



HARMONIZED SYSTEM
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CLASSIFICATION OF APPARATUS FOR WET ETCHING, DEVELOPING, STRIPPING
OR CLEANING SEMICONDUCTOR WAFERS AND FLAT PANEL DISPLAYS

(REQUEST FROM THE WTO)

(Item VIII.15 on Agenda)

I. BACKGROUND

1. On 1 July 2001, the Secretariat received a note from the Chairman of the World Trade Organization (WTO) Committee of Participants on the Expansion of Trade in Information Technology Products, requesting WCO's opinion on the classification of certain commodities.
2. The classification of apparatus for wet etching, developing, stripping or cleaning semiconductor wafers and flat panel displays is one of the issues listed. The pertinent part of the Report of the Informal Meeting of Customs Experts from ITA Participants reads as follows :

"The US submitted literature on a product for discussion here (WS-620C and WS 820C Wet cleaning system for 6-/8-inch wafers). Discussion focussed on whether the product was multifunctional without any principal function, as purported by the EC and thus classified in 84.79, or whether the product should be classified by its principal function, and therefore classified in 84.64, as supported by the US. There were discussions on the different classification approaches taken by the US and the EC, concerning the issue of "principal function" of the essential aspects of the product and whether certain functions were primary or auxiliary functions of the products concerned.

The US provided the following information concerning the processes concerned here :

These processes were steps needed to produce a pattern onto a semiconductor wafer.

The first step is to coat the photoresist film onto a wafer by use of a spinner. The photoresist film is then baked onto the wafer.

After a pattern has been exposed onto the photoresist film, unwanted portions of the photoresist film are removed by a process known as developing. After developing, the

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top layer of the wafer is etched through the openings in the photoresist layers which were created during the developing stage.

The remaining photoresist layer is then removed from the wafer by a process known as stripping. Thus, developing, etching, and stripping are processes that remove films or portions of films that have been deliberately grown on the wafer during earlier processing steps. Prior to and/or after each of the above steps, a wafer must be "cleaned". "Cleaning" refers to removing contaminants such as dust, dirt, etc., that have been added during earlier processing steps (either in other equipment or by wafer handling). These contaminants are materials that would damage products and produce yield losses.

The group suggested that this issue of how to classify a multifunctional machine of this kind be referred to the HSC."

3. The Secretariat contacted the International Chamber of Commerce (ICC) with a view to obtaining more information vis-à-vis the products in question. On 22 August 2001, the Secretariat received information from the ICC enabling the Secretariat to present the following description :

The Dainippon Wet Stations WS-620C and WS- 820C are designed to clean and etch silicon wafer surfaces and remove unnecessary foreign matter from their surfaces by immersing them for specified periods in various bath modules containing chemicals and/or deionized water. They are comprised of various modules (interface units, chemical bath, rinsing bath, dryer and transfer units), the number, order and combination depending upon each model's purpose and processes.

4. The ICC information went on to indicate that "the above-mentioned equipment includes two different sub-series : "C" series machines that transfer and process wafers in processing cassettes : and "L" series machines that directly transfer and process wafers without loading them into cassettes. The WS-620C are for 6-inch wafers, WS-820C are for 8-inch wafers. The following is a description of the function of the various modules :

Interface Units – These modules include the loader and the unloader which are located at the beginning and end of the equipment's process line. The loader receives wafers loaded in cassettes (hereafter called "lots") from external devices and the unloader temporarily holds lots which have been processed in the equipment.

Chemical Bath Modules – These modules are baths filled with various chemicals. Lots are immersed in chemical baths for a preset time to clean and etch the wafer surfaces, and remove unnecessary substances.

Rinsing Bath Modules – These modules are baths filled with deionized water in which lots are immersed to rinse chemicals from wafer surfaces.

Dryer Modules – These modules remove water from the surface of wafers which have been rinsed in a rinsing bath. There are two types of dryer modules : spin dryers which rotate at high speed to dispel water from wafer surfaces and IPA (isopropyl alcohol) dryers which displace water with isopropyl alcohol to dry wafers.

Transfer Units – This module transfers lots between processing baths. In “C” series equipment, processing cassettes containing wafers are held and transported with a chuck. In the “L” series, wafers received from the loader are directly held and transported with a chuck. An illustration of a “typical combination” of the WS-620/820” series equipment is included in the Annex to this document.”

II. SECRETARIATS COMMENTS

5. As indicated above, the Dainippon Wet Stations WS-620C and WS-820C are designed to clean and etch silicon wafer surfaces, and remove unnecessary foreign matter from the surfaces by immersing the wafers for specified periods in various bath modules containing chemicals and/or deionized water. They also have a transport/handling and /or storing function. As such, Note 3 to Section XVI is applicable.
6. Note 3 to Section XVI reads “Unless the context otherwise requires, composite machines consisting of two or more machines fitted together to form a whole and other machines adapted for the purpose of performing two or more complementary or alternative functions are to be classified as if consisting only of that component or as being that machine which performs the principal function.”
7. In the Secretariat’s view, the transport/handling and/or storing function is a subsidiary or auxiliary function to the principal function of the machine, which is to clean and etch silicon wafer surfaces, and remove unnecessary foreign matter from the surfaces by immersing the wafers for specified periods in various bath modules containing chemicals and/or deionized water. This function is not described in any of the headings in Chapter 84. Consequently, in the opinion of the Secretariat, the Dainippon Wet Stations WS-620C and WS-820C would be classified in heading 84.79 and, more specifically, subheading 8479.89 by application of GIRs 1 (Note 3 to Section XVI) and 6.

III. CONCLUSION

8. The Committee is invited to express its view on the classification of the apparatus described in paragraph 3 above, taking into account the comments of the Secretariat in paragraphs 3 to 7 above, and to indicate what action should be taken, if any.
9. The Secretariat would also draw the Committee’s attention to its comments in paragraphs 16 and 18 to Doc. NC0472E1.

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■ **Module configuration** The following illustration shows a typical combination of WS-620/820 series equipment. There are two types of equipment available, classified according to their processing directions: from left to right and from right to left. The illustration below shows a "left-to-right" type of equipment.

