3.3%
Losses on equity method	0.1	0.0%	(0.3)	0.0%
Ⅴ. Profit before tax	215.8	22.6%	118.6	16.3%
Income tax expense	42.0	4.4%	20.8	2.9%
Ⅵ. Profit	173.8	18.2%	97.8	13.5%

Profitability Indicator

	2019	2018
Operating income ratio	23.2%	19.8%
Net profit ratio	18.2%	13.5%
EBITDA (Margin rate)	270.0 (28.27%)	181.4 (24.94%)
ROE	18.60%	12.01%
Total asset turnover	65.62%	60.35%

Balance Sheet

(Unit : 100 million won)

	2019	2018
Assets		
Cashable assets	417.5	276.1
Trade receivable	264.7	206.6
Tangible assets	608.6	560.5
Other assets	348.5	227.6
Total assets	1,639.3	1,270.8
Liabilities		
Trade payables	33.0	37.8
Borrowings	344.7	329.9
Convertible bond	140.4	68.9
Other liabilities	216.9	90.1
Total liabilities	735.0	526.7
Equity		
Issued capital	37.0	37.0
Capital surplus	218.6	219.5
Retained earnings	531.3	403.4
Other equity	117.4	84.2
Total equity	904.3	744.1
Total equity and liabilities	1,639.3	1,270.8

Cash Flow

(Unit : 100 million won)

	2019	2018
Cash at beginning of period	276.1	224.2
Cash flows from operating activities	137.4	176.0
Profit	173.8	97.9
Depreciation expenses	48.9	37.5
Bad debt expense (return)	(12.8)	5.9
Cash flows from investing activities	(144.2)	(160.7)
Purchase of a tangible asset	(81.0)	(120.3)
Cash flows from financing activities	143.8	33.6
Proceeds (repayments) of borrowings	14.8	(16.8)
Disposal of own shares (acquisition)	-	(19.6)
CB issue	140.0	70.0
Net increase in cash	137.0	48.9
Effect of exchange rate changes	4.4	3.0
Cash at end of period	417.5	276.1

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Thank you.