काठमाण्डौ उपत्यका खानेपानी लिमिटेड

मुख्य कार्यालय, त्रिपुरेश्वरमार्ग, काठमाडौं

सूचना ! सूचना !! सूचना !!!

प्रथम पटक प्रकाशित मिति : २०८२/०५/११

यस कम्पनीको सुन्दरीजल पानी प्रशोधन केन्द्र हाता भित्र Water Bottling Plant जडान गर्ने कार्यको लागत अनुमान तयार गर्ने प्रयोजनको लागि Bill of Quantity (BOQ) र संग्लन Specifications बमोजिमको कार्यहरूको दररेट आवश्यक भएको हुँदा उक्त कार्यहरू के कति दररेटमा गर्न सकिन्छ ? सूचना प्रकाशन भएको मितिले ७ दिन भित्र दररेट पेश गर्नु हुन यसै सूचना मार्फत जानकारी गराईन्छ । उक्त कार्यहरूको Bill of Quantity (BOQ) तथा Specifications यस कम्पनीको website : www.kathmanduwater.org मार्फत प्राप्त गर्न सकिने व्यहोरा अनुरोध गरिन्छ । विस्तृत विवरण तथा जानकारीको लागि सम्पर्क नम्बर ०१-४११७३५६/४११७३५८

KATHMANDU UPATYAKA KHAANEPAANI LIMITED
Main Office, Tripureswor
Bill of Quantity

Name of Project: Supply & Installation of Water Bottling Plant

S.N.	Particulars	Capacity	Quantity	Unit	Rate (Rs)	Total (Rs)	Remarks
A	**Water Treatment System**						
1	Drinking Water Treatment System as per specification and standards complete Set	10000LPH	1	Set			
2	5000L Stainless Steel 304 Tank	5000L	6	Nos.			
3	10G Ozone System complete set		1	Set			
4	440W UV Sterilizer System complete set		2	Set			
5	Lifting Pump as per specification		4	Set			
6	Connection of all above treatment unit i.e. S.N. A (1 to 5) with Stainless Steel Pipe and Fittings all complete.		1	Job			
	Sub Total (A)						
B	**Packing Line Machineries for bottle**						
1	Automatic Bottle Filling Machine 24x24x8 High Speed Complete with cap elevetor	5000 BPH	1	Set			
2.	Cap Chlorine Sterilizer System all complete		1	Set			
3	Automatic BOPP Labelling Machine all complete	5000BPH	1	Set			
4.	Automatic Laser Coding Machine Set all complete		1	Set			
5	Automatic Linear Case Wrapping Machine Set all complete	18-20 pack/minute	1	Set			
6.	Conveying System Buffer Conveyer all complete		50	M			
	Sub Total (B)						

KATHMANDU UPATYAKA KHAANEPAANI LIMITED
Main Office, Tripureswor
Bill of Quantity

Name of Project: Supply & Installation of Water Bottling Plant

S.N.	Particulars	Capacity	Quantity	Unit	Rate (Rs)	Total (Rs)	Remarks
C	**Packing Line Machineries for jar**						
1	Automatic Jar Filling Machine 24x24x8 High Speed with pre-wash , hot wash , detergent wash with cap elevetor all complete.	250 JPH	1	Set			
2	Jar High Pressure Jet Washer Machine all complete	250 JPH	1	Set			
3.	Cap Chlorine Sterilizer System all complete		1	Set			
4	Automatic BOPP Lebelling Machine Set all complete	250 JPH	1	Set			
5	Automatic Laser Coding Machine Set all complete		1	Set			
6	Conveying System Buffer Conveyer all complete		1	Set			
	Sub Total (C)						
D	**PCC Panel Board With Capacitor**		1	Set			
E	Wiring works of Project factory all complete		1	Job			
F	**Supply and delivery of Bottle and Jar as per specifications**						
1	500ml bottle with cap all complete		1	No			
2	1000ml bottle with cap all complete		1	No			
3	20L Jar with cap and permanent KUKL Logo print all complete		1	No			
	Sub Total (F)						
	Total amount i.e. A to F including VAT & all type of taxes						

Water Bottling Plant

Table of Contents

A. Technical Specifications of Raw Water Reservation FRP Tank

FRP (Fiber Reinforced Plastic) tanks with a 100,000 Ltr capacity are indispensable in the water industry, serving as robust solutions for water storage. Their corrosion-resistant properties make them ideal for storing chemically treated water, ensuring the integrity of the tank and the quality of the stored water. Renowned for durability, these tanks withstand harsh environmental conditions, offering a cost-effective, long-term storage solution. Their lightweight construction facilitates easy transportation and installation, contributing to cost savings and rapid deployment. Being a non-conductive material, FRP is suitable for areas prioritizing electrical safety. Customizable to specific design and size requirements, FRP tanks adapt seamlessly to available space, meeting the unique needs of the water industry. Moreover, their minimal maintenance requirements enhance overall operational efficiency, reducing the necessity for frequent inspections and repairs.

Size	5 mtr X 5 mtr X 2 mtr
Thickness of Frp –	
Bottom plate	12 MM
First Step Side Plate	10 MM
Second step Side Plate	8MM
Top plate	5MM
Outer & Inner Nut bolt	Hot Deep Galvanized Steel
Tank Stand	10# GI Channel
Tank Assemble Seal	Standard Rubber
Packing	Standard
Total Weight	3 Ton per tank
Pipe & Fitting	As actual (as per required at site)
Quantity	2 Set

B. Technical Specifications of Water Treatment System RO Plant:

1. Raw Water Pre - Treatment Unit Set: 1 Set

The Pre-Treatment Unit in the water industry performs a critical role in preparing raw water for further purification processes. It primarily involves the removal of impurities, sediment, and contaminants from the incoming water. This unit utilizes various techniques, such as filtration and chemical treatment, along with specific components like vessels, strainers, and pipelines. The aim is to enhance water quality by addressing initial contaminants, ensuring that the water meets the required standards for subsequent treatment stages. In short, the Pre-Treatment Unit acts as the initial barrier to purify and condition raw water, setting the foundation for effective and efficient water treatment in the overall process.

1.1. Feed Pump and Backwash Pump for Pre - Treatment:

Its primary function is to facilitate the pumping of untreated water from its source to the pre-treatment system. This pump ensures a consistent and controlled flow of raw water, allowing for efficient removal of impurities, sediments, and contaminants in subsequent treatment processes. Essentially, it serves as a key component in the preliminary phase of water treatment, ensuring that the incoming water meets the necessary standards for further purification and distribution.

Feed Pump		**Backwash Pump**	
MOC	: Mild Steel	MOC	: Mild Steel
Qty of Pump	: 1 pcs	Qty of Pump	: 1 pcs
Type	: Horizontal Centrifugal	Type	: Horizontal Centrifugal
Flow Rate	: 35000L @22.5m Head	Flow Rate	: 42000L @30m Head
Working Pressure	: 2kg/cm2	Working Pressure	: 2kg/cm2
Max. Pressure	: 4kg/cm2	Max. Pressure	: 4kg/cm2
Brand	: Sabar	Brand	: Sabar
Power	: 5HP	Power	: 7.5HP
In/out Connection	: 75mmx75mm	In/out Connection	: 100mmx100mm

1.2. Pre-Treatment Vessel

The Mild Steel (MOC) Pre-Treatment Vessel, with a capacity of 30m3/hr, serves a crucial role in water treatment processes. Its 1400mm diameter and 2400mm height accommodate a flow type from both the top and bottom. The vessel features an 8mm thickness on both sides, with machine-made dish ends and a shell plate. Equipped with a 10mm strainer plate, 2pcs 550mm manholes, and 1pc 400mm handhole, the vessel ensures accessibility for maintenance. The 80mm MS pipelines, including a frontal pipeline with 5 butterfly valves, facilitate controlled water flow. The vessel's function involves the preliminary treatment of water, utilizing filter media like pebble, sand, MN02, and ATS to remove impurities and prepare the water for further purification processes. The inner side is coated with epoxy, while the outer side is protected with enamel. Overall, the pre-treatment vessel plays a key role in enhancing water quality by effectively filtering and conditioning the incoming water.

MOC Of Vessel	Mild Steel
Qty of Vessel	1 pcs
Capacity	30m3/hr
Thickness	8mm both side machines made dish end and 8mm shell plate
Size of Vessel	1400 mm dia and 2400mm height (HOS)
Flow Type	Top and Bottom
Strainer Plate Thickness	10mm
Manhole Size	550mm - 2 pcs
Hand hole Size	400mm-1 pcs
Pipeline size	80mm MS
Frontal Pipeline	80mm MS Pipeline with 5 no of Butterfly Valve
Stand	8" IBM
Color	Inner side epoxy and outer side enamel
Filter Media	Pebble, Sand, MN02 and ATS

2. Raw Water Feed Pump:

The Raw Water Pump provides a pressurization guarantee for the pure water equipment Filter. It ensures that the inlet water pressure is stable and sufficient, and plays a role in pressurization. The pressurized water pressure is greater than the permeation resistance of the Dual Media Filter, Activated Carbon Filter & Softener Resin Filter, It Can efficiently pass through the Pre-Treatment system and provide a sufficient source for the RO System.

MOC of Pump	Stainless Steel304
Type	Vertical Multistage
Capacity	20m3/hr@4kg/cm2
Working Pressure	2kg/cm2
Max. Pressure	4kg/cm2
Qty	1 no
Power	4 Kw 3phase 50 Hz

3. Dual Media Filter:

Dual Media filtration is a mechanical process used in water treatment plants, both chemical and physical absorption process are used here. The four crucial stages in media filtration are straining, sedimentation, interception, and diffusion. The last stage is inertial compaction. Application of dual media filters is a good solution for contaminated water. It is considered to be excellent for the removal of turbidity, organic matter, and many other impurities. However, dissolved solids are partially removed by this process. The dual media filter technology is used in various water treatment plants. Mainly, it is because of its effective construction and dual filtration procedure. Water in a dual media filter passes through media with moderately smaller pores. Anthracite exudes out the largest molecules. Next layer removes particles with the help of adhesion and straining combination feature of sand and garnet. Filters do not block as fast as they do in a single filtration process. It is basically due to multiple depths or filters in dual media filter process.

MOC of Vessel	Stainless Steel 304
Thickness	4mm both side machines made dish end and 3mm shell plate thickness
Qty of Vessel	1 no
Capacity	20 m3/hr
Size of Vessel	1200 mm dia & height 1800 mm (HOS)
Flow type of Vessel	Top & bottom
Pressure Gauge	1 pcs
Sample Tap	1 pcs
Vessel Stainer	1 set
Manhole	400mm-2 pcs
Pipeline	57mm Stainless Steel 304
Frontal Pipeline	57mm Stainless Steel Pipe and fittings with 5 no of Butterfly Valve
Media	Support Bed + Indian Graded Sand + Anthracite

4. Activated Carbon Filter:

The activated Carbon Filter is a more commonly used water treatment filter. The residual Chlorine that can't be removed in the Dual Media Filter can be absorbed by the Activated Carbon Filter, which will help ensure the equipment's service life. It also help in improving the quality the water by minimizing pollution. At the same time, it captures pollutants like organic molecules that have escaped from the preceding stage. It has a significant absorption and removal effect on peculiar smells, colloids, pigments, and heavy metal ions in the water. Furthermore, activated carbon refers to carbon with a small electropositive charge attached to it. This enables it to attract and trap more chemicals and impurities in water. Furthermore, when water passes through the surface of the activated carbon, the negatively charged contaminant ions are drawn to the positively charged carbon.

MOC of Vessel	Stainless Steel 304
Thickness	4mm both side machines made dish end and 3mm shell plate thickness
Qty of Vessel	1 no
Capacity	20 m3/hr
Size of Vessel	1200 mm dia & height 1800 mm (HOS)
Flow type of Vessel	Top & bottom
Vessel Stainer	1 set
Manhole	400mm-2 pcs
Pipeline	57mm Stainless Steel 304
Pressure Gauge	1 pcs
Sample Tap	1 pcs
Frontal Pipeline	57mm Stainless Steel Pipe and fittings with 5 no of Butterfly Valve
Media	Support Bed + Indian Graded Sand + Coconut Base Carbon 1000IV

5. Water Softener Filter:

The automatic water softener system adopts the principle of ion exchange to remove calcium, magnesium and other scaled ions in the water. When the water from carbon filter passes through the resin layer in the exchanger, calcium and magnesium ions are replaced with sodium ions, while the sodium ions enter the water. As a result, the water that exits the exchanger is softened without being harmed. Because Calcium and magnesium are the primary components that form scale, cation exchange resins are generally utilized to replace Calcium and Magnesium in Water. When enough calcium and magnesium ions have been absorbed by the resin it must be regenerated. The regeneration process involves washing the resin layer with salt water in the saltbox to remove hardness ions from the resin and ejecting the resin from the tank with regeneration waste liquid. Thus the soft exchange function has been restored.

MOC of Vessel	Stainless Steel 304
Thickness	4mm both side machine made dish end and 4mm shell plate thickness
Qty of Vessel	1 no
Capacity	20 m3/hr
Size of Vessel	1200 mm dia & height 1800 mm (HOS)

Flow type of Vessel	Top & bottom
Vessel Stainer	1 set
Manhole	400mm-2 pcs
Pipeline	57mm Stainless Steel 304
Frontal Pipeline	57mm Stainless Steel Pipe and fittings with 5 no of Butterfly Valve
Media	Support Bed + Indian Graded Sand + Softener Resin
Salt Charging System (Pump + Tank): 1 set	

6. Micron Filter:

Micron filter is also called surface filter, that is, the impurity particles removed from the water are distributed on the surface of the filter medium instead of distributed inside the filter medium. It is mainly used for the removal of trace suspended solids, before reverse osmosis and electro dialysis, and after the multi-media filter, acting as a security filter. The precision filter consists of filter housing and a filter element installed inside. When working, water enters the filter element from the outside of the filter element, and the impurity particles in the water are blocked outside the filter element. The filtered water enters the filter element and is led out through the collection pipeline. . The filtration accuracy of the precision filter is generally 1.1-20μm, the accuracy of the filter element can be replaced at will, and the shell mainly has two structures: stainless steel and organic glass. The precision filter should be back washed once a day during use.

MOC	Stainless Steel 304
Thickness	3mm
MOC of Cartage	PP
Micron Rating	5m
Size of Filter	300mm dia and 1000mm
Total no of Cartage	10 pcs/set
Qty	1 no
Capacity	20 m3/hr
In/out side	57mm

7. High Pressure Pump:

Reverse Osmosis works by using a ro high pressure pump to increase the pressure on the salt side of the RO and force the water across the semi-permeable RO membrane, leaving almost all (around 95% to 99%) of dissolved salts behind in the reject stream.

MOC of Pump	Stainless Steel304
Type	Vertical Multistage
Capacity	20m3/hr @133m head
RPM	2900
Working Pressure	10kg/cm2
Max. Pressure	16kg/cm2
Qty	1 no
Power	15Kw 3phase 50 Hz

8. Reverse Osmosis System

The function of a Reverse Osmosis (RO) system in the water industry is to purify water by removing contaminants, dissolved solids, and impurities. It achieves this through a semi-permeable membrane that allows water molecules to pass through while blocking larger molecules and ions. In the water industry, RO systems are crucial for producing high-quality water for various applications, including drinking water, industrial processes, and wastewater treatment. They help improve water quality, meet regulatory standards, and ensure the safety and reliability of water supplies. Additionally, RO systems contribute to water conservation efforts by efficiently treating and recycling water resources. Overall, the function of a Reverse Osmosis system in the water industry is to provide clean, purified water for a wide range of uses while promoting sustainability and environmental protection.

8.1. RO Membrane

Capacity	12000LPH
RO Membrane Type	Spiral Wonder
Diameter of membrane	minimum 8 inch
Length of membrane	40 inch
No. of membrane	minimum 10 pcs
Salt Rejection	98%
Brand	Hydranautics/Vonton Antifake code required for RO membrane

8.2. Membrane Housing

MOC	Stainless Steel 304
Size	8-inch dia and 80-inch length
Thickness of material	4mm
End cap	Stainless Steel 304
Testing Pressure	20kg/cm2
Working Pressure	10kg/cm2

8.3. System Configuration

Solenoid Valve, Pressure Gauge, Pressure switch, state of the art control panel with TDS meter to continuously monitor the product water quality, piping, valves etc

Skid	Stainless Steel 304
Flow Meter	Online Pipeline Type
Membrane Cleaning Tank	500L Stainless Steel 304
Pipeline	57mm stainless steel 304

8.4. Control Panel:

Fully Automatic Control panel with PLC Control System combination of MCB, MCCB, Contractor, overload relay, phase preventer, emergency stop, switch, wiring auto manual switch, Volt meter, ampere meter, conductivity meter, PH meter, TDS meter all complete.

Electrical component: Chint
PLC : Simens

9. PH Correction Dosing System:

The pH Correction Dosing System, comprising dosing pumps, tanks, micron filters, and ceramic mineral balls, is a vital component in the drinking water industry. It first adjusts the pH of water to meet regulatory standards and ensure it falls within optimal ranges for quality and safety. Dosing pumps precisely inject pH-adjusting chemicals from the dosing tank into the water stream, guaranteeing accurate treatment control. The dosing tank stores these chemicals, ensuring a steady supply. Micron filters remove suspended solids and impurities, while ceramic mineral balls enhance filtration and improve water taste and quality. By maintaining proper pH levels, the system prevents corrosion, scale buildup, and microbial growth, safeguarding the integrity and microbiological quality of the water supply. Additionally, it optimizes downstream treatment processes by preparing water for subsequent stages, thus enhancing overall treatment efficiency and effectiveness. In summary, this integrated system plays a crucial role in ensuring safe, high-quality drinking water that meets regulatory standards and consumer expectations.

Dosing Pump	: Metering Pump 6LPH
Dosing Tank	:500 Ltr. Food Grade Chemical Tank
Other Requirements:	Combination of different Stainless Steel Micron Filter, Solenoid Valve, Flow Indicator, Skid and UV System 220W with Separate Ceramic Minerals Ball Housing for injection of Ceramic Minerals Balls along with SS transfer pump capacity 6000LPH for continuous water flow which matches with regular flow of Reverse Osmosis System.
Qty of Ceramic Ball	:100Kg
Qty of System	: 1 Set (For Bottle Filling Line)

10. Pure Water Storage Tank:

A pure water storage tank is a container designed to hold and store purified water for a variety of uses. The tank is typically made of materials that do not contaminate the water, generally purified water are stored in stainless steel Tank. According to the requirement of a person, pure water storage tank could vary on its size.]

MOC	Stainless Steel 304
Thickness	2mm
Capacity	5000L
Size of Filter	1400mm dia and 2400mm
Qty	6 no

11. Ozone Generation System: 1 Set

The function of an Ozone Generator System in the water industry is multifaceted, serving as a crucial tool for disinfection, purification, and treatment of water. By producing ozone gas, a potent oxidizing agent, these systems effectively eliminate bacteria, viruses, algae, and other microorganisms present in water. This process not only ensures the safety of drinking water supplies in treatment plants and wastewater facilities but also enhances the quality of water used in industrial processes. Ozone's ability to oxidize organic and inorganic contaminants, including taste and odor compounds, pesticides, pharmaceuticals, and industrial chemicals, further contributes to overall water quality improvement. Additionally, ozone can be integrated into advanced oxidation processes (AOPs) to tackle persistent organic pollutants and emerging contaminants. Beyond disinfection and oxidation, ozone facilitates color removal, Total Organic Carbon (TOC) reduction, and biological growth control in water distribution systems, thereby reducing fouling and contamination risks. Overall, ozone generator systems offer a safe, efficient, and environmentally friendly approach to water treatment, ensuring that water meets regulatory standards and is suitable for various uses.

11.1. Main Features:

a. Integrating oxygen generating and ozone generating
b. Adapt pressure swing adsorption (PSA) method and American ZEOLITE molecular sieve to separate oxygen from nitrogen and filter harmful substances in the air to obtain high concentration oxygen in line with medical oxygen standards
c. Containing oil -free air compressor. Adjustable ozone output
d. Air-cooling.

MOC	Stainless Steel 304
Size	60x52x130cm
Power	520W
Ozone Production	10g/h
Output Pressure (kg/cm2)	0.8±0.2
Oxygen Flow (L/min)	3
Oxygen Concentration	85%±5
Power Supply (V/Hz)	220/50

12. UV Sterilizer System: 2 set

UV (ultraviolet) systems are used to disinfect or purify water by using UV light. The UV light is absorbed by microorganisms, bacteria, and viruses in the water, which destroys their DNA and renders them unable to reproduce or infect. UV systems are often used as a secondary treatment method in addition to other forms of water purification, such as filtration or chlorination. They are commonly used in residential and commercial water treatment systems, as well as in industrial and agricultural settings.

MOC	Stainless Steel 304
Power	minimum 440w
Voltage	220V, 50Hz
Capacity	5000LPH

13. Pure Water Lifting Pump: 4 pcs

The function of a Pure Water Lifting Pump in the water industry is to efficiently transport clean water from one location to another, typically from a storage tank or reservoir to distribution points or treatment facilities. These pumps are specifically designed to handle clean or treated water without risk of contamination, ensuring the purity and quality of the water supply. Pure water lifting pumps play a critical role in maintaining consistent water pressure throughout the distribution network, facilitating reliable access to clean water for industrial, commercial, and residential purposes. In short, their function is to lift and distribute purified water, contributing to the safe and efficient operation of water systems in various industries.

MOC of Pump	Stainless Steel304
Type	Horizontal Centrifugal
Capacity	8m3/hr@4kg/cm2
Working Pressure	2kg/cm2
Max. Pressure	4kg/cm2
Qty	1 no

14. Pipe and Fittings: 1 job

Interconnection of different size(25mm/38mm/57mm) stainless steel 304 pipe and fittings from raw water feed pump to Vessel set, vessel set to RO plant, RO plant to tank. Tank connection stainless steel pipe and fittings with ball valve, Filling line stainless steel pipe and fittings, complete project stainless steel pipe and fittings.

Project for 5000 bottles/hour 1000ml Pure Water Production Line

Technical database:

1、Rated capacity: 5000bph for 1000ml

2、Filling material: Pure water

3、Filling type: Gravity filling normal temperature

4、Filling container type: 250ML~2000ML

PET bottle： Max diameter 96，

Max height: 310mm （special order could design

） 5、Filling type: Neck-hold conveyor

6、Cap: Standard HDPE screw cap，diameter 30/28mm

7、Filling temperature: Normal temperature

8、Label: PVC sleeve label

9、Package: 4x6 film package (1000ML)

10、Conveyor mode:

Empty bottle：Air conveyor

Full bottle：Conveyor belt

11、Condition: temperature：10～40℃

Humidity：no dew（≤95％）

12、Resource power: 380V，50Hz，three phase 13

、Efficiency: >95%

Table of Content

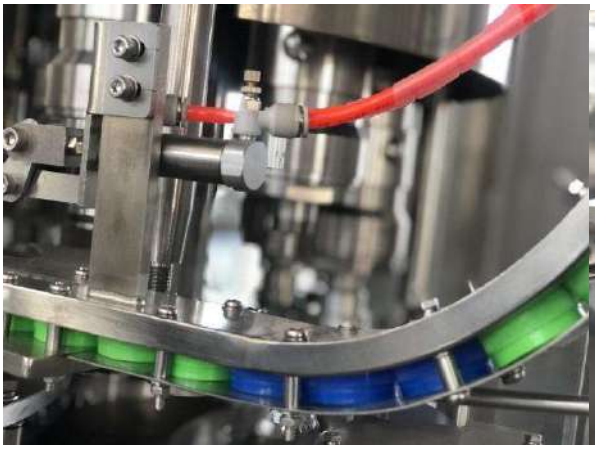
A. Washing filling capping three in one machine XGF 24-24-8

The machine is mainly used in the water filling operations. The three functions of bottle rinsing, filling and capping are composed in one body of the machine. The whole process is automatic. The machine is used in filling mineral water and purified water in bottles made of polyester and plastics. The handle of the machine can be freely and conveniently turned to adjust the machine to fill various types of bottles. The filling operation is faster and more stable because the micro pressure filling operation of the new type is adopted. Therefore, the output and benefit of the machine is higher than the machines of the same specifications. The advanced Mitsubishi programmed controller (PLC) is adopted to control the machine to run automatically while a transducer is used in the bottle –entering chains to adjust speeds and coordinated with the transducer of the main machine to make the operations of moving bottle forward steadily and reliably. It is convenient to operate with higher automation because every part of the machine is inspected to run with photo electricity, On the bases, the filling parts of the machine can be changed into filling methods of lower vacuum. The filling category of lower vacuum (Z type machine) is applicable in glass bottles, filling alcohol, soy and such like materials. The aluminum theft proof cap and plastic cap can be adopted. The machine is an idea-preferred equipment for beverage makers.

Technical Parameter:

Number of washing positions	24
Number of filling positions	24
Number of capping positions	8
Capacity at 1000ml bottles / hour	5,000bottles/hour
Application bottle & cap	PET bottle & Screw cap
Suitable bottle height (mm)	160-320mm
Suitable bottle diameter (mm)	¢50-¢115
Power of main motor (KW)	4.00
Power of washing pump (KW)	0.37
Power of filling pump (KW)	0.75
Power of cap unscramble (KW)	0.37
Water pressure (Mpa)	＞0.06MPa≤0.2Mpa
Filling type	Gravity filling + micro pressure
Filling temperature	Room temperature
Thickness of machine frame	1.5mm
Thickness of deck plate	25mm
Dimension	L3100*W2050*H2550mm
Weight(kg)	5000

Pictures:



Electrical parts brand

No.	Name of parts	Producing area
1	Programmed controller	Siemens
2	Electrical source transformer	Siemens
3	On-off device	Siemens
4	Low-pressure breaker	Siemens
5	Fuse	Japan
6	AC electromagnetic contractor	Siemens
7	AC electromagnetic contractor	Siemens
8	Heat-break device	Siemens
9	Multi-continuous electrical device	Siemens
10	Multi-circle electrical device	Nantong

11	Digital display device	Shanghai
12	Indicator light	Hangzhou
13	Cue light	Hangzhou
14	Middle-continuous electrical device	Japan
15	On-off changing	Hangzhou
16	Key on-off	Hangzhou
17	Button with light	Hangzhou
18	Emergency button	Hangzhou
19	Alarm	Hangzhou
20	Inducing on-off	AUTONICS
21	Fiber optic on-off	Shanghai
22	Speed adjusting device	USA

Buffer conveyor (according to design can change)

The buffer conveyor is placed before the packing machine ,so you can save the factory space and to keep the bottles ,and you can have time to change the labels or PE film .
Material :SUS304 stainless steel side panel with plastic chain
Motor: Hangzhou Jie brand
Width :320mm for 4lines
Height :1080mm (adjustable)

Cap washing and sterilizer system with cap feeder

Description:

The sterilizer is specially designed for the bottles caps, use Low electric field（3000V）by air medium ,it has the function of oxygen and ultraviolet rays ,First Oxygen will kill 80% bacteria ,and the oxygen can be recycled in the body ,Secondly Ultraviolet rays will kill the rest bacterial .

Technical parameters:

Model: JKCP-1500
Machine base: Stainless steel SUS304
Ozone generator:10g/h
Ozone density:>80ppm
Power supply:220V 50HZ
Inside Dimension: 520mm*400mm*1100mm
Outside Dimension:600mm*550mm*1700mm
Power:2.2kw

Light checker

A Light checker is often used in the bottle water industry for quality control and assurance. It typically consists of a light source that allows inspectors to examine bottled water for any impurities, particles, or abnormalities. The purpose is to ensure that the water is clear, free from contaminants, and meets the required quality standards before packaging and distribution.

Material: stainless steel 304
With two light pipes which will be installed on the conveyor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Blow Dryer

This machine is installed after the filling machine, in order to dry the bottles which outside with some water drop. This machine is used to remove the water outside the bottle surface; the blowing capacity can be adjusted through the button.

Material: stainless steel 304

Size: L1400*W900*H1500mm

Weight: 100kg

Power:7.5kw

With 1set of air blower and position can be adjusted, also air flux can be adjusted

B. BOPP Label Machine

BOPP labels are thin, flexible, and transparent. The BOPP label machine is used to apply these labels to the surface of the bottle. BOPP labels offer a high-quality, visually appealing finish and are commonly used when a clear and vibrant label is desired. OPP labels are cost-effective, versatile, and can be printed with high-quality graphics. They provide a premium look to the product without the need for additional heat shrinking

1. Specifications

1). High quality and efficient machine

2). easy to operate and maintain

3). PLC control, touch screen

4). good after-sale service

5). warranty: one year

2. Feature of hot melt glue labeling machine

PLC control system, automatic working

Disc label-pasting and label-adsorbing

Junction line error: +/-1.5mm

Include such mechanisms as label-providing, belt-conveying, label-cutting, wheels-attaching, vac uum-adsorbing, hot sol-conveyance

Hot sol providing machine is made in a hundred million Hertz.

VAC and PUMP don't start working unless the hot sol machine gets to designed temperature.

Auto stop when pasting failure

Bottle material: Plastics, glass, steel, etc

Made of stainless steel 304 Stainless steel, and T6 aluminum alloy after being anode hardened

Adjustable label-pasting speed of main engine

Sensor eye detect system, no bottle no labeling

Horizontally adjustable main engine

Alarm for missing label or gap and label running-out

Indicator light and alarm for abnormality

3. Technical Parameter hot melt glue labeling machine

Labeling Speed	10000 bottles per hour
Main engine size	2500L x 1600W x 2000H mm
Main engine power supply	AC 3 phase220-380V
Main engine power	16kw
Label material	OPP Paper
Label length	10mm -300mm
Bottle diameter	50- 106 mm

Main electrical configuration				
Name	specifications	Qty	Brand	place of production
PLC	6ES7288-ISR20-OAAO	1	SIEMENS	Germany
frequency changer	6ES7288-ICR40-OAAC	1	SIEMENS	Germany
Servo drive	SINAMICS V90	1	SIEMENS	Germany
Touch screen	6AV6648-OCC11-3AXO	1	SIEMENS	Germany
Sensor	FX501	2	Panasonic	Japan
SMPC	S8JC-Z05024C	1	Schneider Electric	France
A.C.contractor	CJX2910M	1	Schneider Electric	France
DC 24VRelay	MY2N-J	3	Schneider Electric	France

C. Batch Coding Machine laser type

The Laser Batch Coding Machine for bottle water serves the purpose of efficiently and permanently marking crucial information, including Maximum Retail Price (MRP), batch number, and manufacturing date, on the surface of each bottle. This technology offers high precision, customization options, and compliance with regulatory standards, ensuring traceability, consumer safety, and adherence to environmental sustainability by minimizing packaging waste. The system's speed, efficiency, and reduced maintenance contribute to overall production efficiency, while the permanent nature of laser coding helps implement anti-counterfeiting measures, enhancing product authenticity and brand protection.

Technical Parameter

Model: VJ3030
Marking speed: 1,200 characters/sec
Line speed: Up to 10m/sec.(33 feet/sec)
Marking window: Approx. 25x20mm to 485x351mm
Wavelengths: 10.6μm and 9.3μm
Marking formats:
Standard industrial fonts(Type 1 Windows True Type) and single line fonts
Machine readable codes(OCR, 2D-matrix, etc)
Bar codes: BC25, BC251, BC39, BC128, GS1-128, ENA13, UPC_A, RSS14,RSS14 Truncated, RSS14 Stacked, RSS 14 Stacked Omnidirectional, RSS Limited, RSS Expanded, etc.
Graphics, logos, symbols, etc.
Linear, circular, angular, reverse, rotate
Sequential and batch numbering
Automatic date, layer and time coding; real time clock
Dot mode enables marking 2D codes faster than traditional grid mode.
Laser tube: Sealed CO_2 laser, power class 10-Watt
Beam deflection:Steered beam with digital high-speed galvanometer scanners
Focusing
Focal lengths: 64/95/127/190/254 mm(2.5/3.75/5.0/7.5/10.0 inches);63.5/85/100/150/200/300/351/400 mm(2.50/3.35/3.94/5.9/7.87/11.8/13.8/15.75 inches)
Multiple operator interface options
Handheld controller
PC software
Clarity Laser Controller
Smart Graph Com
Language capabilities
Arabic, Bulgarian, Czech, Danish, English, German, Greek, Finnish, French, Hebrew, Hungarian, Italian, Japanese, Korean, Dutch, Norwegian, Polish, Portuguese, Romanian, Russian, Serbian, Simplified Chinese, Slovak, Spanish, Swedish, Thai, Traditional Chinese, Turkish, Vietnamese; interface dependent
Integration
Direct integration into complex production line via scripting interface
Flexible beam delivery options(beam extension unit/beam turning unit)
Detachable umbilical for simple integration;available in 3 lengths
Electrical requirements
100-240VAC(autorange),~50/60Hz, 1PH, 0.40KW
Cooling system
Air cooled
Environment
Temperature 40-105°F(10-45°C)
Humidity 10%-90%, non-condensing
Sealing and safety standards
Supply Unit: IP32, optional IP54 and IP65
Marking Unit: IP54,optional IP65

Optional safety module provides Performance Level d(PFL-d) to EN 13849-1
IEC/EN 60825-1:2007

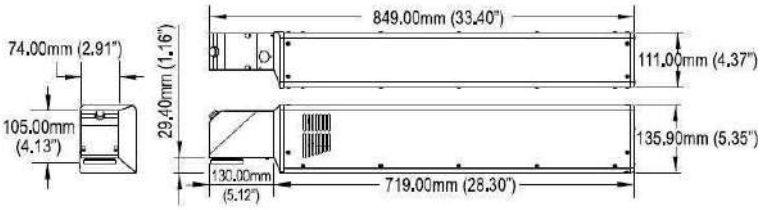
Approximate weight

Supply Unit(IP32/IP54): 16lbs.(7kg)
Marking Unit(IP54): 30lbs(13.6kg)

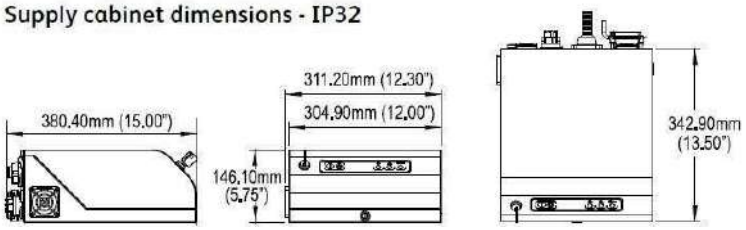
Applicable certifications

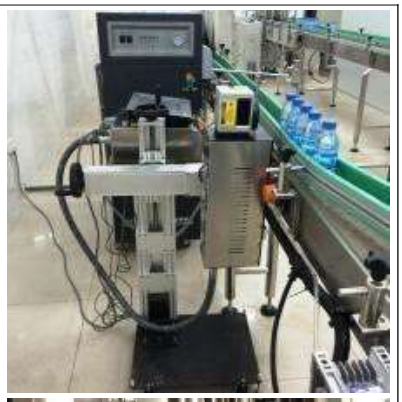
CE, TUV/NRTL,FCC
Compliance(no certification required):ROHS, CDRH/FDA

Marking unit dimensions - IP54 with SHC60 marking head



Supply cabinet dimensions - IP32





D. Shrink Wrapper Machine (Machine color can change)

PE film group packing machine is suitable for wrapping of such products as pop-top, mineral water ,bottles, beer, drinks etc without bottom-tray ,working with PE shrink tunnel to pack the goods perfectly ,the whole producing process adopts the Germany advanced technology. And the main parts are imported from international famous company ,Capability stable and using long-time.

Function: It can connect with the filling line directly by conveyor system. All process from bottle feeding ,packing ,sealing ,cutting can works automatically.

Model	： YCBS25
Speed	： 18-20 bag/m
Packing size	： 3×5，4×5，4×6
Power	： 28KW
Max packing size	： 420×280×240mm
Machine size	： 14000×1100×2160mm
Machine weight	： 1.2T

Electrical parts brand cooperation supplier

Conveyor system(It should design according to your factory layout)

Flat Conveyor

1. Stable conveying, using synchronous chasing control between the conveying belt and engine, making bottles in good condition in the conveying: non-falling, non-block, non-jam.
2. Conveying belt is designed by module, component can be interchanged easily, with compact structure, low noise, easy assembling and maintaining, good flexibility to combine the bottle type according to the different capacity.
3. The design of electrical control is advanced and rational, we can design the control method , select the electrical control component according to client's layout, to improve the conveying stability
4. Set the switch according to conveying system layout or customers' reasonable requirement, for the convenience of operation.
5. Belt lubricating system is equipped
6. Main part all using ANSI304
7. Fringe board is using the U.S. Rexnord technology to produce

Specification:

1. Conveyor Height:1050mm
2. Side panel: 304 stainless steel sheet, thickness is 2mm
3. Power: HANGZHOU JIE Brand 0.75KW
4. Supporting leg: 304 stainless steel
5. Trunking and cover: 304 stainless steel
6. Lubricant water conservation tank: 304 stainless steel
7. Chain plate: Domestic high-quality plastic chain plate,polyoxymethylene (POM)
8. Bearing housing: 304 stainless steel cage

Air Conveyor

Description

Air conveyor is horsed on the floor, with fan installed on the top. Air filter is positioned at every entrance of air fan, to prevent dust blown into bottles. Bottles are blocked on the neck in the conveyor and transported into filling machine by blowing power. All are made of stainless steel ANSI304, except the horses, board of plastic and nylon.

Technical parameter

1. Model of fan: DF-9;

2. Power fan: 1.1 KW/Unit; flowing capacity: 2800m^3/h; full pressure: 1650MPa; rotation speed: 2840r/min; weight:38kg

3. Length of air conveyor: according to plant layout

List 1--Electrical parts

Name	Amount	Unit	Manufacturer	Origin
PLC	1	Set	SIEMENS/Mitsubishi	GERMAN/Japan

Touch Screen	1	Set	SIEMENS/Mitsubishi	GERMAN/Japan
Sensors	1	Set	AUTONICIS	KREA
Air cylinder	1	Set	AIRTAC	TAIWAN
Thermal protection	1	Set	SIEMENS	GERMAN
Solenoid valve	1	Set	AIRTAC	TAIWAN
Relay	1	Set	SIEMENS	GERMAN
Contactor	1	Set	SIEMENS	GERMAN
Circuit breaker	1	Set	Schneider	France
SWITCH	1	Set	Schneider	France
Toggle Buttons	1	Pc	Schneider	France
Emergency Stop button	1	Pc	Schneider	France
Pump	1	Set	Nangfang	China famous brand
Motor	1	Set	Sanli	China famous brand
servo motor	1	set	Panasonic	Japan
Air cylinder for blower	1	Set	FESTO	GERMAN
bearing	1	set	NSK MNB EZO IJK	JAPAN

List 2--Spare parts for filling and packing line

Product name	Specification	Quantity (root)
Driving belt	5M -525-15 W	1
	5M -370-15 W	2
Cutter head belt	5M -525-15W	1
	5M -475-15W	1

Hairbrush belt	114XL*12W	2
Bottle carryig belt	5M-230*10W	2
Cutter		1
Hairbrush		1
shifting fork		2 pcs
splice	PL8-01	2 pcs
gear ring"O"	"O" 42x4	6 pcs
steel ball	¢5	5 pcs
outside callipers	¢6	6 pcs
sealing gasket bottle gasket	32x18x9	12 pcs
Liquid valve gasket	¢26	12 pcs
Exhaust gasket	12x4.5x2.5	12 pcs
Gas injection gasket	8.5x2.5x2.5	12 pcs
"U" shape seal	9x14x3.5	12 pcs
"O" rings	17x1.5	12 pcs
"O" rings	10x2	12 pcs
"O" rings	15x2.5	12 pcs
"O" rings	42x3	12 pcs
special tools for capping head		1set
Plastic plate chain		1m
exhaust pipe		2set
water distribution white cap		18pcs
Silicone"O" rings	32.5x3.55	2pcs
Black "O" rings	65x5	2pcs

Screws, nuts, bottle gasket, spring gasket		several
grease gun		1 pcs

List 4--Toolbox detailed list

NO	Name	Specification	Quantity
1	Open wrench	14、12、8、10（4 total）	1set
2	Movement wrench	250＊30	1 set
3	Inner hexagonal wrench	7 total	1set
4	Open screwdriver	6＊100mm、3*75mm	1set
5	Clubs screwdriver	6＊100mm、3*75mm	1set

HY-A4 SERVO BLOW MOLDING MACHINE

EQUIPMENT AND PRICE LIST:

	Model	Product name	QTY	UNIT PRICE	PRICE(RMB)
HY-A4S (4cavity)	HY-A4S	Main machine	1 SET		
	HY-A4S	Auto-loader machine	1 SET		
	4 cavity	500ML Bottle mold (Aluminum）	1SET		
	1.2/30BAR	Screw supercharged air compressor	3SET		
	5HP	Water chiller	1 SET		
	4.0m³ /30Bar	Air cold dryer	1 SET		
	4.0 m³ /30 Bar	Air filter	4 SET		
	1.0 m³ /30Bar	Air tank	1 SET		
Output	PET BOTTLE:500ML:5500-5800 bottles/hr				

:

DESCRIPTION:

HY-A4S is the fastest liner blow molding machine in mainland of China by now. HY-A4S reaches around 5500BPH for 350ML bottle. Used the servo system， Its baking tunnel is separated from the blow station so that time for mold opening is shortened with a result of speedy blowing and high output, damage to machine is lessened so as to keep reliable performance and prolong service life, as well as machine runs more smoothly and steadily.

HY-A4S is controlled by PLC. The whole process from preform feeding to bottle discharging is completed automatically with advantages of labor saving and no pollution. HY-A4S consists of three main parts: preform loading system, Heater channel & blow station.

MACHINE FEATURES:

1. Machine use of advanced PLC control system， stable in performance, automatic preform feeding .
2. Strong penetrability and good and swift distribution of the heat by letting the bottles rotate by itself and revolute in the rails simultaneously in the infrared preheater
3. High adjustability to enable the preheater to preheat preforms in shapes by adjusting the light tube and the length of the reflecting board in the preheating area, and eternal temperature in the preheater with an automatic thermostatic apparatus.
4. High safeties with security automatic-locking apparatus in each mechanical action, which will make the procedures turn into a state of safety in case of a breakdown in certain procedure.
5. No contamination and low noise with the air cylinder to drive the action instead of the oil pump.
6. Air route design is divide into two parts ,
7. Ideal effect of the chilling with the chilling system
8. Low rejection rate: less than 0.3percent

Container	**Max Volume**	**L**	**2**
	Max Neck Diameter	**mm**	**38**
	Max Container Diameter	**mm**	**105**
	Max Container Diameter	**mm**	**335**

	Cavity		4
	Theoretical Output	bph	5000-6000(*)
Electrical	Clamping force	KN	400
	Total power	KW	68
	Heating Power	KW	43
	Max Heating Power	KW	59
Air Compressor	Operating Pressure	Mpa	0.87
	Low Pressure Consuming	L/min	1400
	Blowing Pressure	Mpa	3.5
	High Pressure Consuming	L/min	6000-6500(**)
Chiller	Pressure	Mpa	0.3-0.5
	Temperature	℃	10-12
	Flow Rate	L/min	30
Machine	Machine Size	m	3.6x2.13x2.03
	Machine Weight	Kg	3800

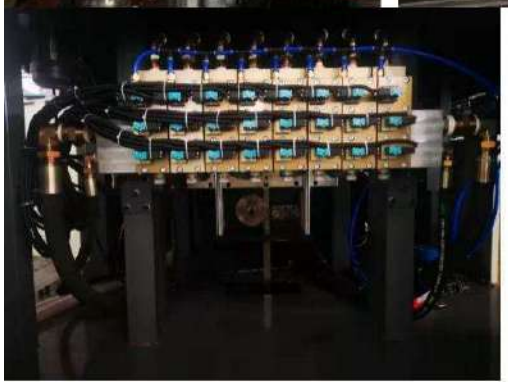
（**）Depending on bottle size, shape and weight.

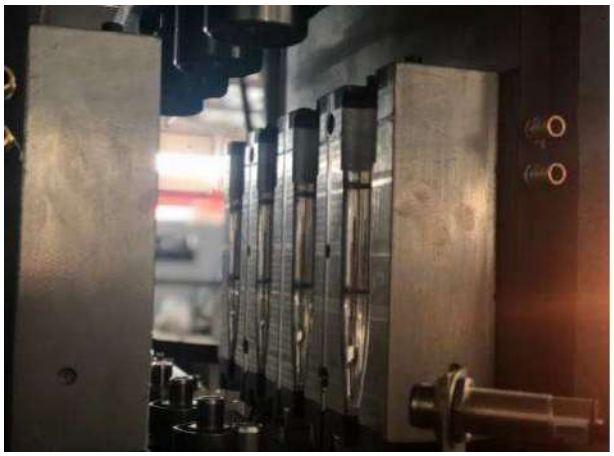
（*）Depending on bottle size and operation conditions.

MAIN SUPPLIER OF COMPONENTS:

PNEUMATIC PARTS		
NAME	BRAND	ORIGIN
BOTTOM DIE CYLINDER	AIRTAC	TAIWAN
PREFORM FEEDING CYLINDER	FESTO	GEMANY
REVOLVE CYLINDER	SMC	JAPAN
VALVE	FESTO	GEMANY
HIGH PRESSURE BLOWING VALVE	MAC	AMERICAN
PLC	MITSUBISHI	JAPAN
PHOTOELECTRIC SWITCH	OMRON	JAPAN
PROXIMITY SWITCH	OMRON	JAPAN
MAGNETIC SWITCH	FESTO	FESTO
WATER SEPARATOR	FESTO	GEMANY
ROTATING MOTOR	TUNGLEE	TAIWAN
ONE WAY VALVE	PARKER	U.S.A
CONTACTOR	SCHNEIDER	FRANCH
TEMPERATURE MODULE	XINJIE	CHINA
VOLTAGE ADJUSTOR MODULE	XINJIE	CHINA
HEATING LAMP	HAICHUANG	CHINA
SERVO MOTOR	XINJIE	CHINA

PRODUCT DISPALY:





AUXILIARY EQUIPMENT:

	**Air compressor** HD-COMPRESSOR，LZ-4.0/10/40 TECHNICAL FEATURES Screw supercharged air compressor Model No:LZ-4.0/10/40 Air discharge:4.0m^3/min Pressure:4.0Mpa Running speed:800r/min Motor power:48.5KW Package:2250×1800×1000(mm) Weight:1450K
	**Air cold dryer** Model: STDP-2.0/3.0 Details as follows: Rated flow:2.0 m^3 /min Working pressure:3.0Mpa Inlet air temperature: ≦45℃ Dew-point temperature:2-10 ℃ Power ： 0.75 HP Refrigerant:Freon R22 Power supply:220V/50HZ Operating current: 3A Pipe diameter of inlet&outlet air:ZG1#

	Dimension: 1000*570*850(MM) Weight:100KG
	**Air filter** 22*22*64 Intake pressure：1.0-3.0mpa Intake air temperature：≤80℃ It can filter out the impurities in the air and increase the service life of the machine
	**Water chiller** Model:ZCL-5F Refrigerating Capacity : 11990Kcal/Hr Input Power (KW):4.5kw Power:3PH-380V/50Hz/60Hz Ambient temp:≤40℃ Refrigerant:R22(404A) Volume of Water Tank(L): 56 Refrigerating Water Flow (T/H): 2.9 Refrigerating Water Outlet&Inlet (in) : 3/4" External Dimension : L*W*H 1260*640 *1250(mm) Weight(KG) :225
	High Pressure Air Tank 0.6m³ /30KG Dimension: 650*650*2120(MM) Weight:300KG

PACKING:

INJECTION MACHINE :

IJ-S270- PET		
Injection Unit		
Screw diameter	mm	60
Screw L/D ratio	L/D	24.3
Injection capacity in theory	m^3	819
Injection weight(ps)	g	982
Injection pressure	MPA	124
Injection rate	cm^3 /s	300
Plasticizing capacity	g/s	49
Screw speed	rpm	160
Clamping unit		
Clamping force	kn	2700
Moving mould-plate stroke	mm	545
Max.Mould height	mm	580
Min.Mould height	mm	220

Space between tie-bars	mm	580*580
ejector tonnage	KN	62
Hydraulic ejector stroke	mm	150
Ejector number	n	9
Other		
Pump pressure	MPA	14
Motor/Driving power	KW	26
Heating capacity	KW	23.05
Machine dimension	m	6.1*1.48*2.2
Machine weight	t	9
Oil tank capacity	L	500

SPECIFICATIONS Component of the injection machine

NO.	ITEM	BRAND/SPEC	ORIGIN
1	SCREW AND BARREL	38CRMOAL	CHINA
2	PLATE	QT500	CHINA
3	SERVO SYSTEM	PHASE	CHINA- ITALY
4	HYDRAULIC MOTOR	STF	CHINA- ITALY
5	STROKE SWITCH	BEIFU	CHINA
6	LIMIT SWITCH	OMRON/PANASONIC	JAPAN
7	SINGLE-PHASE BREAKER	SCHNEIDER	FRANCE
8	DOUBLE-PHASE BREAKER	SCHNEIDER	FRANCE
9	THREE-PHASE BREAKER	SCHNEIDER	FRANCE
10	AIR SWITCH	SCHNEIDER/LG	FRANCE/KOREA
11	AC CONTACTOR	SCHNEIDER	FRANCE
12	SSR	SCHNEIDER	FRANCE
13	PLC	TECHMATION	TAIWAN
14	TRANSDUCER	FORT	USA
15	GEAR PUMP	SUMITOMO	JAPAN
16	VALVE	YUKEN	JAPAN
17	SEALING	VALQUA/HALLITE	JAPAN/U.K
18	KDAS	BUSAK SHAMBAN/HALLITE	SWEDEN/U.K


670 x 480

Plastic- Polyethylene terephthalate (PET) bottle and jar –Specification: For the use of drinking water

Polyethylene terephthalate (PET) bottle – Specification:

For the use of drinking water

Plastic materials

Materials manufactured from simple petrochemical products of low molecular weights by polymerization to produce high molecular weight compounds such as polyethylene, polypropylene, polyvinyl chloride, polystyrene, and polyethylene terephthalate.

Bottle thickness

The smaller dimension in a plane parallel to the bottle base.

Bottle width

The larger dimension in a plane parallel to the bottle base.

Antioxidants

Materials added to the plastic material to avoid its oxidation during processing, storage, and final use.

Permeability of gases and water vapors

A measure of the rate of permeable of the gas or vapor through a specific thickness of the plastic material at a specific conditions of temperature, pressure and relative humidity.

Creep

A measure of deformation that takes place with time when the plastic material is exposed to a constant load.

Degradation of the plastic package

Occurrence of a sensible change in its chemical composition, physical properties and appearance.

Dimensional stability

Ability of the package to retain its initial dimensions and shape.

The overall migration limit

The amount of non-volatile substances released from a material or article into food simulants;

Bottle finish

The configuration of the neck or opening of the bottle which serves to engage specific parts of the closure in order to securely attach it to the bottle.

Container height to Neck face

The height of the height point of the neck face of the finished empty container

Closure

Closures are devices and techniques used to close or seal container such as a bottle, jug, jar, tube, can,etc.

Neck face

The upper most surface of the container neck.

Container Overall height

The height of the finished empty container as its highest point with closure and fitment.

Container Diameter

The external diameter of the finished empty container at a specified height, expressed as the mean of the two perpendicular diameters.

Neck height

The perpendicular distance from the highest point of the plane including the neck face to the nearest point of the finished container's shoulder along a line passing through (in the case of screw threaded necks, the outer most edge of the thread; a feature below the thread of greater diameter than the thread is considered as a part of the container's shoulder)

Thread diameter

The external diameter of the neck thread measured as the mean of the two perpendicular diameters avoiding part line.

Neck bore

The diameter of the inner periphery of the neck at a specified depth.

Neck ovality

The difference between the maximum and the minimum neck diameter

Nominal capacity

A recommended range of nominal capacities for stock containers for liquid products, together with the corresponding minimum brimful capacities.

Brimful Capacity

Filled to maximum capacity.

Food simulant

The food simulant is a chemical with characteristics similar to water

1. Requirements

1.1. General requirement

The following general requirements for plastic packages used in packaging water shall be met:

1.1.1. All plastic raw materials used in manufacturing water packages shall be of known origin and composition to avoid use of scrap or pre used raw materials.

1.1.2. They shall be clean and homogeneous, free from any foreign materials, swelling or air pockets.

1.1.3. They shall not cause any hazards to consumer health.

1.1.4. They shall not lead to degradation of sensory properties of the water, or occurrence of undesirable changes in the nature and quality of water.

1.1.5. Pigments, coloring materials, and other components used in their formulation and manufacture shall be nonpoisonous and with no tendency for migration which may cause migration of components to react or mix with the food material.

4.1.6 The bottle shall be resistant to impact effects caused by shocks and mechanical vibrations

4.1.7. The bottle shall not be affected by heat during filling, closing, storing, transportation, or handling, in a way that deform them or change their composition, chemical or physical properties; or increase probabilities of reactions and migrations of monomers or additive materials within the permissible levels.

4.1.8. Their creep value shall be low in order to avoid problems arising as a result of stacking and handling and they shall be characterized with good dimensional stability in order to avoid printing difficulties.

4.1.9. The bottle shall be stable to the pH of the packaged water as specified in the relevant standard.

4.1.10. Their permeability to gases, water vapor and alcohol shall be suitable to the packaged water .

4.1.11. The plastic bottles shall not be affected by light when exposed.

4.1.12. The bottle design shall be such that it is stable when kept in a verticalposition.

4.1.13. The bottles and closures shall be m manufactured in accordance with good manufacturing practices and they shall be free from undesirable odor, bottles s hall be transparent (even if Colored), free from any flash and scratches.

4.1.14 The material used for product packaging shall be recyclable or biodegradable

2. Specific requirements

5.1 Material

5.1.1 The bottles shall be made of virgin polyethylene terephthalate material.

5.2 Cap

5.2.1 The bottles shall be provided with a cap, and, if required, with an insert plug. The material for cap and plug shall be food grade. HDPE injection molding grade 45 MA or 55 MA or any other suitable material as agreed to between the purchaser and the supplier.

5.3 Wad

5.3.1 The wad, if required, shall be of cork board or pulp board or any other suitable material compatible with the contents and suitable for food contact application.

5.4 Migration

The overall migration shall be less than 10 mg/dm^2 or 60 mg/kg as tested

5.5 Capacity

The bottle shall be manufactured in normal capacity of 500 and 1000,ml and jar shall be manufactured in normal capacity of 20 liter agreed between the purchaser and the supplier. The overfilled capacity shall exceed the nominal capacity by a minimum of 10% as tested

5.6 Shape and Design

The shape and design shall be as agreed to between the purchaser and supplier.

5.7 Tolerance

The tolerance on the specified diameter and over all height of bottle shall be as under

Up to and including 100 mm	± 1.5 mm
Over 100 mm and up to and including 200 mm	± 2 mm
Over 200 mm	± 2.5 mm

5.8 Wall Thickness

The minimum wall thickness of the bottle measured at any point by dial caliper gauge fitted with spherical anvil, vernier calipers or micrometer shall be 0.25 mm. Mean of three readings at any location shall be taken as the wall thickness at that point.

5.9 Verticality

The variation in verticality when tested according, to the method shall not be more than ±1.5 mm

5.10 Variations in Body Dimensions

The recommended variations in the body dimensions of plastic bottles covered by the specification

5.11 Ink Adhesion Test for Printed PET

The printed matter on the filled PET when tested in accordance with the method given in Annex B shall be still legible.

5.12 The pH of a water solution within the range of 6.5-8.5 shall not be changed when placed in the package for one hour.

5.13 Permeability of gases and vapors

The overall permeability of gases and vapors shall be within the range of specified values as is given in table 1.

Table 1. The overall permeability of gases and vapors for PET

Polymer	Oxygen Permeability cc.mm/m2 .day.atm	Carbon Dioxide Permeability cc.mm/m2 .day.atm	Water Vapor Transmission g.mm/m2 .day
Polyethylene terephtlate	1.2-2.4	5.9-9.8	0.39-0.51

All permeability values are at 23° C, 0% RH unless otherwise specified
1cc.mm/m2 .day.atm = 65.62 Barrer and 1 Barrer = 1x10-10 ccSTP.cm/cm2 .s.cmHg

5.14 Storage and transport

The end- product should be stored and transported under such conditions as will preclude contamination with and/or proliferation of micro-organisms and protect against deterioration of the product or damage to the container.

6 Tests

6.1 Closure Leakage Test

The bottle filled with water at ambient temperature and closed tightly with the cap when subjected to vibrations on a vibration table as detailed in **Annex A**, shall not show any leakage trough the closure after one hour of testing.

6.2 Drop Impact Test

The bottle and the cap when subjected to the dropt test as given in **Annex B** shall not show any sign of cracking. Slight deshaping of the body shall not render the bottle unacceptable in the test.

Note: – If agreed to between the purchaser and the supplier testing of oils at frequent intervals may be carried out during storage.

7 Marking

Each bottle shall be marked with:

a) Logo of KUKL

Annex A
(*Clause* 5.1 and 9.1)

Closure Leakage Test

A – 0 General
A 0.1 The method helps to determine the ability of a closure (on a container) to prevent leakage due to transformational vibration.

A – 1 Apparatus
A – 1.1 A vibrating table conforming to standard agreed.

A – 2 Procedure
A – 2.1 Fill the bottle to its nominal capacity with the product/water and close it with the usual closure in a manner in which it is intended to be used.
A – 2.2 Mount the bottle upside down rigidly on the vibrating table and subject to vibrations for 1 hour at a peak acceleration of 1 g.
A – 2.3 At the end of the test period, the closure shall show no indication of leakage, loss of tightness, backing-off or popping.

A – 3 Precautions
A – 3.1 Before the test is carried out it should be ensured that the inner plug, if provided and cap are fully tightened.

Annex B
(*Clause* 9.2)

Drop Impact Test

B – 1 Apparatus
B – 1.1 The apparatus shall consist of a vertical scale marked in 150 mm increments from 1 m to 4 m fixed above a rigid flat base of steel or smooth concrete as a dropping surface.

B – 2 Procedure
B – 2.1 The bottles shall be filled to their nominal capacity with water at ambient conditions and closed tightly with the cap. Each bottle shall be dropped from a height of 12 m in the following sequence:

a) Vertical position, so that the bottom strikes the impact surface flat; and
b) Horizontal position, so that the bottom strikes the impact surface horizontally with its side flat.

B – 2.2 Bottles shall not show any leakage of water through cracks or closures. Slight denting shall not be taken as failure of the bottle in the test.

Annex C
(Normative)
Test for ink adhesion of printed PET

C-1 Apply two strips of 25 mm wide transparent pressure sensitive taps or cello-tape to the printed area of the pouch, one piece down the length of the pouch and the other along the width.

C-2 Press the tape firmly on to the pouch and leave for 15 s.

C-3 Remove the tape by pulling slowly at about 10 mm/s from one end at about 90° to the pouch surface.

C-4 There shall be no significant removal of the print from the surface of the pouch and the printed material shall be still legible.