

AUTOMATIC LATEX BALLON PRODUCTION LINE



**PLOT NO F-3, CAMERON INDUSTRIAL PARK, OPP.
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BALLOON: -

A balloon is an air-tight bag made out of a light material that can be inflated with air or gas. Toy balloons are available in all kinds of shapes, sizes, and colors to delight children and adults at birthday parties and other festive occasions. They made the first public demonstration of a lighter-than-air balloon in June 1783, with a 35-foot (11 m) diameter balloon made of cloth lined with paper. Later that year, Jacques Charles flew a balloon made of silk coated with a rubber varnish and filled with hydrogen, a gas that is lighter than air. The first modern latex balloon was created by Neil Tillotson in his attic.

Latex Party Balloon Market Size was valued at USD 101 Million in 2023 and is expected to reach **USD 250 Million** by the end of 2030 with a **CAGR of 13.99%** During the Forecast Period 2023-2030.

Although rubber can be made synthetically, natural latex is preferred for its great elasticity. It can be stretched to seven or eight times its original length and still return to its former shape. The most important sources of natural rubber today are plantations in **Malaysia and Africa**.

Latex Collection: - The latex is white, milky water (latex proteins) originating from rubber trees and shrubs, either from local or hybrid trees and shrubs. Rubber trees (**Pará rubber tree**) are usually ready to be tapped after about seven years of growth. A steel tapping knife is used to remove thin strips of bark from the tree at a downward curve. This



directs the milky-white sap to a spile, or spigot, which channels it into a cup affixed to the tree & it is harvested several hours later and preserved with ammonia to stop it from premature coagulation. Because of its high water and non-rubber contents, about 70%, the latex is concentrated and purified by centrifugation to a 60% strength latex concentrate and stabilised using lauric soap for long term storage. Before the latex can be used for manufacturing Balloon it must be mixed with a recipe of processing chemicals which include **sulfur, zinc oxide, accelerators, pigments, stabilizers', dew ebbing agent and antioxidant**. These are mixed with the latex and allowed to mature over a period of **24-36 hours** for the mix to cure. During this period the sulfur will become mixed with the rubber particles to yield a latex compound ready for dipping.

Parameters of Latex Balloon Making Machine: -

| Model | VSI-45 | VSI-60 | VSI-80 | VSI-100 |
|--------------------------|------------------------------------------------|----------------------------------------------|----------------------------------------------|------------------------------------------------|
| Dimension(L*W*H*) (m) | 45*1.26*4.45 45*1.70*4.45 45*2.23*4.45 | 60*1.26*4.45 60*1.70*4.45 60*2.23*4.45 | 80*1.26*4.45 80*1.70*4.45 80*2.23*4.45 | 100*1.26*4.45 100*1.7*4.45 100*2.23*4.45 |
| Layer | 2 | 2 | 2 | 2 |
| Colour/time | 4/6/8 | 4/6/8 | 4/6/8 | 4/6/8 |
| Mold/row | 16/24/32 | 16/24/32 | 16/24/32 | 16/24/32 |
| Mold(pcs) | 10912/16368/21824 | 14944/22416/29888 | 20272/30408/40544 | 25600/38400/51200 |
| Capacity(pcs/hr) | 10560/15840/21120 | 14400/21600/28800 | 19200/28800/38400 | 24000/36000/48000 |
| Heat (Kcal/hr) | 250000 | 400000 | 500000 | 625000 |
| Power(kW/hr) | 23kw | 29kw | 32kw | 40kw |
| Usage of Latex (ton) | 2.5 | 3 | 3.5 | 4.5 |
| Worker | 5 | 5 | 6 | 7 |
| Water (ton) | 30 | 40 | 50 | 60 |
| Heating Source | Steam Thermos oil Natural Gas Electricity etc. | | | |
| Voltage(V) | 380/220V 50-60HZ | | | |

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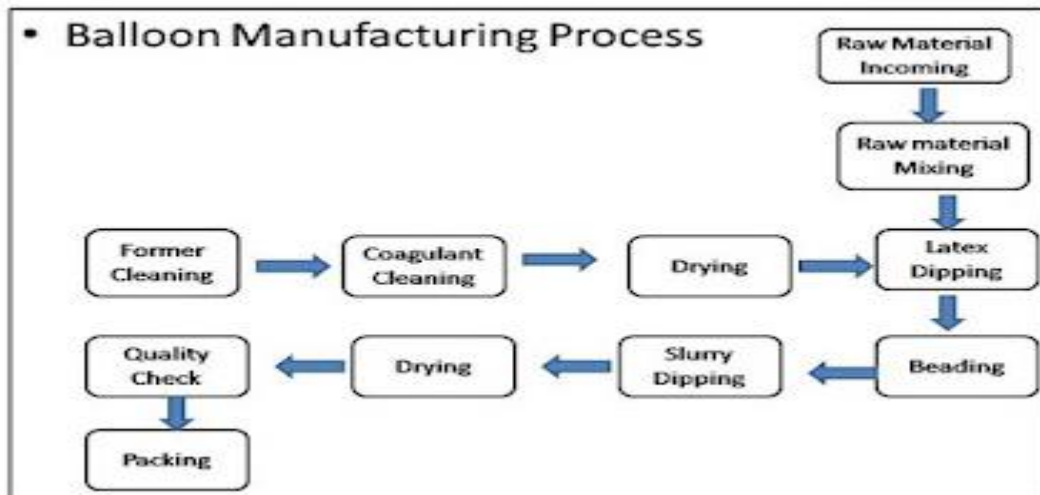
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Equipment list

| Press | Parts Name | Qty |
|------------------------------|------------------------------------------------|--------------------|
| Raw Material handling | Compounding Tank | 3pcs |
| | Storage tank | 2pcs |
| | Grinding tank | 3pcs |
| | Pump | 3pcs |
| | Water softener | 1set |
| Heating System | Wood heating system | 4set |
| | Water heating system | 1set |
| Main Machine system | Frame (Include all kinds of tanks) | 1set |
| | Balloon moulds & Mould bases | As per Requirement |
| | Chain and connection board | As per Requirement |
| | Beading Unit (with Motors) | 1set |
| | Automatic Stripping Unit with motors & brushes | As per Requirement |
| Offline Units | Cleaning machine (with motors) | 2 |
| | Drying | 1set |
| Finished products | Air test | 1set |
| Packing system | Fully auto packing machine | Customer scope |
| | Air compressor | Customer scope |
| Balloon printing | Balloon printing machine | Customer scope |

Latex Balloon Production Process: -



- ✚ **Raw material Incoming and mixing:** -The Raw materials incoming and compounding like centrifuged latex, accelerators, activators are weighed according to the desired proportion and are kept ready for mixing. The dispersions/Solution are prepared and mixed into the compound.
- ✚ **Former Cleaning:** -The formers are attached to the trays of the balloon making machine, formers are cleaned by dipping them into tanks containing water, acid and alkali.
- ✚ **Coagulant and Dipping and Drying:** - Formers are then dipped into coagulant tank; the tank consists of chemicals such as Calcium Nitrate. Coagulant dipping is done to ensure the appropriate thickness of the balloon.
- ✚ **Latex Dipping:** -The formers after drying are dipped into the latex compound, the formers with latex dipped in a coagulant tank to remove excess compound. This process is done for having an even balloon surface. Solid and wet latex rubber film on the formers



- ✚ **Drying (Vulcanization):** -The wet film deposit on the formers is dried in the sun for vulcanization purpose, the period of drying is extended, preferably at a higher temperature to vulcanize the film. This process is done with film on the former.
- ✚ **Beading and slurry dipping:** -The balloon tip is rolled manually to make the bead, the bead reinforces the tip of the balloon and aids in blowing air into the balloon; after rolling the beads, powder is applied on the balloons for ease of stripping.
- ✚ **Stripping:** - Solid balloons are stripped from the formers in this process.
- ✚ **Removing the balloons:** - The balloons are then mechanically removed from their forms. One approach is to blow them off using a spray of water or air and collecting the balloons in a basket or net. If the balloons are removed using a spray of water, they are next placed in a centrifuge, where excess water is removed by spinning the balloons around at high speed. The balloons are then dried in large tumble dryers.



For making a good balloon the formers pass the following stages: -

1. Acid bath needed. It is clean the former after every round.
2. Clean water bath of which the water is constantly refreshed brushing, especially former bottom
3. Warming bath up to 70-80°C
4. First coagulant bath, for beading the edge of the balloon
5. Second coagulant bath for the balloon (the temperature of both coagulant baths is 70°C)
6. Oven for drying coagulant
7. Latex dip (former is leaving the bath upright in a good sliding angle-system of batch dipping - to prevent drop forming on the end of the balloon)
8. Oven for setting latex film
9. Beading
10. Leaching
11. Two ovens with a temperature 80-90°C, other (higher) temperatures possible
12. Cooling Station
13. Stripping by air and rollers

A good balloon has the following conditions: -

- Regular peripheral wall thickness
- Good end gelation
- Pinhole free
- Good bead rolling

Good Quality Balloon controlled by: -

- Surface tension control of coagulant and good antissettling of 'chalk', even speed immersion and withdrawal with still liquid surface
- Correct compound viscosity and correct chemical stability
- Clean formers and efficient filters
- Good step back of film thickness, well-leached film, dryness state
- Chemically friendly formula, well-leached film.

Automatic Latex Balloon Production Machine Advantages

- Use natural latex to produce balloons, which can be degraded and will not pollute the environment.
- This equipment is designed according to the chemical properties of the raw materials and the requirements of the balloon-forming process. The process flow is compact and the structure is reasonable.
- The entire latex balloon production line adopts direct immersion continuous production, with a high degree of automation, and can produce balloons of various colors at the same time.
- latex balloon making machines to meet customers' production of balloons of different volumes and sizes.
- The automatic vibrating glue dispensing and glue dispensing system makes the finished balloon of good quality.
- This machine makes great use of the effective heating space in the design process, adopts the principle of hot air circulation and an intelligent PID temperature control system, and the temperature control is accurate so that the machine can achieve the best energy-saving effect and reduce the cost.
- The drying box adopts the tunnel drying method, the principle of hot air rising, and the recycled hot air circulates and stirs so that the machine can get the best effect under the minimum power.
- The equipment mold connects by a specially designed elastic piston mold, which makes it easier to replace the mold.
- Adopt a special high-temperature resistant chain, co-extrusion one-step method, speed up production speed and increase output.

THE CRITICAL CONTROL POINTS IN BALLOON MANUFACTURING

Water Source Quality: Balloon manufacturing uses an abundance of hot water and clean water sources are not always available. Water can be contaminated from agricultural fertilizers and pesticides, industrial wastewater, and animal and human sewage. To further reduce costs, factories may not heat water sufficiently to clean tanks or kill microbes, and can reuse dirty, contaminated water.

Former Cleaning & Drying: Formers, the ceramic molds used in Balloon manufacturing, undergo cleaning processes involving hot water and bleach. If the water temperature or chlorine concentration is insufficient, or if the wash water and brushes are not cleaned effectively, microbial contamination may occur.

Coagulant Dipping & Vulcanization: The chemical quality and purity of the polymer can vary significantly. Manufacturers looking to reduce costs may incorporate cheap and toxic ingredients or fillers, compromising the durability, performance and safety of the Balloons.

Leaching Tanks: Balloon undergo a leaching process to remove unwanted chemical residue. However, this is an expensive step that requires high water temperatures to effectively kill any present microbes. Factories may reduce the number of washes or neglect proper cleaning of the leaching tanks, allowing for the persistence of microbes and chemical residues, which can compromise the quality and safety of the Balloon.

Balloon Drying & Stripping: Insufficient heating or reduced drying times in the pre-stripping ovens can leave moisture on the Balloon. If packaged in a moist condition, pathogenic mold can form, leading to potential contamination issues.

NOTE: -

- A good even latex film depends upon a good even coagulant deposit, which depends upon fast drying, even withdrawal speed from the coagulant. This means a hot coagulant and a hot former and with small time cycles leading up to the coagulant dip, it is important not to lose heat necessarily after the stripping.
- Because of "intended health regulations", leaching is more important than ever, and ideally should come before beading. But because some drying - not too much - is necessary, this design may not accommodate this situation.
- What has to be accepted, is that the machinery provides as much satisfaction as possible especially in the sense that this is then advertising a good machine builder.
- On the ground floor baths, cleaning tanks, latex tanks and ovens can easily have their positions changed, because the chain has been equipped with arms. In- and outgoing angles can easily be adapted during the process. The arms can be taken out of the baths nearly sheer for a short interval, e.g. for beading the thin latex film. In order to save energy, the chain has been separated from the oven. The heating is done by means of thermal oil, which can be heated by oil, gas or electricity. In countries with high humidity a condenser can be placed in order to get very dry air in the oven. We have placed the latex bath on air cushion to remove it easily from the machine when a change of colour is desired.

FAQ:**1. How long is your Ballon machine guarantee?**

- One year (Calculated from the equipment arrives at the customer's side) If there is any problem within guarantee period, we will send you spare parts for free. After this period, we will definitely support you when needed. You will be welcome to contact us with any problem may happen.

2. How much does the product cost?

- We quote the price according to the customer's demands, different specifications of the production line price is different.

3. How to find the raw material, can you help us?

- We can give supplier of raw material of high quality and medium quality, or we help you to buy directly.

4. How can calculate my profit?

- We can give you normal finishing product cost for reference. We will offer you the cost report in detail according to your sample.

5. How can I open factory?

- We can do factory layout, also suggest you the electric and water layout.

6. Why I choose your company?

- We have 10 years' experience in manufacturing of machines.
- We have our professional researching team to develop machines.
- We have our after-service team and engineer to support customer in machine running and products produce.
- Spare parts in our machine are produced using CNC/ computerized numerical control with high precision, it makes machines serve longer and more stable under high-speed running.

7. How can I get to your company?

- We are located in Pune Chakan & our address is: - V S INDUSTRIES Plot No F-3, Cameron Industrial Park, Opp. Dwarka Housing, Ambethan, Chakan -410501, Pune, Maharashtra, India.
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THANK YOU

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