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PASCN Discussion Paper No. 98-03

**APEC Early Voluntary Sectoral  
Liberalization on Medical Equipment,  
Instruments and Devices**

*Ma. Teresa C. Sanchez-Robielos*



The *PASCN Discussion Paper Series* constitutes studies that are preliminary and subject to further revisions and review. They are being circulated in a limited number of copies only for purposes of soliciting comments and suggestions for further refinements.

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For comments, suggestions or further inquiries please contact:

**The PASCN Secretariat**  
Philippine Institute for Development Studies  
NEDA sa Makati Building, 106 Amorsolo Street  
Legaspi Village, Makati City, Philippines  
Tel Nos: 893-9588 and 892-5817

## APEC Early Voluntary Sectoral Liberalization on Medical Equipment, Instruments, and Devices

Maria Teresa C. Sanchez<sup>1</sup>

### Sector Definition and Coverage

The medical equipment, instrument, and device sector covers the manufacturers and traders of instruments, apparatus, or contrivances, including their components, parts, and accessories, all of which have intended for use in the diagnosis, cure, mitigation, treatment, or prevention of disease in man or animals; or to affect the structure or any function of the body of man or animals.<sup>2</sup> The medical equipment and instruments sector includes products such as blood pressure apparatus, eye-examining instruments and apparatus, intravenous apparatus, surgical instruments, dental equipment, CAT-scans, X-ray equipment, electromedical equipment, and in vitro diagnostic substances. The scope has been expanded to include other scientific instruments such as hydrometers, thermometers, barometers, instruments and apparatus for measuring or checking, oscilloscopes, and spectrum analyzers. The product coverage is generally classified under the following HS categories (see Table 1).

**Table 1. Product Coverage: Medical Equipment, Instruments, and Devices**

HS Code	Product
2844.40	In vitro and in vivo diagnostic substances
3822	Composite reagents
8419.20	Medical sterilizers
ex85438985	Nerve stimulating equipment
8713; 8714.20	Invalid carriages and parts
9018	Surgical and medical instruments
9019	Electromedical and electrotherapeutic apparatus
9021	Orthopedic, prosthetic and surgical appliances and supplies
9022	X-ray apparatus, tubes and related irradiation apparatus
9023	Instruments, apparatus and models, designed for demonstration
9024	Machines and appliances for testing
9025	Hydrometers, thermometers, barometers
9026	Instruments and apparatus for measuring or checking
9027	Instruments and apparatus for physical or chemical analysis
9028	Gas, liquid, or electricity supply or production meters
9030	Oscilloscopes, spectrum analyzers, and other instruments
9031	Measuring or checking instruments, n.e.s.
9032	Automatic regulating or controlling instruments

<sup>1</sup> Economist V, Philippine Institute for Development Studies (PIDS)

<sup>2</sup> RA 3720, Chapter V

## Sectoral Profile

Only few players in the sector are generally dominated by affiliates of multinational companies like Johnson & Johnson, Abbott Laboratories, Boehringer Mannheim, and B. Braun Medical Supplies. The number of new entrants into the sector has grown to an average of 5 per year since 1991 (see Table 2). As of 1996, there were 36 medical device manufacturers and 11 medical device traders in the country. Twenty-two medical device manufacturers operate in the NCR, 5 in Region 7, 2 in Region 8, and 1 in Region 11. On the other hand, all the medical device traders are located in the NCR. The concentration of these manufacturers and traders in the NCR can be attributed to market proximity and accessibility of improved infrastructure facilities in the area.

The market demand for medical equipment, instruments, and devices comes mainly from private and government hospitals and diagnostic laboratories (see Table 3). In 1995 there were 1,689 hospitals in the country, 1,100 of which were privately owned while 589 were run by the government. Private hospitals acquire medical equipment, instruments and devices through sales negotiation while government hospitals follow mandated bidding procedures. On the aggregate, the unit sales to government hospitals are larger than those made to private hospitals because the former have larger bed capacities and a greater number of patients who undergo surgical procedures.

**Table 2. Number of Manufacturers and Traders of New Medical Devices**

	1991	1992	1993	1994	1995
a. Manufacturers of Medical Devices	3	4	6	8	4
b. Traders of Medical Devices	2	1	2	2	3

Source: *Philippine Statistical Yearbook 1997*

The medical equipment, instruments, and devices sector is a highly technology-driven industry. Advances in science and technology have caused a rapid turnover of products. These on top of the demand for health care and surgery. Since there are very few local manufacturers of these products and most of suppliers are affiliates of multinational companies abroad, the demand for the products is satisfied mostly through imports. Table 4 shows the distribution and import growth rate of medical equipment, instruments, and devices for the period 1994-1995. The imports of these products grew considerably during the two-year period. Major sources of the imports include the United States, Japan, Taiwan, Hongkong, Singapore, South Korea, Australia, and Germany.

**Table 3. Number and Regional Distribution of Private and Government Health Facilities in 1995**

Region	Hospitals			Diagnostic Laboratories
	Total	Private	Gov't	
Phil	1,700	1,100	589	1,446
NCR	168	126	42	371
CAR	56	28	28	52
Region 1	107	73	34	32
Region 2	77	41	36	50
Region 3	159	114	45	165
Region 4	249	156	93	211
Region 5	139	91	48	61
Region 6	80	30	50	103
Region 7	94	50	44	64
Region 8	74	26	48	58
Region 9	80	50	30	36
Region 10	92	73	19	90
Region 11	169	145	24	86
Region 12	87	74	13	67
Caraga	40	24	16	-
ARMM	29	10	19	-

Source: *Philippine Statistical Yearbook, 1997*

## Sectoral Issues and Concerns

### *Valuation*

The customs valuation of products is based on the export price rather than on the transactions price. Different sources of like products can have different export values. Tariff duties on medical equipment, instruments, and devices are based on export prices which are about 20 to 70 percent higher than the transactions price. Thus, the suppliers and traders of these products pass the added cost to consumers. The process of valuation increases the cost of the product even if tariff is reduced to 3 percent.

### *Processing and Registration*

The SGS processing of shipments can take 2 weeks to one month to complete. This unwarranted delay shortens the shelf life of some highly critical products by as much as 50 percent.

Table 4. Distribution and Percent Change of Philippine Imports of Medical Equipment and Instruments, 1994-95

		FOB Value (Dollars)		% Change 1994-95	Top Three Sources
		1994	1995		
87	Professional, scientific instruments and apparatus	167,251,291	212,637,991	27.1	
871	Optical instruments and apparatus	8,693,082	13,405,175	54.2	
872	Instrument and appliance, dental/ other purposes	35,745,094	39,390,908	10.2	Japan, Taiwan, US
8721909	Other dental instruments, appliance and parts	1,141,222	1,559,445	36.6	Hongkong, South Korea, US
8722101	Syringes, with or without needles, of any material	2,106,567	2,077,393	(1.4)	Japan, Hongkong, Singapore
8722102	Tubular metal needles & needles for sutures	609,548	1,041,032	70.8	Japan, Singapore, Belgium, South Korea
8722109	Other needles; catheters, cannulae & the like	6,521,030	5,771,988	(11.5)	Singapore, Japan, US
8722902	Kidney coil dialysers & blood serum	322,422	380,524	18.0	Australia, Malaysia, Singapore
8722903	Artificial incubators for babies	18,344	28,689	56.4	Japan, US, Germany
8722909	Other medical, surgical & veterinary instruments & appliances, nes	18,154,144	18,437,288	1.6	US, South Korea, Malaysia
8722918	Other parts & accessories for medical, surgical & vet instruments & app	2,321,182	2,578,630	11.1	US, Malaysia, Japan
8723101	Mechano-therapy appliances	27,240	108,556	298.5	Taiwan, US, South Korea
8723102	Message apparatus	396,832	568,470	43.3	Taiwan, Proc, Hongkong
8723103	Psychological aptitude-testing apparatus	-	9,046		
8723111	Parts & accessories mechano-therapy, massage, psycio ap-testing apparatus	37,203	168,372	352.6	Taiwan, Korea, Netherlands
8723301	Ozone-/oxygen-/aerosol therapy artificial respiration	2,037,029	1,997,159	(2.0)	US, Australia, Japan
8723302	Parts of ozone therapy, aerosol therapy artificial therapy respiratory apparatus	-	896,470		
8723501	Other breathing appliances & gas mask	212,155	433,302	104.2	US, Taiwan, Australia
8723508	Parts & accessories of instruments & apparatus for breathing app. & gas mask	123,716	990,315	700.5	Australia, Taiwan, US

Source: Foreign Trade Statistics, NSO.

Most of the suppliers and traders of medical equipment, instruments, and devices do not carry huge inventory because of the following reasons:

- a. Since most of the sector's products are bidded at government levels, supplies and traders ran the risk of losing out to other players.
- b. The unwarranted delays in the SGS processing adversely affect the capacity of the traders and manufacturers to supply. In most cases, the traders and manufacturers are penalized by government hospitals due to delayed deliveries.

The Bureau of Food and Drugs plays a critical role in the registration and certification of products under the sector. But poor facilities and inadequate staff prevent it from discharging its functions with utmost efficiency. Besides being undermanned, the agency's lean staff lacks the necessary training in the registration of medical equipment, instruments, and devices.

The BFAD's stringent certification requirements impose higher cost on the manufacturers and traders. For instance, the agency requires firms to submit at least 10 samples of each product for testing when most of these items have already been certified in their countries of origin. What the BFAD has to do is establish reciprocity with the originating countries and recognize their certification of the products.

To fast track the BFAD registration processing, the agency must be equipped with the necessary facilities for testing and training of the technical people. A bigger budget is needed to support these undertakings.

### ***Classification***

Certain products may need to be reclassified at their 8-digit disaggregation. Some products are classified under a different grouping because classification is based on the materials used. For instance, the surgical gowns which are made of paper are classified under toilet paper and similar paper because they are made of paper and thus have a tariff rate of 20 percent. However, a surgical gown is a medical device or supply used in surgery whose basic objective is to prevent infection.

### ***Implications of Higher Cost***

The high cost of some disposable medical devices presently on the 10 percent duty will force hospitals and clinics to recycle. This could have dire implications on the efficacy and quality of medical services and may put the life of medical patients at high risk.

### **Likely Impact of EVSL on the Sector**

Health care is an important basic social infrastructure in the country. However, the Filipinos are not spending enough for health care. Total health care expenditure in the country is less than 1 percent of GDP, one of the lowest in the Asian region. The tariff on medical equipment, instruments, and devices discourages trade and increases the cost of

health care. Lowering or removing the trade barriers on medical equipment, instruments, and devices carries social and economic benefits. The liberalization of the health care sector in the form of early voluntary liberalization of the medical equipment, instruments, and devices sector should enable the suppliers of these products to provide high-value, cost-efficient technologies. This in turn will support domestic cost containment measures and facilitate the development of the economy's health care system.

The medical equipment, instruments and devices sector is R&D-intensive and subject to the rapid pace of technological change. Although the Philippines is not expected to be a major player in the area in the liberalization of the sector will enable to take advantage of high-technology medical equipment, instruments, and devices from other countries at reduced cost. This will reduce the cost of medical care in the country and improve the delivery of health care services to the population.

### **Action Plan (Recommendations)**

#### ***Tariff Reduction Schedule\****

The country should move toward EVSL of the sector except for products which are or about to be locally produced. These products should carry a 3% to 5% at most. (See Appendix A for the listing of medical device manufacturers and their products in NCR.) The tariffs on medical equipment, instruments, and devices should be eliminated within three years. The proposed schedule and method of elimination follow the approach used in the ITA. The elimination of the tariff rates on products that are locally manufactured products must be based on the Tariff Reform Program timetable while the tariffs on those with no local producers with 3% tariff rate should be eliminated as early as possible.

The EVSL tariff reduction schedule is shown in Table 5.

#### ***Non-Tariff Measures***

\* The shift from export price to transactions value should be accelerated for life-saving equipment, instruments and devices. Since most of these products are not being produced in the country, the cost of hospitalization is affected significantly by the cost of equipment and is linked to the huge difference between the export price and transactions value. In many cases, the cost of medical care rises not so much because of the tariff the valuation procedures being used.

The Department of Health (DOH) should take a look at this issue closely, study the benefits and cost of accelerating the shift, and make a special case for life-saving facilities. The shift from export price to transactions value must be fasttracked for these products and facilities, specially since they significantly affect the quality and cost of hospital care. This measure should be presented to the Social Development Committee and the Tariff and Related Matters of the NEDA Board for appropriate action.

### ***Facilitation Measures***

- \* To reduce the processing time of life-saving medical products, the DOH must prepare a policy paper calling for special fast tracking procedure for products with short life span. This calls for the cooperation of various agencies and the creation of a special committee composed of representatives from SGS, BFAD, DOH, and UP-PGH. Together they should look closely into the matter and work out a particular fast tracking arrangement. They will need to establish the coverage of the fasttracking arrangement by identifying the products with short life span. (See Appendix B for the listing of medical devices and diagnostic reagents that require registration with the BFAD.)
- \* The BFAD should make a unilateral decision recognizing product certification issued by other countries, particularly where it concerns for which the agency does not have adequate manpower and testing facilities.
- \* The government should take steps to encourage the BFAD to be more pro-active and facilitative.
- \* The issue of classification should be raised with the Tariff Commission for particular products which should be properly reclassified under the sector for inclusion in the tariff reduction schedule.

### ***Economic and Technical Measures***

- \* There should be technical assistance in the establishment of testing facilities in the country to ease registration and certification procedures. The technical transfer with respect to monitoring and certification of medical equipment and devices should be explored.
- \* Training programs for the BFAD staff are needed for institution capacity building.
- \* A program of technical assistance in cooperation with the private sector, involving training by private sector experts in medical technology, managed health care should be explored to upgrade the health care system in the country.
- \* For medical equipment, a 5-10 year guarantee on parts availability is essential. A trade-in arrangement can be considered for purposes of upgrading these equipment. Maintenance and repair services for newly acquired medical and scientific equipment must also be provided.

## **References**

Borja, Francisco S. (1998) "Medical Instruments, Equipment and Devices," PHAP Paper on APEC-EVSL, presented during the roundtable discussion of the APEC-EVSL for the Medical Equipment, Instruments and Devices, Sector, 3 March 1998, PIDS, Makati City.

Minutes of the Roundtable Discussion/Consultation on "Early Voluntary Sectoral Liberalization Program for the Medical Equipment, Instruments and Devices Sector," held 3 March 1998, PIDS, Makati City.

**APPENDIX A****MEDICAL DEVICE MANUFACTURERS AND THEIR PRODUCTS**

<b>Company Name</b>	<b>Products</b>
Adamson & Adamson, Inc.	Cotton
Blue Sky trading Co., Inc.	Gloves, abdominal pads, gauze, gauze sponge, sterile tongue depressor
Care Products, Inc.	Cotton
Cosmo Medical, Inc.	Disposable syringes
Drugmaker's Labs, Inc.	Contact lens solution
Gazza Medical Products, Inc.	Cotton buds/rolls
Golden Ray Merchandizing Manufacturing, Inc.	Cotton buds
Helios Manufacturing Corp.	Cotton
Indoplas Phils., Inc.	Small vein set, oxygen, catheter, Ysuction catheter, duodenal tube
JAD Company, Inc.	Cotton buds
Johnson & Johnson (Phils.), Inc.	Medicated plastic strip
Kayphil Medical Corp. (repacker)	Needles
Kayphil Medical Corp.	Disposable syringes
Latex Product Co., Inc.	Gloves
Medical Center Trading	Gauze bandage
Medical Generic Labs., Inc.	Optical solution
Qualipharma Labs. Philippines	Sterile lubricating jelly
RMG Hospital Supply Inc.	Sterile pre-cut cotton, gloves, silk sutures, gauze
Sin Sin Philippines, Inc.	Non-medicated plastic strip
Sin Science Laboratory, Inc.	Skin patch

## APPENDIX B

### MEDICAL DEVICES REQUIRED TO BE REGISTERED

1. Absorbable collagen hemostatic felt
2. Absorbent cotton (sterile and non-sterile)
3. Arterial venous fistula needle set
4. Bandages with plaster of Paris
5. Elastic bandage
6. Band-aid plastic strip plain pad
7. Bone wax
8. Blood transfusion set
9. Catheters
10. Cervical collar
11. Collagen
12. Condom
13. Contact lenses (hard and soft and disposable)
14. Corset cast
15. Cosmetic puff cotton
16. Cotton buds
17. Cotton swabs
18. Dental-filling alloy
19. Disposable needles
20. Disposable skin stapler and staples
21. Disposable tissue-measuring device
22. Drainage pouches
23. Duodenal tube
24. Earpiercing device
25. Endotracheal tube
26. Exchange transfusion set
27. Feeding tube
28. Filter set
29. Flour alloy amalgam
30. Gause pads (sterile and non-sterile)
31. Humidifier mask
32. Hypo-allergenic paper tape
33. Implantable staple
34. Infusion administration set
36. Intrauterine device (IUD)
37. I.V. catheter needles
38. Ligating clip device
39. Lubricating jelly
40. Lumbar puncture tray
41. Nasal oxygen cannula
42. Nebulizer with aerosol mask
43. Orthoplast cervical collar
44. Ostotomy set
45. Oxygen catheter
46. Oxygen mask
47. Peridental bone-grafting implant

48. Peritoneal dialysis administration set
49. Plaster
50. Porcine heart valve
51. Implantable Prosthesis
52. Rectal catheter
53. Rectal tube
54. Removable skin staple
55. Rotahalers
56. Scalp vein infusion set
57. Scissors skin retractors
58. Skin traction kit
59. Spinal anesthesia tray
60. Stoma bag
61. Stomach tube
62. Suction catheter
63. Surgical blades, disposable
64. Surgical gloves (sterile and non-sterile)
65. Sutures
66. Suturing needles
67. Synthetic cast padding
68. Syringes
69. Thermometers
70. Transfusion set
71. Urethral catheter
72. Urinary drainage tube
73. Urine-collecting bag
74. Abdominal pads

#### **DIAGNOSTIC REAGENTS REQUIRED TO BE REGISTERED**

1. HIV testing kits
2. Hepatitis B testing kits
3. Blood typing sera
4. Pregnancy test kits
5. Hepatitis C testing kits

#### **PRODUCTS THAT ARE NOT REQUIRED TO BE REGISTERED**

1. Plastic Bags For Blood Transfusion
2. Non-Sterile Surgical Facemasks
3. Surgical Caps (nonsterile)
4. Tongue depressors
5. Non-sterile applicator sticks
6. Gause (in bolts)
7. Anti embolism stocking
8. Undercast padding
9. Sputum caps
10. Rubber stoppers
11. Aluminum seals
12. Vials (50, 10, 5 cc)

13. Ampules (5, 10 ml amber.white)
14. Laboratory glassware
15. Surgical instruments (e.g., scissors, forceps blade holder, needle holder, clamps, biopsy punches, retractors, scope, etc.)
16. Toothbrushes
17. Dental floss
18. Heat solution
19. Mortuary refrigerator
20. Abdominal binder
21. Ice bags
22. Weighing scale
23. Urinal/receptacles
24. Splints
25. Plaster of Paris
26. Centrifuges and equipment
27. Anaerobic generating system
28. X-ray fills and chemicals
29. Surgical face mask



90.18	Instruments and appliances used in medical, surgical, dental or veterinary sciences, including scintigraphic apparatus, other electro-medical apparatus and sight-testing Instruments - Electro-diagnostic apparatus (including apparatus for functional exploratory examination or for checking physiological parameters):									
HS Code	Description	Rate of Duty (%)								Remarks/Comments
		1998	1999	2000	2001	2002	2003	2004	2005	
9018.11 00	-- Electro cardiographs	3	3	3	0	0	0			
9018.12 00	-- Ultrasonic scanning apparatus	3	3	3	0	0	0			
9018.13 00	-- Magnetic resonance imaging apparatus	3	3	3	0	0	0			
9018.14 00	-- Scintigraphic apparatus	3	3	3	0	0	0			
9018.19 00	-- Other	3	3	3	0	0	0			
9018.20 00	- Ultra violet or infra red ray apparatus	3	3	3	0	0	0			
	- Syringes, needles catheters, cannulae and the like:									
9018.31 00	-- Syringes, with or without needles	3	3	3	3	3	3			Follow TRP schedule
9018.32 00	-- Tubular metal needles and needles for sutures	3	3	3	3	3	3			Follow TRP schedule
9018.39 00	-- Other	3	3	3	0	0	0			Follow TRP schedule
	- Other instruments and appliances, used in dental sciences:									
9018.41 00	-- Dental drill engines, whether or not combined on a single base with other dental equipment	3	3	3	0	0	0			

9018.49 00	-- Other	3	3	3	0	0	0			
9018.50 00	- Other ophthalmic instruments & appliances	3	3	3	0	0	0			
9018.90 00	- Other instruments and appliances	3	3	3	0	0	0			
90.19	Mechano-therapy appliances; massage apparatus; psychological aptitude-testing apparatus; ozone therapy, oxygen therapy, aerosol therapy, artificial respiration or other therapeutic respiration apparatus									
9019.10 00	- Mechano-therapy appliances; massage apparatus; psychological aptitude-testing apparatus	3	3	3	0	0	0			
9019.20 00	- Ozone therapy, oxygen therapy, aerosol therapy, artificial respiration or other therapeutic respiration apparatus	3	3	3	0	0	0			
HS Code	Description	Rate of Duty (%)								Remarks/Comments
		1998	1999	2000	2001	2002	2003	2004	2005	
90.21	Orthopaedic appliances, including crutches, surgical belts and trusses; splints and other fracture appliances; artificial parts of the body; hearing aids and other appliances w/c are worn or carried, or implanted in the body, to compensate for a defect or disability									
	- Artificial joints and other orthopaedic or fracture appliances:									
9021.11 00	-- Artificial joints	3	3	3	0	0	0			
9021.19 00	-- Other	3	3	3	0	0	0			
	- Artificial teeth and dental fittings:									
9021.21 00	-- Artificial teeth	3	3	3	0	0	0			

9021.29 00	-- Other	3	3	3	0	0	0		
9021.30 00	- Other artificial parts of the body	3	3	3	0	0	0		
9021.40 00	- Hearing aids, excluding parts and accessories	3	3	3	0	0	0		
9021.50 00	- Pacemakers for stimulating heart muscles, excluding parts and accessories	3	3	3	0	0	0		
9012.90 00	- Other	3	3	3	0	0	0		
90.22	Apparatus based on the use of X-rays or of alpha, beta or gamma radiations, whether or not for medical, surgical, dental or veterinary uses, including radiography or radiotherapy apparatus, X-ray tubes and other X-ray generators, high tension generators, control panels and desks, screens, examination or treatment tables, chairs and the like - Apparatus based on the use of X-rays, whether or not for medical, surgical, dental or veterinary uses, including radiography or radiotherapy apparatus:								
9022.12 00	-- Computed tomography apparatus	3	3	3	0	0	0		
9022.13 00	-- Other, for dental uses	3	3	3	0	0	0		
9022.14 00	-- Other, for medical, surgical or veterinary uses, including radiography or radiotherapy	3	3	3	0	0	0		



HS Code	Description	Rate of Duty (%)								Remarks/Comments
		1998	1999	2000	2001	2002	2003	2004	2005	
9022.19 00	- For other uses - Apparatus based on the use of alpha, beta, or gamma radiations, whether or not for medical, surgical, dental or veterinary uses, including radiography or radiotherapy apparatus:	3	3	3	0	0	0			
9022.21 00	-- For medical, surgical, dental or veterinary uses	3	3	3	0	0	0			
9022.29 00	-- For other uses	3	3	3	0	0	0			
9022.30 00	- X-ray tubes	3	3	3	0	0	0			
9022.90 00	- Other, including parts and accessories	3	3	3	0	0	0			
9023.00 00	Instruments, apparatus and models, designed for demonstrational purposes (for example, in education or exhibitions), unsuitable for other uses	3	3	3	0	0	0			
90.24	Machines and appliances for testing the hardness, strength, compressibility, elasticity or other mechanical properties of materials (for example, metals, wood, textiles, paper, plastics)									
9024.10 00	- Machines and appliances for testing metals	3	3	3	0	0	0			
9024.80 00	- Other machines and appliances	3	3	3	0	0	0			
9024.90 00	- Parts and accessories	3	3	3	0	0	0			

	analysis apparatus); instruments and apparatus for measuring or checking viscosity, porosity, expansion, surface tension or the like; instruments and apparatus for measuring or checking quantities of heat, sound or light (including exposure meters); microtomes									
9027.10 00	- Gas or smoke analysis apparatus	3	3	3	0	0	0			
9027.20 00	- Chromatographs and electrophoresis instruments	3	3	3	0	0	0			
9027.30 00	- Spectrometers, spectrophotometers and spectrographs using optical radiation (UV, visibles, IR)	3	3	3	0	0	0			
9027.40 00	- Exposure meters	3	3	3	0	0	0			
HS Code	Description	Rate of Duty (%)								Remarks/Comments
		1998	1999	2000	2001	2002	2003	2004	2005	
9027.50 00	- Other instruments and apparatus using optical radiations (UV, visible, IR)	3	3	3	0	0	0			
9027.80 00	- Other instruments and apparatus using	3	3	3	0	0	0			
9027.90 00	- Microtomes; parts and accessories	3	3	3	0	0	0			
90.28	Gas, liquid or electricity supply or production meters, including calibrating meters therefor									
9028.10 00	- Gas meters	3	3	3	0	0	0			
9028.20	- Liquid meters									
9028.20 90	--- Other	3	3	3	0	0	0			
9028.30	- Electricity meters:									
9028.30 90	--- Other	3	3	3	0	0	0			
9028.90 00	- Parts and accessories	3	3	3	0	0	0			

90.30	Oscilloscopes, spectrum analysers and other instruments and apparatus for measuring or checking electrical quantities, excluding meters of heading No. 90.28; instruments and apparatus for measuring or detecting alpha, beta, gamma, X-ray, cosmic or other ionising radiations										
9030.10 00	- Instruments and apparatus for measuring or detecting ionising radiations	3	3	3	0	0	0				
9030.20 00	- Cathode-ray oscilloscopes and cathode-ray oscillographs - Other instruments and apparatus for measuring or checking voltage, current, resistance or power, without a recording device:	3	3	3	0	0	0				
9030.31 00	-- Multimeters	3	3	3	0	0	0				
9030.39	-- Other:										
9030.39 90	--- Other	3	3	3	0	0	0				
HS Code	Description	Rate of Duty (%)								Remarks/Comments	
		1998	1999	2000	2001	2002	2003	2004	2005		
9030.40 00	- Other instruments and apparatus, specially designed for telecommunications (for example cross-talk meters, gain measuring instruments distortion factor meters, psophometers)	3	3	3	0	0	0				
9030.82 00	- Other instruments and apparatus: -- For measuring or checking semi conductor wafers and devices	3	3	3	0	0	0				
9030.83 00	-- Other, with a recoding devices	3	3	3	0	0	0				

9030.89 00	-- Other	3	3	3	0	0	0		
9030.90 00	- Parts and accessories	3	3	3	0	0	0		
90.31	Measuring or checking instruments, appliances and machines, nior specified or included elsewhere in this Chapter; profile projectors								
9031.10 00	- Machines for balancing mechanical parts	3	3	3	0	0	0		
9031.20 00	- Test benches	3	3	3	0	0	0		
9031.30 00	- Profile projectors	3	3	3	0	0	0		
9031.41 00	- Other optical instruments and appliances -- For nspecting semi conductor wafers or devices or for inspecting photomasks or reticles used in manufacturing semiconductors devices	3	3	3	0	0	0		
9031.49 00	-- Other	3	3	3	0	0	0		
9031.80 00	- Other instruments, appliances and machine	3	3	3	0	0	0		
9031.90 00	- Parts and accesories	3	3	3	0	0	0		
90.32	Automatic regulating or controlling instruments and apparatus								
9032.10 00	- Thermostats	3	3	3	0	0	0		
9032.20 00	- Manostats	3	3	3	0	0	0		
9032.81 00	- Other instruments and apparatus: -- Hydraulic or pneumatic	3	3	3	0	0	0		
9032.89 00	-- Other	3	3	3	0	0	0		
9032.90 00	- Parts and accessories	3	3	3	0	0	0		