

Demonstration set of atom models

LABOTRIX ATOMIX A1

PRODUCT PASSPORT

Kyiv

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1. Basic product information

- 1.1. Product name — Demonstration set of atom models.
- 1.2. Trademark — Labotrix.
- 1.3. Model — ATOMIX A1; full trade name — LABOTRIX ATOMIX A1.
- 1.4. Manufacturer — Labotrix Group Limited, China.
- 1.5. Intended use: The set is used in chemistry lessons in high school and gymnasium for three-dimensional construction of molecules from inorganic and organic substances. Using models, the teacher visually demonstrates to the class the spatial shape of the molecule, the type and multiplicity of chemical bonds, and also explains the phenomenon of isomerism. The set is designed for frontal demonstration in front of the audience when considering complex topics in organic and inorganic chemistry.
- 1.6. Design features: The set includes balls of various sizes and colors — models of atoms of chemical elements — and rods for connecting them. Each ball has holes at an angle that reproduces the valence of the corresponding element, thanks to which the assembled structure conveys the real geometry of the molecule. Single bonds are connected with rigid rods, and double and triple bonds with flexible ones. The set is supplemented with orbital models and a tool that facilitates the disassembly of finished structures.

2. Technical specifications

- Brand — Labotrix
- Model — ATOMIX A1
- The article number is LTX-ATOMIX-A1
- Product type — set of atom models for demonstration teaching
- Number of parts in the set (pieces) — 270
- Number of atoms (balls) in the set (piece) — 111
- Number of rods (links) in the set (pieces) — 140
- Number of orbital models in the set (pieces) — 18
- Maximum diameter of an atom (millimeter) — 23
- Number of elements presented in the set (pieces) — 12
- Length of the average rod for a single bond (millimeter) — 27
- Length of flexible rod for double and triple bond (millimeter) — 43
- Short rod length for scale models (millimeter) — 11
- Color coding - complies with generally accepted standards (Hydrogen - white, Carbon - black, Oxygen - red, Nitrogen - blue, etc.)
- The material of the atoms (balls) is colored plastic.
- Rod material - plastic and metal
- Operating conditions — premises of an educational institution, air temperature from +5 to +40 °C, relative humidity from 40 to 60 % without condensate
- Language of marking and operating documentation — Ukrainian

- Product marking — trademark, model and a space for the inventory number
- Individual packaging - corrugated cardboard box with contents fixation
- Documentation supplied — product passport with warranty card and operating manual
- Organization of work - set suitable for classroom demonstration
- User requirements - teacher assembles models in front of the class, students watch the demonstration
- Element recognition - the shape and color of the ball immediately indicate the chemical element it represents
- Service life (year) — 5
- Warranty period (month) — 12

3. Equipment

- Hydrogen atom balls (white) — 40 pcs.
- Carbon atom balls (black) with different numbers of holes — 38 pcs.
- Oxygen atom balls (red) — 12 pcs.
- Nitrogen atom balls (blue) — 4 pcs.
- Sulfur atom balls (yellow) — 2 pcs.
- Phosphorus atom balls (purple) — 4 pcs.
- Halogen atom balls (green) — 8 pcs.
- Metal atom balls (silver) — 3 pcs.
- Medium rods for single connections (rigid) — 55 pcs.
- Long rods for double and triple bonds (flexible) — 25 pcs.
- Short rods for scale models — 60 pcs.
- Orbital models (p-orbitals) purple — 6 pcs.
- Orbital models pink — 6 pcs.
- Orbital models beige — 6 pcs.
- Tool for removing short rods — 1 pc.
- Product Passport and Warranty Card — 1 pcs
- Individual transport packaging — 1 pcs

The set is a closed package, does not require assembly before first use. Apart from the presented elements, nothing is included in the set.

4. Safety measures

4.1. General requirements

- Before first use, read this passport and keep it together with the product.
- The set is intended solely for demonstration work under the direct supervision of a teacher or other adult who has received appropriate instruction.
- Inspect the unpacked set for mechanical damage; damaged parts with cracks or broken fragments must not be used.
- Pay attention to the tightness of the packaging during storage and transportation.

4.2. Hazard prevention

- The set contains small parts; ensure that children under 3 years of age do not have access to individual elements.
- Atoms and rods have sharp edges at the joints; handle them carefully to avoid injury.
- Do not heat the parts or place them near an open flame - the materials are subject to melting and burning.
- Do not use the set for purposes other than education; do not disassemble or modify the design of the parts.

4.3. Health care

- Do not allow parts to come into contact with eyes, mouth or mucous membranes.
- If plastic parts enter the respiratory tract or are swallowed, consult a doctor immediately.
- When working with the set in a hot room, do not leave the parts on the shelf for a long time - the plastic may deform.

4.4. It is strictly forbidden

- Allow children to play with the set without adult supervision.
- Disassemble the balls and rods by aggressive methods, using sharp tools or a hammer.
- Immerse parts in organic solvents, sprays, acids or alkaline substances.
- Wash the set in the dishwasher or under hot running water.
- Do not leave the set in places where moisture is accessible or near heating devices.

5. Preparation for work

- 5.1. Unpack the kit and check for completeness according to section 3 of this passport. We recommend that you keep the original packaging for further transportation and long-term storage.
- 5.2. Inspect each part for mechanical damage, cracks, and broken elements. Damaged parts are not allowed to work.
- 5.3. Wipe the balls and rods with a soft, dry cloth to remove dust and packaging residue.
- 5.4. Place the kit on a clean and flat surface (table or display stand), away from the edge to prevent parts from falling.
- 5.5. Before demonstrating a complex model, it is recommended to practice independently to avoid wasting class time and making mistakes.
- 5.6. If the kit has been stored at low temperatures (below 0 °C), allow it to come to room temperature for at least 1 hour before use.

6. Procedure

6.1. Selection and preparation of atoms

To assemble a molecule, select the balls of the desired elements by color and number of holes. The number of holes in the ball corresponds to the valency of the element - the number of chemical bonds that the atom can form. For example, Carbon (black ball) has four holes and forms four bonds.

6.2. Connecting atoms by a single bond

To form a single bond between two atoms, use a medium-sized rigid rod 27 mm long. Insert the rod into the hole of the first ball until it stops, then place the second ball on the other end of the rod. Make sure that both balls fit snugly on the rod without any play.

6.3. Connecting atoms by double and triple bonds

For a double bond, insert two flexible rods 43 mm long into two adjacent holes of the first atom, then insert their free ends into two adjacent holes of the second atom. For a triple bond, use three flexible rods. The flexible rods form an arc, which clearly shows the multiplicity of the bond.

6.4. Use of scale models

Use short 11 mm rods to build compact models with atoms packed tightly together. They help students understand the spatial proximity of atoms in a molecule.

6.5. Completion of work

After the demonstration, carefully disassemble the model by inserting the special tool into the hole near the rod and pulling the ball off the rod. Never try to pull the rod out with your bare fingers - this can damage the holes in the balls. Put all parts back in the packaging and store in a safe place.

7. Care, maintenance and possible malfunctions

7.1. Cleaning

- Wipe the parts with a soft, dry cloth to remove dust and chalk residue.
- If necessary, wash the parts in warm water with a neutral detergent, using a soft brush.
- Wipe the parts dry with a soft cloth immediately after washing.
- Do not use abrasive materials, organic solvents, alcohol, or chlorine-containing products - they will damage the plastic and paintwork.

7.2. Periodic control

- Check the integrity of the parts, especially the holes in the balls and rods, at least once a month.
- Make sure all parts are kept in their original packaging and are free from environmental damage.

- Repairs and replacement of damaged parts are performed only by an authorized service center.

7.3. Possible malfunctions and ways to eliminate them

Symptom	Possible cause	User actions
The rod is difficult to insert into the ball hole	The hole is contaminated with dust, chalk, or other debris	Clean the hole and the rod with a dry brush or cloth.
The rod protrudes from the ball; the model falls apart	The rod is installed incorrectly, not inserted deep enough	Pull out the rod and reinsert it until it stops.
The ball has a crack or broken edge	Mechanical damage due to dropping or mishandling	Stop using the part; order a replacement from an authorized dealer.
The flexible rod is twisted or deformed.	Improper storage, ambient temperature above 40 °C	Try to straighten the rod by gently pulling on it; if that doesn't work, replace it.
The rod removal tool is lost.	Loss of detail	Order a replacement tool from an authorized dealer or use an alternative removal method.

8. Storage and transportation conditions

- Store the set in a dry closed room at a temperature not lower than +5 and not higher than +40 °C and relative humidity up to 80 % without condensation.
- Protect the product from direct sunlight, heat sources, and ventilation holes to prevent plastic deformation.
- Keep all parts in their original packaging or container to prevent loss of small items and contamination.
- When transporting, pack the kit in a hard box or original packaging to protect against mechanical damage.
- Do not place heavy objects on top of the kit packaging.
- The storage period before commissioning is unlimited provided that the stated requirements are observed and the integrity of the packaging is monitored.

9. Warranty obligations

- 9.1. The warranty period of the product is 12 months from the date of sale specified in the warranty card.

- 9.2. The manufacturer guarantees that the product complies with the declared technical characteristics, provided that the rules for transportation, storage and operation set out in this passport are followed.
- 9.3. During the warranty period, product defects that have arisen due to the manufacturer's fault will be eliminated free of charge. The method of elimination (repair, component replacement or product replacement) is determined by the service center.
- 9.4. Warranty service is provided upon receipt of a correctly and completely filled out warranty card and a document confirming the fact and date of purchase.
- 9.5. The warranty does not apply to cases where the malfunction is caused by:
- mechanical damage, in particular cracks, chips and deformation of the housing and of the components of the product;
 - violation of the operating, storage or transportation rules set out in this passport;
 - ingress of liquid or foreign objects into the product, and also the action of insects and animals;
 - independent disassembly, repair or modification of the product, in particular repair at unauthorized workshops;
 - use of the product other than for its intended purpose;
 - force majeure circumstances (fire, flood, earthquake, etc.).
- 9.6. The warranty does not apply to natural wear and tear of the coating and appearance of the product, as well as to consumables.

10. Product disposal

- The product is not electrical or electronic equipment, therefore the marking in the form of a crossed-out container does not apply to it.
- After the end of the service life, the product is disposed of according to the rules established at the institution that operated it, with prior separation by materials.
- Hand over the packaging elements (cardboard, polymer materials) to the corresponding streams of recyclable materials.

Contacts

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Conditions of use and storage of the product

The product is intended for educational work in general secondary education institutions and is used only under the control and supervision of a teaching staff member; the recommended age of students — from 10 years, that is, students of grade 5 and of higher grades. Keep the product in a dry, clean and ventilated room at a temperature from +5 to +40 °C and relative air humidity up to 80 % without condensation, separately from heat sources and out of direct sunlight, moisture and dust. Use the product exclusively for its intended purpose and do not allow drops, impacts or other mechanical damage. If you notice damage, a crack or any malfunction, stop working with the product immediately and inform the teacher or the responsible person of the educational institution; repairing the product on your own is prohibited.

WARRANTY CARD

Product name:	Demonstration set of atom models
Product model:	LABOTRIX ATOMIX A1
Serial number:	
Date of sale:	
Warranty period:	12 months from the date of sale
Trading organization:	
Signature of the seller:	

The goods have been received in working order, without visible damage, complete, and have been checked in my presence. I have no claims regarding the quality of the goods; I have read and agree to the operating and warranty service conditions.

Full name of the buyer

Buyer's phone number Buyer's signature

Dear Customer!

Thank you for choosing Labotrix products. After-sales service of this product is provided in accordance with the regulations of the company and the legislation of the country of sale. So that we can serve you quickly and without unnecessary formalities, check that this warranty card is filled in correctly at the moment of purchase and keep it together with the payment document throughout the entire warranty period. When applying for repair, hand the product over to the seller or to the service center together with the filled-in card.

Procedure for applying

1. The right to free warranty service for the product is valid for 12 months from the date of sale specified in the warranty card. Within this period, components that have failed due to a manufacturing defect are repaired or replaced without payment from the buyer.
2. Before contacting, make sure that the malfunction is not caused by the reasons listed in section 9 of this passport, and if possible, use the table of possible malfunctions in section 7.3.
3. After the 12-month warranty period, repairs are carried out for a fee; the cost of work and spare parts is determined depending on the nature of the malfunction.

Grounds for refusal of warranty service

The company reserves the right to refuse free service or to perform the work on a paid basis if at least one of the following circumstances is established:

- absence of the warranty card, its incomplete or corrected completion, and also the absence of a document confirming the purchase;
- non-conformity of the serial number of the product with the number specified in the card, or damage to the factory marking;
- traces of independent disassembly, repair or modification of the product;
- damage caused by violation of the operating rules, connection to an unsuitable power source or external mechanical impact;
- damage as a result of force majeure circumstances.

Service Records

Date of entry	Description of the malfunction	Work performed	Position, signature, full name of the responsible person