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JY

**INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

JY/T 0192-2011

Replacing JY 192-1985

**Monocotyledon stem model
(English Translation)**

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009 "Guidelines for Standardization Work_Part 1. Structure and Preparation of Standards" this standard replaces JY 192-1985 "Technical Conditions for Monocotyledon Stem Model". In addition to editorial changes, the main technical changes are as follows.

- Appearance size has increased allowable tolerances;
- Clearly specify the content that should be displayed in the cross section, longitudinal section, catheter, sieve, and companion (phloem);
- Added some cells in the epidermis to show the nucleus;
- Added the requirement that the main parts of the model should be affixed with name or number tags;
- Specifies the materials that should and should not be used for the model;
- Specify the limit of heavy metal content in the paint of the model.

Please note that some elements of this standard may involve patents. The issuer of this standard is not responsible for identifying these patents.

This standard was proposed by the National Technical Committee for Standardization of Teaching Instruments (SAC/TC125).

This standard is under the jurisdiction of the National Technical Committee for Standardization of Teaching Instruments (SAC/TC125).

1 Scope

This standard specifies the names, requirements, test methods, inspection rules and signs, packaging, transportation, storage, etc. of monocotyledonous plant stem models.

content.

This standard applies to monocotyledonous plant stem models for biology teaching in middle schools.

2 Normative references

The following documents are essential for the application of this document. For dated references, only the dated version applies to this article. For undated references, the latest version (including all amendments) applies to this document.

GB 21746-2008 General requirements for safety requirements of teaching instruments and equipment
JY 0001-2003 General quality requirements for teaching instruments and equipment products
JY 0002 Inspection rules for teaching instruments and equipment products
JY 0026-1991 teaching instrument and teaching equipment product model naming method
JY 0213-1994 Teaching mechanical, thermal instrument transportation, storage environmental conditions and test methods

3.1 Naming rules

The model name of the product is JY 0026-1991.

3.2 Nomenclature

The monocotyledon stem model is named.

SM - ZWJ - D - 120

Product height, 120mm Product Feature Code, Monocotyledon Product name Pinyin prefix, "plant stem" Product model classification code, biological model Model example.

SM-ZWJ-D-120 stands for biological model, plant stem model, monocotyledon, 120mm in height.

4.1 Use environmental conditions

Temperature. -10 °C ~ 40 °C, relative humidity. not more than 90%.

4.2.1 General requirements

4.2.1.1

The product shall use the corn stalk as a reference material, showing the structure of the monocotyledon stem vertical and horizontal sections. See the main dimensions of the model cross section figure 1. Among them, l_1 should be $400\text{mm} \pm 30\text{mm}$, l_2 should be $400\text{mm} \pm 30\text{mm}$, and h should be $120\text{mm} \pm 10\text{mm}$.

Figure 1 Schematic diagram of model dimensions

4.2.1.2

Cross sections should be made through the sections, the cross section is about 1/10 of the overall section (the central part is removed), and the longitudinal sections are made on both sides (the vascular bundle should be passed).

4.2.1.3

The cell surface view and different sections shall be shown on the model. The morphology, structure and location of each cell should be correct, and some cells should show cells nuclear. The color of each part structure should be different.

4.2.2 Specific requirements

4.2.2.1

Cross section. shows the structure of the epidermis, mechanical tissue, and vascular bundles scattered in basic tissues (thin-walled cells).

4.2.2.2

Longitudinal section. shows the morphological characteristics of the longitudinal section of the vascular bundle in the epidermis, mechanical tissue and basic tissue. On the longitudinal profile on both sides, it should show the structure of ring-shaped conduit, threaded conduit, perforated conduit, sieve tube, sieve plate, sieve hole and companion cell.

4.2.2.3

Epidermis. It should be composed of epidermal cells of different lengths, and some cells should show nuclei.

4.2.2.4

Mechanical tissue. It is located on the inner side of the epidermis and consists of several layers of thick-walled cells. The thick-walled cells in longitudinal section are fibrous with tapering ends.

It has thick walls and small cell cavities.

4.2.2.5

Parenchymatous cells. They gradually increase from the outside to the inside. The cell walls are thin and have intercellular spaces. Some cells should show nuclei.

4.2.2.6

Vascular bundles. externally tough, that is, small and more near the edge of the stem and large and small near the center. The vascular bundle sheath and airway are shown.

4.2.2.7

Catheter. It should be "V" shaped in the cross section. Except for the airway, its tip should have one or two catheters with smaller diameters on both sides each has a larger diameter catheter. The position, morphology, and structure of the ring-shaped catheter, threaded catheter, perforated catheter, airway should be correctly displayed.

The thick-walled color of the tube.

4.2.2.8

Sieve tube and companion cell (phloem). distributed in the middle of one side of two large ducts, the screen,, Location and morphological characteristics of sieve holes and companion cells.

4.2.2.9

The following parts of this model shall be affixed with name or number tags. epidermis, mechanical tissue, parenchyma cells, vascular bundles, vascular bundle sheaths, ring guides Tubes, threaded catheters, perforated catheters, sieve tubes and companion cells, airways.