Product Instruction

for

Liquid Nitrogen Container

Product Instruction

Application

The liquid nitrogen containers manufactured by our factory have characteristics in their light weight, portable, excellent performance of deep freezing. They are widely used to store semen and embryos of domestic animals, microbe, vaccine, skin, organ treatment, cold assembly and cooling of instruments and elements for industry, ice-cream making, and cold medical treatments for beauty.

Technical data

MODELS INDICATED

YDS--□□--□

- Head diameter size, 50mm will omit
- B: transportation type, No: storage type
- Volume
- Chinese name abbreviations

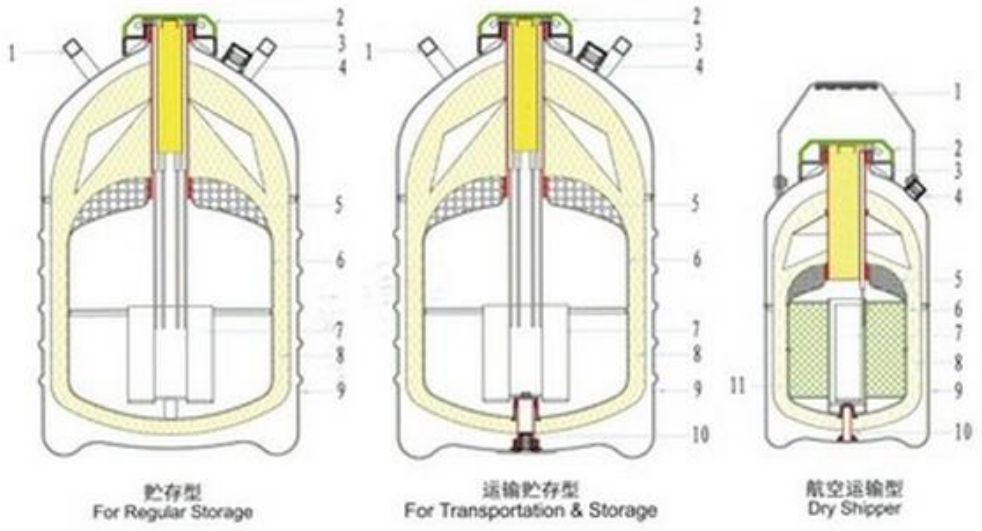
For example:

YDS-10-80,

Volume is 10L; Head diameter is 80mm, storage type.

YDS-30B-80,

Volume is 30L; Head diameter is 80mm, transportation type.



产品结构示意图	Product Structure Overview	
1	提手	Handle
2	盖塞	Plug
3	颈管	Neck Tube
4	真空接头	Vacuuming Nozzle
5	吸附剂	Adsorbent
6	内胆	Inner Vessel
7	提筒	Canister
8	多层绝热体	Multi-Layer Thermal Isolation
9	外壳	Outer Shell
10	支撑	Support
11	液氮吸附剂	Hydrophobic Liquid Nitrogen Absorbent

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Technical data of the liquid nitrogen container for storage

Model	Capacity (L)	Mouth diameter (mm)	Outside diameter (mm)	Height (mm)	Empty weight (Kg)	Full Weight (Kg)	Static evaporation loss (L/day)	Effective days	Canisters pcs	Canister Size Diameter*Height mm	Protective Jacket pcs	Plug pcs	Lockable Cover pcs
YDS2-35	**2**	**35**	**180**	**410**	**2.1**	**3.7**	**0.07**	**28**	**3**	**25*120**	**1**	**1**	**1**
YDS-3	3.15	50	224	425	3.2	5.7	0.10	32	6	38*120	1	1	1
YDS-6	6	50	285	460	4.4	9.2	0.10	61	6	38*120	1	1	1
YDS-10	10	50	305	530	6.0	14.1	0.10	101	6	38*120	1	1	1
YDS-10A	10	50	305	605	7.6	15.7	0.09	112	6	38*276	1	1	1
YDS-13	13	50	305	605	7.6	18.1	0.10	131	6	38*276	1	1	1
YDS-15	15.2	50	355	600	8.6	20.9	0.10	158	6	38*120	1	1	1
YDS-16	16	50	355	600	8.6	21.5	0.10	168	6	38*276	1	1	1
YDS-20	21	50	355	620	9.0	26.0	0.10	212	6	38*120/276	1	1	1
YDS-30	31.5	50	455	670	13.8	39.2	0.11	298	6	38*120/276	1	1	1
YDS-35	35.5	50	455	720	17.0	45.6	0.11	326	6	38*120/276	1	1	1
YDS10-80	10	80	305	530	6.8	14.9	0.17	59	6	63*120	1	1	1
YDS30-80	31.5	80	455	670	14.6	40.0	0.18	175	6	63*120/276	1	1	1
YDS35-80	35.5	80	455	740	16.8	45.4	0.19	189	6	63*120/276	1	1	1
YDS30-125	31.5	125	455	690	16.8	42.3	0.28	113	6	97*120/276	1	1	1
YDS35-125	35.5	125	455	740	16.8	45.4	0.29	123	6	97*120/276	1	1	1
YDS60-210	63	210	560	900	27.8	78.7	0.68	93	----	Rack	1	1	1
YDS100-210	100	210	560	1100	31.2	112.0	0.85	117	----	Rack	1	1	1

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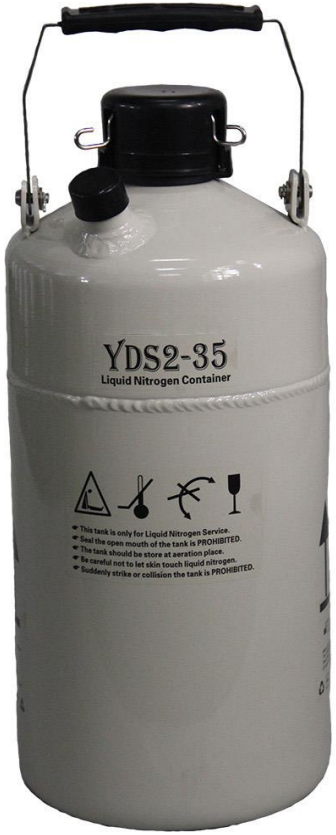

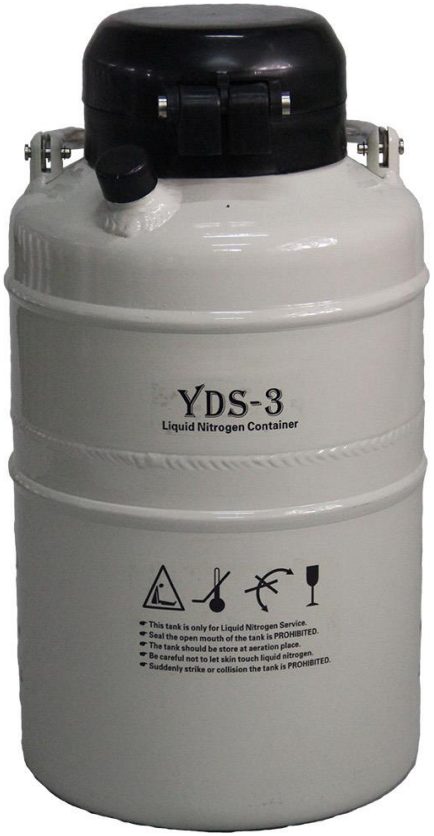

Construction Features

1. The liquid nitrogen container is consisted of an inner container, an outer container, a canister and a neck tube linking two containers above. The strength durable inner container and outer container are made up of high strength aluminum alloy.
2. The container employs multi-layer thermal insulation material in high vacuum space between the inner and outer containers. Therefore it has excellent performance of deep freezing.
3. The neck plug made of good thermal insulation plastics can not only reduce liquid nitrogen evaporation but also fix the canister.
4. The neck tube is made of reinforced glass plastic which has the lowest heat conduction coefficient, and for this reason it can control outside heat coming into the container from the neck tube to the minimum limit.
5. Gas absorbent is used in the vacuum space, which can absorb the gas from metal and other materials in the vacuum space so that it can maintain long-term high vacuum.
6. The canister in liquid nitrogen is an appliance for storing refrigerated products and is fixed at upper position by means of the neck plug slot and the dial gap connected with the unit, so it can be transported with safety.

These large capacity containers are designed for transferring biological samples stored via manual work. They are light, portable, economical, and have lower static evaporation loss.

Points of attention

1. The container is only used for charging liquid nitrogen; it cannot be used for charging liquid air or oxygen in order to prevent violent burning when they act with some materials in container.
2. The liquid nitrogen is in super-low temperature (-196℃). It can arouse frostbite similar to burnt injuries when touching skin. So, use protective gloves and shoes when filling and drawing it to avoid being hurt by splashing.
3. Do not use the storage container as a transportation one. The special transportation container must be used when the liquid nitrogen should be transported. The model YDS-XXB type produced by us is specified transporting containers. It has specific structure to prevent vibration. And it is durable, uneasy to be damaged.
4. Only use neck plug specialized for the unit, never use other plug to replace it so as to avoid the damage may occurred to the container. If use other plugs to replace original ones, the liquid nitrogen may continue evaporating and higher pressure resulting from which can lead to damage of the container.
5. Use plastic or wood measuring scale to measure depth of liquid nitrogen in the container. Insert measuring scale in the container (to bottom) for five to ten seconds, and then take it out. The length of frosted section is the height of liquid level. Never use a hollow tube or stick as a measuring scale in order to prevent liquid nitrogen overflowing from the used tube and injuring people.
6. The liquid nitrogen is a tasteless, smell less and nonpoisonous gas, but if there is no good vitalization, evaporating nitrogen will cause nitrogen content increasing of indoor air and oxygen content decreasing relatively, and all these will cause the risk for people's health. Therefore, the storage location and operation place of the liquid nitrogen containers should be ventilated and maintain fresh air.

Service instruction

1. Please cover the mouth quickly to reduce nitrogen consumption when inserting or removing canister. Do not draw the canister all out from the container to keep the good storage efficiency of products.
2. Do not collide and impact container against objects because container is at high vacuum status and the outer container will bear a quite large ambient atmosphere pressure. If the container (outer container) is collided and impacted, it may appear concaves. In the circumstances evaporation performance has no changes; the container can continue to be used. If evaporation performance has changed badly, the container cannot be used any more.
3. Often weigh container in order to know how much liquid nitrogen left and how long it will be used. The container should be filled at once if liquid nitrogen reduced to one third (1/3) of gross capacity.
4. If the neck of the container is wet and or covered with some white frost, it shows that the container vacuum has changed badly and the container cannot be used and should be replaced immediately.
5. Cleaning and drying of the container

There will be moisture gradually gathered in the inner container, and then some germs will be reproduced and sneaked into liquid nitrogen during use of liquid nitrogen container. The inner container will be corroded because of these reasons, meanwhile the reproduced germs will decrease fertilization rate of semen.

Therefore, liquid nitrogen container should be cleaned one or two times for a year.

The methods of cleaning are as follows:

<1> after removing out the canister and liquid nitrogen from the container for two days, the temperature of the container will rise to about 0℃.

<2> fill water of temperature 40-50℃ into the container and then clean it with cloth.

<3> wash the container with water.

<4> put up side down the container to make it dry with the natural air or hot air. The temperature should be controlled between 40-50℃ and cannot exceed 60℃.

Transportation

1. Put all canisters exactly into the slots of container mouths and cover all neck plugs before transportation.
2. The container should not be put horizontally when it is transported with vehicle or train. Container must be fixed with belts in order to avoid falling down. Put sponges or other cushions under base of the container to reduce impact.
3. Container must be put into wood case to avoid upside down of container when it is transported by air. Liquid nitrogen will quickly boil over or bring out unusual situation because of plane rising and atmosphere pressure decreasing.

Test for daily static evaporation rate of liquid nitrogen

1. The testing ambient temperature is at 20±3℃and the container should be covered with neck plug without the canister.
2. Fill 1/2 volume liquid nitrogen into the container and statically keep the container for 48 hours. After 48 hours, the first weight of the container is A (g), and there days later the second weight of the container is B (g).

Calculate daily evaporation rate Q as follows.

$$Q = \frac{A-B}{3} \quad \text{(g/day)}$$

If use volume (liter) unit, the formula is:

$$D = \frac{Q}{808} \quad \text{(liter/day)}$$

Warrantee: 24 months from date of arrival when the product is use under normal conditions