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Item 17. CONSUMPTION OF SELECTED MATERIALS DURING 1997

INSTRUCTIONS

1. General – The materials, parts, and supplies listed below are those commonly consumed in the manufacture, processing, or assembly of the products listed in item 18B. Please review the entire list and report separately each item consumed. Leave blank if you do not consume the item. If you use materials, parts, and supplies which are not listed, describe and report them in the "Cost of all other materials . . ." line at the end of this section. If you consumed less than \$25,000 of a listed material, include the value with "Cost of all other materials . . .," Census material code 970099 8.

Report materials, parts, and supplies purchased, transferred from other plants of your company, or withdrawn from inventory.

If quantities are requested, please use the unit of measure specified.

If the information as requested cannot be taken directly from your book records, REASONABLE ESTIMATES ARE ACCEPTABLE.

2. Valuation of Materials Consumed – The value of the materials, etc., consumed should be based on the delivered cost; i.e., the amount paid or payable after discounts and including freight and other direct charges incurred in acquiring the materials.

Materials received from other plants within your company should be reported at their full economic value (the value assigned by the shipping plant, plus the cost of freight and other handling charges).

If purchases or transfers do not differ significantly from the amounts actually put into production, you may report the cost of purchases or transfers. However, if consumption differs significantly from the amounts purchased or transferred, these amounts should be adjusted for changes in the materials and supplies inventories by adding the beginning inventory to the amount purchased or transferred and subtracting ending inventory.

3. Contract Work – Include as materials consumed those you purchased for use by others making products for you under contract. Amounts paid to the companies doing the contract work should be reported in item 10, line e, and should include freight in and out. On the other hand, materials owned by others but used at this establishment in making products for others under contract or on commission should be excluded.

4. Resales – Cost for products bought and sold or transferred from other establishments of your company and sold without further manufacture, processing, or assembly should be reported in item 10, line b, not in item 17 below. The value of these products shipped by this establishment should be reported in item 18B under Census product code 99989 00 6, "Resales."

5. Produced and Consumed – Forgings, foundries, and screw machine products – Report the quantities produced and used in manufacturing other products made in this establishment in item 19. Note that the materials used to produce these items should be reported in item 17.

Line No.	Materials, parts, and supplies (A)	Census material code (B)	Consumption of purchased materials and of materials received from other establishments of your company		
			Cost, including delivery cost (freight-in) (E)		
			574 Millions	Thou- sands	Dollars
1	Tube blanks	322925 9	\$		
2	COMPONENTS FOR ELECTRONIC CIRCUITRY, EXCEPT TUBES	Printed circuit boards	367201 1		
3		Printed circuit assemblies, loaded boards or modules (printed circuit boards with inserted electronic components)	367981 8		
4		Semiconductors, including transistors, diodes, rectifiers, and integrated circuits	367408 2		
5		Capacitors	367501 4		
6		Resistors	367601 2		
		Other components and accessories, n.e.c., not listed elsewhere – <i>Specify kind</i>			
7			367990 9		
8	Silicon, hyperpure	281995 1			
9	Silicon chips	333991 8			
10	Gold and other precious metals, all forms (including ingot, sheet, strip, solder, plating, electrodes, etc.)	333942 1			
11	Commodity gases (argon, helium, hydrogen, oxygen, nitrogen)	281311 1			
12	Doped chemicals and other doped materials for electronic use	333951 2			
13	Specialty gases (dopants – foreign atoms, etchants, nitrogen reactants)	281905 0			
14	Ferrites (powder and paste)	339913 6			
15	Metal powders	339915 1			
16	Electronic computing equipment	357001 7			
17	Current-carrying wiring devices	364300 4			

Item 17. CONSUMPTION OF SELECTED MATERIALS DURING 1997 – Continued							
Line No.	(A)	Materials, parts, and supplies	Census material code	Consumption of purchased materials and of materials received from other establishments of your company			
				Cost, including delivery cost (freight-in)			
				(E)			
			571	574	Thou-	Dollars	
			(B)	Millions	sands		
18		Electronic communication equipment	366301 0	\$			
19		Electrical instrument mechanisms and meter movements (including instrument relays)	382501 5				
20		Masks (glass plates containing the pattern at a single integrated circuit)	386191 1				
21		Optical instruments and lenses (except sighting, tracking, and fire control)	382700 3				
22		Plastics resins consumed in the form of granules, pellets, powders, liquids, etc., but excluding sheets, rods, tubes, and shapes	282104 9				
23		Resists (photosensitive resin films applied to the surface of a wafer)	308114 8				
24		Fabricated plastics products (except gaskets)	308006 6				
25	FABRICATED METAL PRODUCTS (Except forgings)	Sheet metal products (except stampings)	344401 5				
26		Metal stampings	346901 2				
27		Bolts, nuts, screws, washers, rivets, and screw machine products	345001 2				
28		Other fabricated metal products	340063 7				
29		Forgings	346000 3				
30		Castings (rough and semifinished)	330091 0				
31	SHAPES AND FORMS (Except castings, forgings, and fabricated metal products)	Steel	331002 6				
32		Copper and copper-base alloy	335105 3				
33		Aluminum and aluminum-base alloy	335001 4				
34		Other nonferrous shapes and forms	335099 8				
35		Insulated wire and cable (including magnet wire)	335796 9				
36		Paper and paperboard containers (including shipping sacks and other paper packaging supplies)	260091 4				
37		Cost of all other materials and components, parts, containers, and supplies consumed <i>Describe the principal materials, etc., included in this value.</i>	970099 8				
38		TOTAL Sum of lines 1–37 should equal item 10, line a		\$			

Item 18A – Not applicable to this report

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Item 18B. PRODUCTS AND SERVICES OF THIS ESTABLISHMENT DURING 1997

INSTRUCTIONS

1. General – The manufactured products and services listed below are generally made in your industry. If you make products that are not listed, describe and report them in the "All other products made in this establishment" section at the end of item 18B. PLEASE DO NOT COMBINE PRODUCT LINES.

If quantities are requested, please use the unit of measure specified.

If the information as requested cannot be taken directly from your book records, REASONABLE ESTIMATES ARE ACCEPTABLE.
2. Valuation of Products – Report the value of the products shipped and services performed at the net selling value, f.o.b. plant to the customer; i.e., after discounts and allowances, and exclusive of freight charges and excise taxes.

If you transfer products to other establishments within your company, you should assign the full economic value to the transferred products; i.e., include all direct costs of production and a reasonable proportion of all other costs and profits.
3. Contract Work – Report PRODUCTS MADE BY OTHERS FOR YOU FROM YOUR MATERIALS on the specific lines as if they were made in this establishment. On the other hand, do not report on the specific product lines PRODUCTS THAT YOU MADE FROM MATERIALS OWNED BY OTHERS. Report only the amount that you received for "commission or contract receipts" under Census product code 93000 00 8.
4. Resales – Do not report on the specific product lines those PRODUCTS BOUGHT AND SOLD OR TRANSFERRED FROM OTHER ESTABLISHMENTS OF YOUR COMPANY AND SOLD WITHOUT FURTHER MANUFACTURE. Report only a value under Census product code 99989 00 6, "Resales."
5. Detailed Data Reported Elsewhere – Items denoted by an asterisk (*) require totals for groups of products covered in the more frequent Current Industrial Reports (CIR). If you report on the CIR forms, the sum of the detailed CIR products should equal the total reported on this census form. The Current Industrial Reports related to this report are as follows:
 - a. MA33L, Insulated Wire and Cable
 - b. MA35R, Computers and Office and Accounting Machines
 - c. MA36A, Switchgear, Switchboard Apparatus, Relays, and Industrial Controls
 - d. MA36K, Wiring Devices and Supplies
 - e. MA36M, Radio and Television, Receivers, Phonographs, and Related Equipment
 - f. MA36P, Communication Equipment, Including Telephone, Telegraph, and Other Electronic Systems and Equipment
 - g. MA36Q, Semiconductors, Printed Circuit Boards, and Other Electronic Components
 - h. MA38R, Electromedical Equipment and Irradiation Equipment (Including X-ray)
 - i. MA38B, Selected Instruments and Related Products
 NOTE: Only CIR totals are requested; do not duplicate detail reported on the CIR.

Line No.	Products and services *Item corresponds to products reported on Current Industrial Reports		Census product code	Corresponds to the sum of products reported for 1997 on –		Products shipped and other receipts		
				CIR form (B-2)	Item code (B-3)	Value, f.o.b. plant (E)		
	581	584	Millions			Thou- sands	Dollars	
(A)	(B-1)	(B-2)	(B-3)	Millions	Thou- sands	Dollars		
1	ELECTRON TUBES Transmittal, industrial, and special-purpose (except X-ray) (36713)*	36713 00 6	MA36Q	For corresponding survey item codes, see paragraph 5, "Comparability," of CIR Instruction Manual	\$			
2	Receiving-type (including cathode ray) (new and rebuilt) (36714)*	36714 00 4						
3	Parts (36715)*	36715 00 1						
4	PRINTED CIRCUIT (WIRING) BOARDS OR ASSEMBLIES (Report contract work receipts for work done by you for others on their own materials on lines 97 and 98) Printed circuit (wiring) boards (36720)*	36720 00 1						
5	Printed circuit assemblies, loaded boards or modules (printed circuit boards with inserted electronic components) (36798)*	36798 00 7						
6	Integrated microcircuits (including semiconductor networks, microprocessors, and MOS memories) (36741)*	36741 00 7						
7	Transistors (36742)*	36742 00 5						
8	Diodes and rectifiers (36743)*	36743 00 3						

CONTINUE WITH ITEM 18B ON PAGE 8

Item 18B. PRODUCTS AND SERVICES OF THIS ESTABLISHMENT DURING 1997 - Continued											
Line No.	Products and services *Item corresponds to products reported on Current Industrial Reports				Census product code 581	Corresponds to the sum of products reported for 1997 on -		Products shipped and other receipts			
						CIR form (B-2)	Item code (B-3)	Value, f.o.b. plant (E)			
	(A)	(B-1)			584			Millions	Thou- sands	Dollars	
9	Rectifying (Power conversion) Apparatus (Except for electronic circuitry), Including All Apparatus Using Semi-conductors and/or Electron Tubes as Power Conversion Means (36292)	SEMI- CONDUCTOR POWER CONVERSION APPARATUS	Semiconductor battery charges	Automotive	36292 21 7			\$			
10				Industrial and railroad	36292 25 8						
11				Semiconductor high-voltage power supply in excess of 2kV (except separate associated apparatus, such as controls, capacitors, switch-gears, etc.)	100kW or less	36292 41 5					
12					More than 100kW	36292 45 6					
13					All other ac-to-dc semiconductor power conversion apparatus (including computer supplies) - <i>Specify kind</i>	36292 51 4					
14					Uninterruptible power supply (UPS) systems	36292 53 0					
15					Other rectifying (power conversion) apparatus - <i>Specify kind</i>	36292 55 5					
16	Other semiconductor devices (including semiconductor parts such as bare die, wafers, and heat sinks) (36749)*				36749 00 0	MA36Q	See CIR Instruction Manual				
17	Capacitors for electronic circuitry (36750)*				36750 00 8						
18	CAPACITORS FOR INDUSTRIAL USE (Except for electronic circuitry) (36291)	Shunt and series power capacitors, units and equipment, 1/2 kVA and above, and accessories for power factor correction and other low-frequency ac applications			36291 01 1						
19		Other capacitors (except electrolytic) (Including ac capacitors, general-purpose for motors, controls, and high-intensity discharge lighting) - <i>Specify kind</i>			36291 04 5						
20	Resistors for electronic circuitry (36760)*				36760 00 7	MA36Q	For survey item codes, see paragraph 5, "Comparability," of CIR Instruction Manual				
21	Coils, transformers, reactors, and chokes for electronic circuitry (36770)*				36770 00 6						
22	CONNECTORS FOR ELECTRONIC CIRCUITRY	Coaxial (RF) (36781)*			36781 00 3						
23		Cylindrical (36782)*			36782 00 1						
24		Rack and panel (rectangular) (36783)*			36783 00 9						
25		Printed circuit (36784)*			36784 00 7						
26	Other (including parts) (36785)*			36785 00 4							
27	Wire connectors for electrical circuitry (36435)*				36435 00 6	MA36K	3182-3189				
28	Crystals, filters, piezoelectric, and other related electronic devices, except microwave filters (36791)*				36791 00 2	MA36Q	For survey item codes, see "Comparability," paragraph of CIR Instruction Manual				
29	Microwave components and devices (except antennae, tubes, and semiconductors) (36793)*				36793 00 8						
30	Communication systems and equipment, except broadcast, but including microwave equipment such as transmitters, receivers, and amplifiers (36631)*				36631 00 0	MA36P					
31	Transducers, electrical/electronic, input or output (36795)*				36795 00 3	MA36Q					
32	SWITCHES	For electronic circuitry (mechanical) (36796)*			36796 00 1	MA36Q					
33		For electrical circuitry (including vehicular) (36433)*			36433 00 1	MA36K	3109-3137				

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Item 18B. PRODUCTS AND SERVICES OF THIS ESTABLISHMENT DURING 1997 - Continued

Line No.	Products and services *Item corresponds to products reported on Current Industrial Reports (A)		Census product code (B-1)	Corresponds to the sum of products reported for 1997 on -		Products shipped and other receipts					
				CIR form (B-2)	Item code (B-3)	Value, f.o.b. plant (E)					
						584 Millions	Thou- sands	Dollars			
34	AUDIO AND VIDEO EQUIPMENT FOR HOME ENTERTAINMENT, EXCEPT PHOTOGRAPHIC	Earphones and headsets (except telephone), phonograph cartridges and pick-ups, and phonograph needle and styli*	36799 30 2	MA36M	3058-3060	\$					
35		Television receivers (including television-radio-phonograph-tape recorder combination models) (36512)*	36512 00 2				2011-2060				
36		Speakers (including loudspeaker systems and loudspeakers sold separately, microphones, home-type electronic kits, and commercial sound equipment, except broadcast; including public address systems) (36515)*	36515 00 5					5076-5095			
37		Home, portable, and automobile radios and radio-phonograph-tape recorder combinations (36511)*	36511 00 4						1015-1138		
38		Other (including audio and video recorders and players, stereo compact systems, tuners, amplifiers, receivers, television chassis, and other home-type equipment) (36514)*	36514 00 8							3010-3056 and 3061-3066	
39	Magnetic recordings and reproducing heads including audio, video, digital, instrumentation (36799)*	36799 25 0	MA36Q	9713							
40	Electronic control modular chips for motor vehicles (36799)*	36799 26 9			9810						
41	All other electronic components, n.e.c. (36799)*	36799 27 8				9814					
42	Electronic wire and cable (Report electronic cable harness assemblies on line 38) (3357A)*	3357A 00 1	MA33L	2202-2237							
43	Electrical and electronic fabricated plastics products, excluding foam and reinforced plastics	30892 00 4									
44	Electroplating, plating, polishing, and anodizing	34710 00 4									
45	PRINTED CIRCUIT BOARD MANUFACTURING (Except testing) (35595)	Surface mount machinery	35595 01 6								
46		Through-hole machinery	35595 03 2								
47		Other printed circuit board manufacturing machinery and equipment - <i>Specify kind</i>	35595 05 7								
48		Parts, attachments, and accessories for printed circuit board manufacturing machinery and equipment	35595 09 9								
49	Semi-conductor Manufacturing Equipment (Except furnaces and ovens, instruments, and photo-graphics) (35596)	WAFER PROCESSING EQUIPMENT	Microlithography, including aligners and other lithography systems	35596 02 2							
50			Thin layer deposition	Chemical vapor deposition	35596 15 4						
51				Physical vapor deposition	35596 17 0						
52				Epitaxial growth	35596 19 6						
53		Etch and Strip		Wet etch	35596 21 2						
54			Plasma etch	35596 23 8							
55			Reactive Ion etch	35596 25 3							
56			Stripping systems	35596 27 9							
57			Ion implantation including current and voltage ion implanters	35596 30 3							
58		(Continued on next page)	(Continued on next page)	Machines designed to saw (slice) blank semiconductor wafers from crystal boules of semiconductor grade materials	35596 53 5						
59	Machines designed to grind or polish semiconductor wafers			35596 55 0							

CONTINUE WITH ITEM 18B ON PAGE 10

Item 18B. PRODUCTS AND SERVICES OF THIS ESTABLISHMENT DURING 1997 - Continued											
Line No.	Products and services *Item corresponds to products reported on Current Industrial Reports			Census product code 581	Corresponds to the sum of products reported for 1997 on -		Products shipped and other receipts				
					CIR form (B-2)	Item code (B-3)	Value, f.o.b. plant (E)				
	(A)			(B-1)					584	Millions	Thou- sands
60	Semi-conductor Manufacturing Equipment (Except furnaces and ovens, instruments, and photographs) - (35596) - Continued	WAFER PROCESSING EQUIPMENT - Continued	Pattern generating apparatus designed to produce masks and reticles from photoresist coated substrates, except for focused for beam milling machines		35596 57 6			\$			
61			Other semiconductor wafer processing equipment		35596 59 2						
62		ASSEMBLY PACKAGING EQUIPMENT	Assembly	Dicing, including saws and scribing/fracturing machines		35596 36 0					
63				Bonding	Die bonders		35596 39 4				
64			Wire bonders		35596 41 0						
65			Packaging, including mold and seal equipment and finish and mark equipment		35596 46 9						
66		Other assembly and packing equipment, including lead frame inserting machines		35596 48 5							
67		Parts of machine tools designed to produce or process semiconductor wafers		35596 61 8							
68		Parts of ion beam and plasma machines designed to process semiconductor wafers and designs by removal of material		35596 63 4							
69		Parts of ion implanters designed for doping semiconductor wafers		35596 65 9							
70		Parts of apparatus for the projection of circuit patterns on sensitized semiconductor materials		35596 67 5							
71		Parts of pattern generating apparatus designed to produce masks and reticles from photoresist coated substrates		35596 69 1							
72		Other parts of semiconductor manufacturing machinery		35596 71 7							
73		Computers (excluding word processors, peripherals, and parts)*			35710 00 3		↑ MA35R ↓	↑ See paragraph 4 of CIR Instruction Manual ↓			
74	Computer terminals, including teleprinters (excluding point-of-sale and funds-transfer devices) (35751)*			35751 00 7							
75	Computer input/output equipment (35771)*			35771 00 5							
76	Relays for electronic circuitry, industrial control, overload, and switchgear type (36251)*			36251 00 7		↑ MA36A ↓	5400-5496				
77	Specific-purpose industrial controls (36252)*			36252 00 5			6101-6355				
78	Telephone switching and switchboard equipment (36611)*			36611 00 2		↑ MA36P ↓	↑ For survey item codes, see paragraph 4, "Comparability," of CIR Instruction Manual ↓				
79	Carrier line equipment (office and line repeaters and line terminating carrier equipment) and modems (modulator-demodulator) (including auxiliary sets) (36613)*			36613 00 8							
80	Other telephone and telegraph (wire) apparatus, including telephone sets, telephone answering machines, and facsimile communications equipment (36614)*			36614 00 6							
81	Broadcast, studio, and related electronic equipment (36632)*			36632 00 8							
82	Magnetic and optical recording media (unrecorded) (36950)*			36950 00 4		MA35R					
83	Search, detection, navigation, and guidance systems and equipment (38122)*			38122 00 8		↑ MA38B ↓	4202-4382				
84	Test equipment for testing electrical, radio, and communication circuits, and motors (38252)*			38252 00 3			5701-5849				
85	Sighting, tracking, and fire-control instruments, optical-type (38271)*			38271 00 3			8379-8391				
86	Aircraft engine instruments (except flight) (38291)*			38291 00 1			6101-6119				
87	Irradiation (ionizing radiation) equipment, including x-ray, beta ray, gamma ray, and nuclear (medical, dental, industrial, and scientific) (38440)*			38440 00 4		MA38R	9092-9116				

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Item 18B. PRODUCTS AND SERVICES OF THIS ESTABLISHMENT DURING 1997 - Continued

Line No.	Products and services *Item corresponds to products reported on Current Industrial Reports (A)		Census product code 581	Corresponds to the sum of products reported for 1997 on -		Products shipped and other receipts		
				CIR form (B-2)	Item code (B-3)	Value, f.o.b. plant (E)		
			581			Millions	Thou- sands	Dollars
88	ALL OTHER PRODUCTS MADE IN THIS ESTABLISHMENT	<i>Describe and report separately each product with a sales value of \$50,000 or more which cannot be assigned to one of the lines above. For all remaining products, write "Other" and report a single total value.</i>	18			\$		
89			26					
90			34					
91			42					
92			59					
93			67					
94			75					
95			83					
96			91					
97	CONTRACT WORK (Receipts for work done for others on their own materials)	Printed circuit (wiring) boards	93000 31 0					
98		Printed circuit assemblies, loaded boards or modules (printed circuit boards with inserted electronic components)	93000 32 1					
99		Receipts for work done for others on their own materials <i>Describe below products worked on and kind of work.</i>	93000 00 8					
100	MISCELLANEOUS RECEIPTS	Receipts for research and developmental work	99980 41 9					
101		Other miscellaneous receipts (including repair work, except computer maintenance and repair, installation, sales of scrap and refuse, etc.)	99980 98 9					
102	RESALES	Sales of products bought and sold without further manufacture, processing, or assembly in this establishment. The cost of such items should be reported in item 10, line b.	99989 00 6					
103	TOTAL value of shipments and other receipts Sum of lines 1-102, column (E)		77000 00 8			\$		

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Item 19. SELECTED PRODUCTS PRODUCED IN THIS ESTABLISHMENT AND USED IN MANUFACTURING OTHER PRODUCTS MADE IN THIS ESTABLISHMENT

INSTRUCTIONS

- 1. Report below the quantity of each listed item produced in this establishment and used in manufacturing other products made in this establishment.
- 2. Purchases or receipts of the items specified below should be reported only in item 17.
- 3. Materials used to produce the items specified below should be reported in item 17.
- 4. Quantities produced for sale as such and not for incorporation in other products should be reported in item 18B.
- 5. Report quantities in the unit of measure specified in column (D).

Line No.	Item (A)	Census code (B)	Was this operation performed at this establishment during 1997?		Unit of measure for quantities (D)	Quantities produced in this establishment and used in manufacturing other products made in this establishment (E)
			(C)			
			591	592		
			Yes	No		
1	Ferrous foundries	1001 7	1 <input type="checkbox"/>	2 <input type="checkbox"/>	Short tons	
2	NONFERROUS FOUNDRIES (Except die-casting)	Aluminum	1002 5	1 <input type="checkbox"/>	2 <input type="checkbox"/>	Thousand pounds
3		Copper	1003 3	1 <input type="checkbox"/>	2 <input type="checkbox"/>	
4		Zinc	1004 1	1 <input type="checkbox"/>	2 <input type="checkbox"/>	
5		Other	1005 8	1 <input type="checkbox"/>	2 <input type="checkbox"/>	
6	Nonferrous die-casting foundries	1006 6	1 <input type="checkbox"/>	2 <input type="checkbox"/>		
7	Precision turned products (on screw machines, turning centers, and CNC equipment)	1007 4	1 <input type="checkbox"/>	2 <input type="checkbox"/>		

Items 20 and 21 – Not applicable to this report

REMARKS – Please use this space for any explanations that may be essential in understanding your reported data.

Item 22. CERTIFICATION – This report is substantially accurate and has been prepared in accordance with instructions.

Name of person to contact regarding this report (<i>Print or type</i>)		Area code	Number	Extension		
667	1	Telephone	2			
Name of company		Address (<i>Number and street, city, State, ZIP Code</i>)				
Period covered	FROM: Month	Day	Year	TO: Month	Day	Year
	666	1		2		
Signature of authorized person		Title		Date		