Multi-client Study

Summary

Market Report

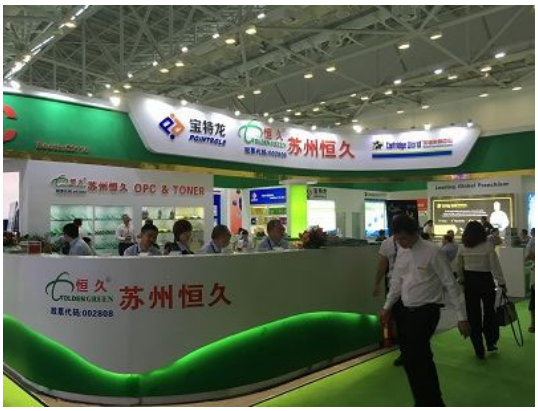
[2021 version of Photoconductor Market Forecast]

"A Strategic Shift Is Required in the Struggling Photoconductor Industry"

=The rise of outsourcing and external sales!!=

<Ultra-durable drum using ceramic coating technology announced by Ricoh>

<Fuji Xerox will change its corporate name to FUJIFILM Business Innovation in April 2021>
(Above is the Takematsu Center producing photoconductors)



<Suzhou Goldengreen Technologies of China finally becoming the top producer>

April 2021
DATA SUPPLY
INC.

〈Overview〉

I. Theme

[2021 version of Photoconductor Market Forecast]

"A Strategic Shift Is Required in the Struggling Photoconductor Industry"

=The rise of outsourcing and external sales!!=

II. Abstract

One year has already passed since the novel coronavirus (COVID-19) was first confirmed in Wuhan, Hubei, China. Vaccine has since been developed at an incredible speed, and vaccination has already taken place in the U.S. and the U.K. among healthcare workers and the elderly, but a considerable amount of time will likely be necessary before the pandemic is fully contained.

Sales of hardware machines in the office equipment industry fell sharply due to lockdown measures implemented in Europe, the U.S., and other countries from March to June 2020, and print volume also suffered a major decline as offices became empty. Although a gradual recovery is expected in both shipments of hardware machines and print volume from 2021, telecommuting is taking root mainly in developed countries, and some say it is already unlikely to see the market size come back to the 2019 level.

Amid the very quickly maturing office equipment market, the Chinese market, one of the very few that is growing, is shifting toward to domestic production of printers, helping local Chinese makers continue to expand rapidly. This has led to intensified competition in China and continuing tough situations for existing Japanese and US makers.

Under these circumstances, the photoconductor market has fully entered a phase of decline. In particular, the production volume of photoconductors for printers is on a significant downward trend, and not only Japanese makers but also third-party makers in China, which had been increasing steadily, have begun to show they are clearly passing the peak. In the meantime, the trend toward longer life photoconductors for copiers is advancing, making the replacement cycle of photoconductors even longer in the future.

Amid the overall demand decline, hardware makers are prompted to review their business strategies. Some reportedly plan to sell off their business and reduce investment and development costs by switching to outsourced photoconductor products. If not, they will likely try to maintain the total volume by increasing external sales to other companies. In either case, some kind of change is sure to emerge as long as maintaining the existing strategy could pose a major risk.

Against this backdrop, this report extensively analyzes not only photoconductor makers, but also substrate makers and material makers. We hope the 2021 version report will be beneficial to many of our readers.

III. Target Items and Makers

1. Target items

1) Photoconductor
   - OPC drum
   - Se-based drum
   - a-Si drum

2) Aluminum substrate for photoconductors

3) Coating material for photoconductor

2. Target makers

1) Photoconductor makers (9 in Japan, 23 overseas)
2) Photoconductor's substrate makers (4 in Japan, 4 overseas)
3) Substrate processing makers (7 in Japan, 1 overseas)
4) Makers of photoconductor's coating materials (CTL/CGL/UCL/OCL) (11 in Japan, 2 overseas)
5) Hardware makers (9 copier makers, 15 printer makers)

IV. Research Period and Methodology

1. Research period: 2018-2024 Regions: Japan, North America, Europe, South Korea, Taiwan, China, and others.
2. Methodology: 1) On-site and in-person interviews with target makers 2) Analysis and review of open literatures, materials, statistics, and other sources 3) Analysis of Data Supply's own proprietary database

V. Format and Report Preparation Period

1. Study format: Multi-client study 2. Report preparation period: January and February 2021
3. Publication date: The English version: April 26, 2021 (Japanese version was published on February 25, 2021)
4. Report format: A4 size/PDF format 5. Price: $5,200
6. Researchers: Mr. Yukio YAMAMOTO, Mr. Kosuke YOSHIDA, and Mr. Masafumi HARIU
   Phone: +81-3-3831-9201 FAX: +81-3-3831-9204 E-mail: <yamamoto@datasupply.jp> <yoshida@datasupply.jp> <hariu@datasupply.jp> Homepage: http://www.datasupply.jp/
7. How to Apply: Please send us an email with your name, company, department, and phone number included to Data Supply Inc. at infods@datasupply.jp or any researcher shown above.

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[Executive Summery]

A. Comprehensive Analysis

B. Photoconductor Market

■Common research item■
・Present and future production volume by region, production base, type, and application (Japan and overseas) (2018-2024) ・Changes in production volume of photoconductors for 25 years ・Trend of production bases (facility investment, changes in the number of production lines, and future production bases) ・Production volume by diameter and application ・Production volume, shipment value, and unit price by diameter and length (2020 results) ・Production volume by positive and negative charge ・Status of long-sized photoconductors ・Development and purchase status of photoconductive layers and coating materials (UCL, CGL, CTL, OCL) ・Development trend of long-life photoconductors ・Status of drum diameters (small/large) ・Production lines ・Coating methods ・Measures by genuine makers against third-party photoconductors ・Production ratio between genuine (OEM) and third-party products ・Changes in supply volume by destination ・Worldwide production bases

1. Canon 2. Ricoh 3. Fuji Xerox 4. Konica Minolta 5. Kyocera Group 5-1. Kyocera 5-2. Kyocera Document Solutions 6. Mitsubishi Chemical 7. Fuji Electric 8. Sharp

1. APS Photoconductor (China) 2. GreenRich Technology (Taiwan) 3. Guangzhou A&G Optoelectronics Technology (China) 4. Hanp (Baiksan OPC) (South Korea) 5. HG Technologies (China) 6. Huaian Gantech Opto-Electronics (China) 7. Lexmark International (USA) 8. Sindoh (South Korea) 9. Suzhou Goldengreen Technologies (China) 10. Xerox Corporation (USA) 11. Other makers (USA: 1, China: 7, South Korea: 2, Hong Kong: 1, India: 1, Bangladesh: 1)

C. Drum Substrate Market

■Common research item■
・Production volume by diameter, application, and length ・Production volume of non-burnished/burnished drum substrates ・Photoconductor makers' supply volume by production base (worldwide) ・Approach for color photoconductors (runout tolerance of drum substrates, roundness, surface roughness, and uniformity) ・Relations between processing and drawing makers ・Trend of production technology (burnished and non-burnished drum substrates) and others ・Price trend ・Production bases

1. Showa Denko 2. UACJ Extrusion Corporation 3. Nikkeikin ACT

D. Coating Material Market

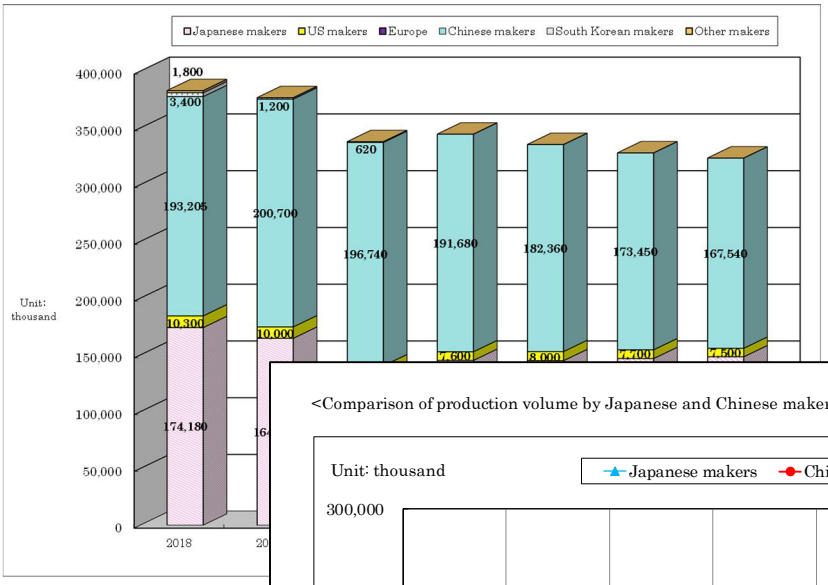
SAMPLE PAGE

Excerpts from < Executive Summary > and < Comprehensive Analysis >

*Charts are filled in the actual version.

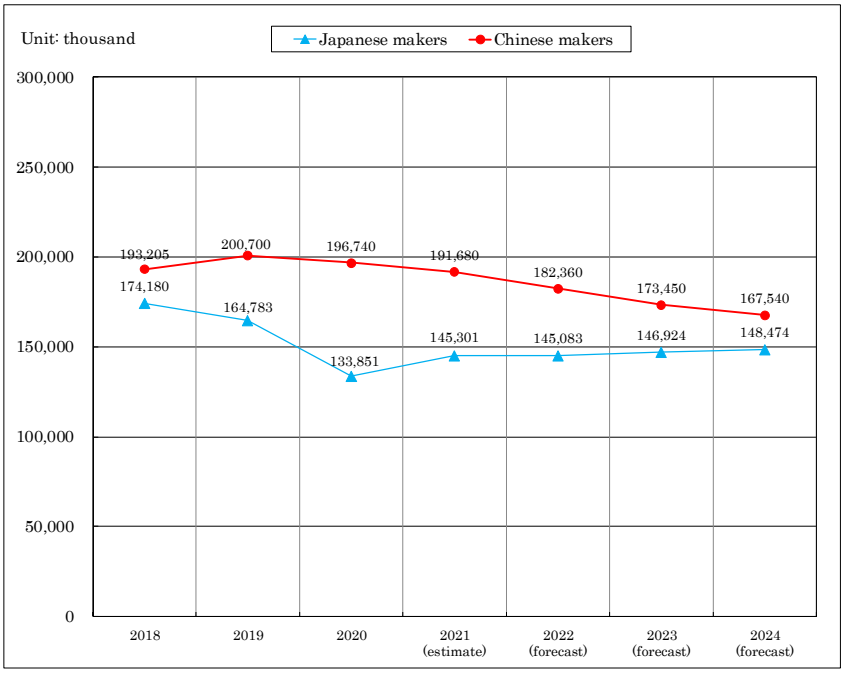
◇ Executive Summary ◇

1. Changes in worldwide production volume of photoconductors



The worldwide production v
million units year on year in 20
19), which led to lockdowns an
and as a result, the photoconc
from 2021, but the prolonged
countries and the trend towar
the 2019 level would already b
While the photoconductor ma
shows that the clearer polariz
makers (Xerox Corp. and Lexr
makers. When it comes to Sout
have virtually been eliminate
India is too small to count. It
companies trying to stay in th

<Comparison of production volume by Japanese and Chinese makers>



The production volume of Chinese makers has surpassed Japanese makers, the gap of which widened further in 2020 when the COVID-19 struck.
However, the production volume by Chinese makers will likely be passing the peak in the future, thereby closing and the gap of the production volume between the two countries again.

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Excerpts from < Comprehensive Analysis >

*Charts are filled in the actual version.

2) Production volume by region and by application

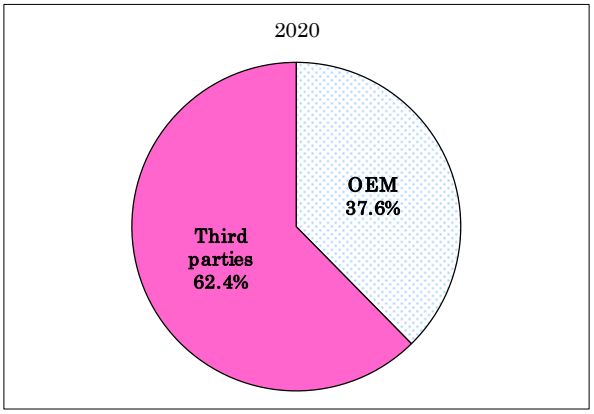
Unit: thousand

		2018	%	2019	%	2020	%	2021 (estimate)	%	2022 (forecast)	%	2023 (forecast)	%	2024 (forecast)	%
Japan	PPC	18,957	5.0	18,969	5.0	14,088	4.2	15,580	4.5	16,130	4.8	16,332	5.0	16,499	5.1
	%	-		100.1		74.3		110.6		103.5		101.3		101.0	
	Printer/Fax	77,064	20.1	73,201	19.4	53,854	15.9	61,412	17.8	60,094	17.9	61,898	18.9	63,691	19.7
	%	-		95.0		73.6		114.0		97.9		103.0		102.9	
	sub total	96,021	25.1	92,170	24.5	67,942	20.1	76,992	22.3	76,224	22.7	78,230	23.8	80,190	24.8
	%	-		**96.0**		**73.7**		**113.3**		**99.0**		**102.6**		**102.5**	
North America	PPC														
	%														
	Printer/Fax														
	%														
	sub total														
	%														
Europe	PPC														
	%														
	Printer/Fax														
	%														
	sub total														
	%														
China	PPC														
	%														
	Printer/Fax	2													
	%														
	sub total	2													
	%														
South Korea	PPC														
	%														
	Printer/Fax														
	%														
	sub total														
	%														
Others	PPC														
	%														
	Printer/Fax	2													
	%														
	sub total	2													
	%														
Total	*PPC*	3													
	%														
	Printer/Fax	34													
	%														
Total		**38**													
	%														

2) Third-party ratio (2019-2021)

Unit: thousand

Year		2019	%	2020	%	2021 (estimate)	%
OEM	For hardware devices						
	For consumable supplies						
	total						
Third parties							
total							



In the photoconductor market, the continued overproduction by Chinese makers has resulted in an unusual situation in which third parties completely exceed the OEM ratio. The production volume by Chinese makers will likely be passing the peak in the future, making the OEM ratio recover gradually.

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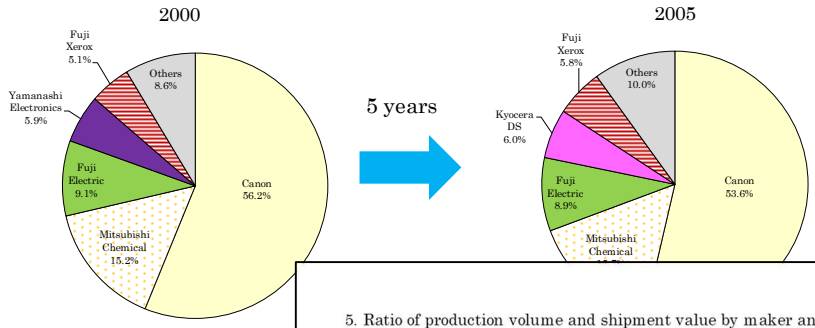
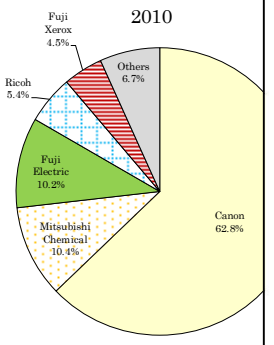
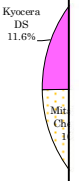
Excerpts from < Photoconductor Market >

*Charts are filled in the actual version.

(2) Market share by maker for the last two decades

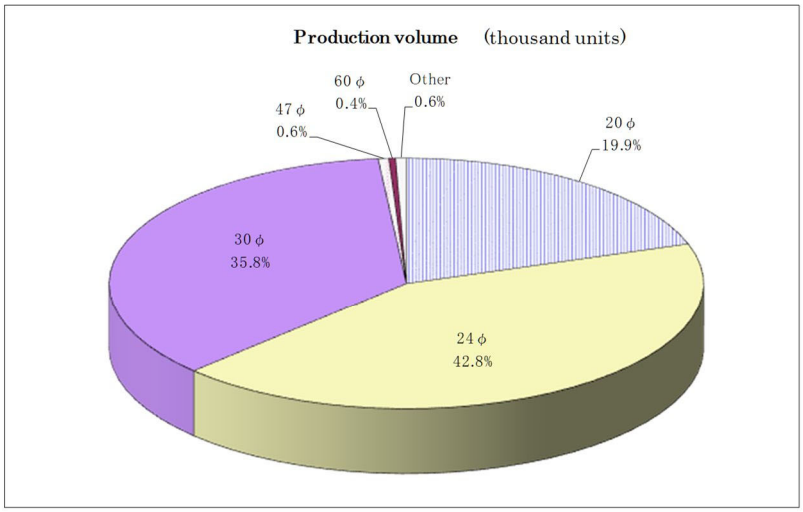


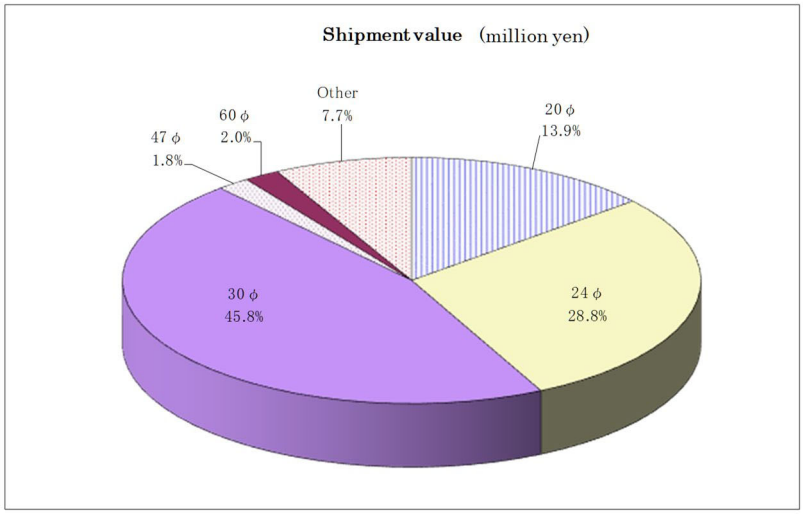




5. Ratio of production volume and shipment value by maker and diameter (2020)

[All makers]





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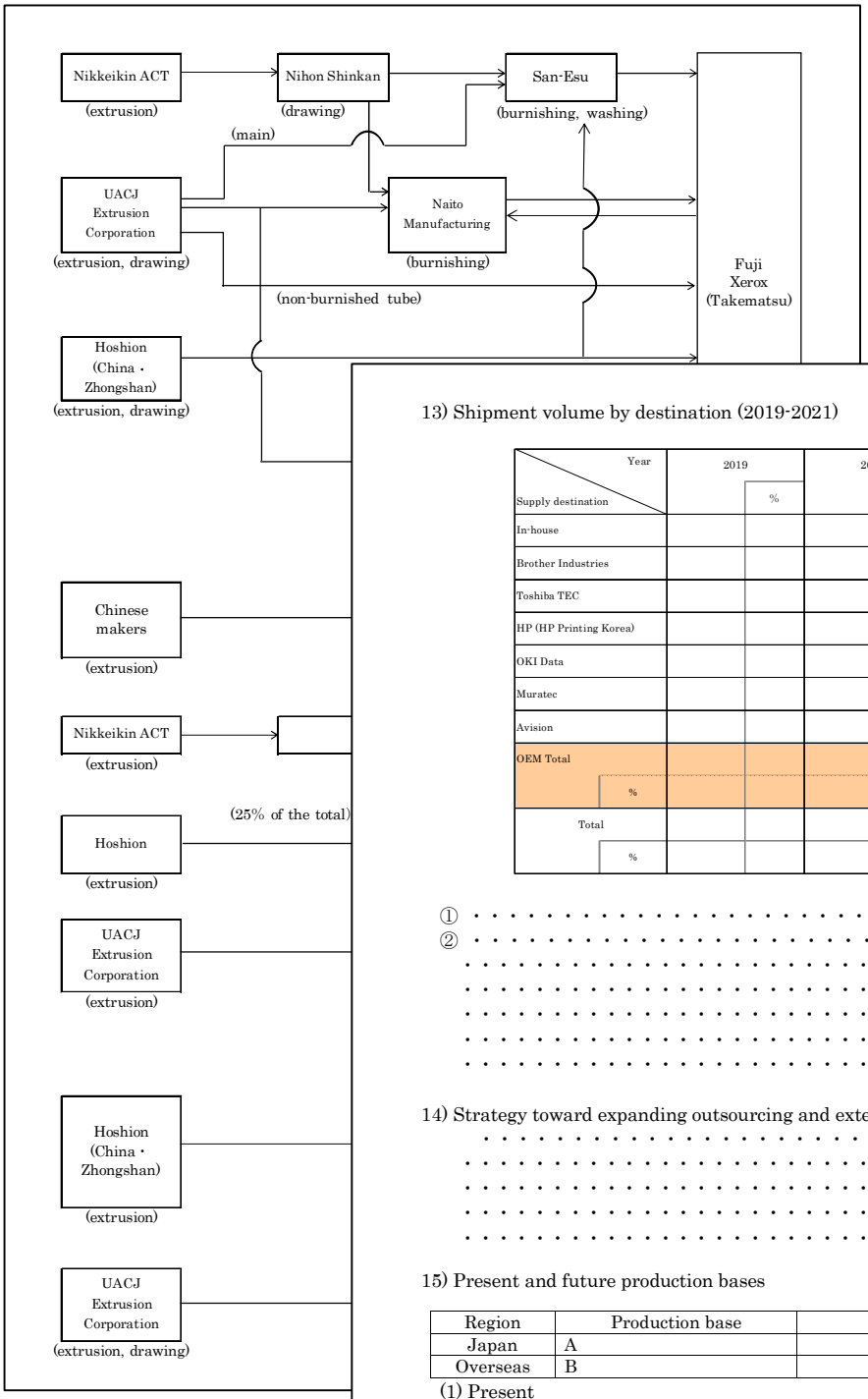
Excerpts from < Photoconductor Market > and < Drum Substrate Market >

*Charts are filled in the actual version.



13) Shipment volume by destination (2019-2021)

Unit: thousand

Year / Supply destination	2019	%	2020	%	2021 (estimate)	%
In-house						
Brother Industries						
Toshiba TEC						
HP (HP Printing Korea)						
OKI Data						
Muratec						
Avision						
OEM Total						
%						
Total						
%						

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14) Strategy toward expanding outsourcing and external sales

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15) Present and future production bases

Region	Production base	Address
Japan	A	
Overseas	B	

(1) Present

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(2) Future

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Excerpts from < Drum Substrate Market > and < Coating Material Market >

*Charts are filled in the actual version.

3) CTM types

(1) Overall

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(2) CTM makers

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4) Major supply relations of CTM

○: main △: small volume

Photoconductor maker / CTM maker	Canon	Ric	Yar Ele	Fuj	Kon Min	Kyo	Mit Che	Fuj	Sha	Oth
Canon Finetech										
Fujifilm Finechemicals										
Konica Minolta Chemical										
Mitsubishi Chemical										
Takasago International										
Hodogaya Chemical										
Nisshoku Techno Fine Chemical										
IT-Chem (South Korea)										
Others *3										

*1: Supply ended for Sindoh (So

*2: Mainly for Chinese makers

*3: Others include outsourced p

5. Supply volume to photoconductor makers (2020)

1) Overall

Unit: thousand

	Showa Denko	UACJ Extrusion Corporation	Nikkeikin ACT	Fuji Aluminum Tube Manufacturing	**Sub total**	Chinese makers / other makers	**Total**
Canon							
Canon Virginia (U.S.A.)							
Canon (Dalian, China)							
Sub total							
Yamanashi Electronics (head office)							
Yamanashi Electronics Numazu							
Yamanashi Electronics (Thailand)							
Ricoh Industry Tohoku							
Sub total							
Fuji Xerox							
Xerox Corp.							
Konica Minolta							
Kyocera							
Kyocera Document Solutions							
Kyocera Document Technology (Dongguan, China)							
Sub total							
Mitsubishi Chemical							
Mitsubishi Chemical Infonics (Singapore)							
Sub total							
Fuji Electric (Shenzhen, China)							
Sharp							
Others							
Total							