

Introduction to the manufacturing process of anti static ic tubes

With the rapid development of the electronics industry, more and more components such as integrated circuits and connectors, relays, power modules, etc. need to be packaged with IC tubes.

[The IC shipping tube](#) is actually a kind of [pvc plastic](#)(reference to : [What are the materials for IC shipping tubes](#)) profile, the size varies with the shape of the installed product, the precision requirement is high, the wall thickness should be controlled within $\pm 0.1\text{mm}$, and the surface is required to have no impurity spots, smooth and transparent. The IC packaging tubes produced by [Sewate Technology Co., Ltd.](#) are extruded. The typical process flow is: extrusion, vacuum adsorption setting, traction, fixed length cutting and directional discharge, deburring, immersion antistatic liquid, drying, testing, packaging and storage

First step extrusion

Plastic extrusion molding uses electric heating to obtain a continuous profile through the die die under a certain pressure by the rotary motion of the screw. The heating is divided into 6 stages, and the heating temperature is 150 to 165 °C.

The key part of extrusion molding is the extrusion die, which generally consists of an expansion zone, a compression zone and a die. When the molten plastic is extruded from the die, the extrusion speed of each side should be the same. Otherwise, check that the die size is consistent. If the die size is no problem, it can be solved by correcting the diversion angle of the splitter cone.



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The second step is vacuum shaping

After the molten plastic is extruded from the die, it should immediately enter the vacuum setting die. The outer wall of the pipe is attached to the inner wall of the sizing die by vacuum suction. At the same time, the cooling water is introduced into

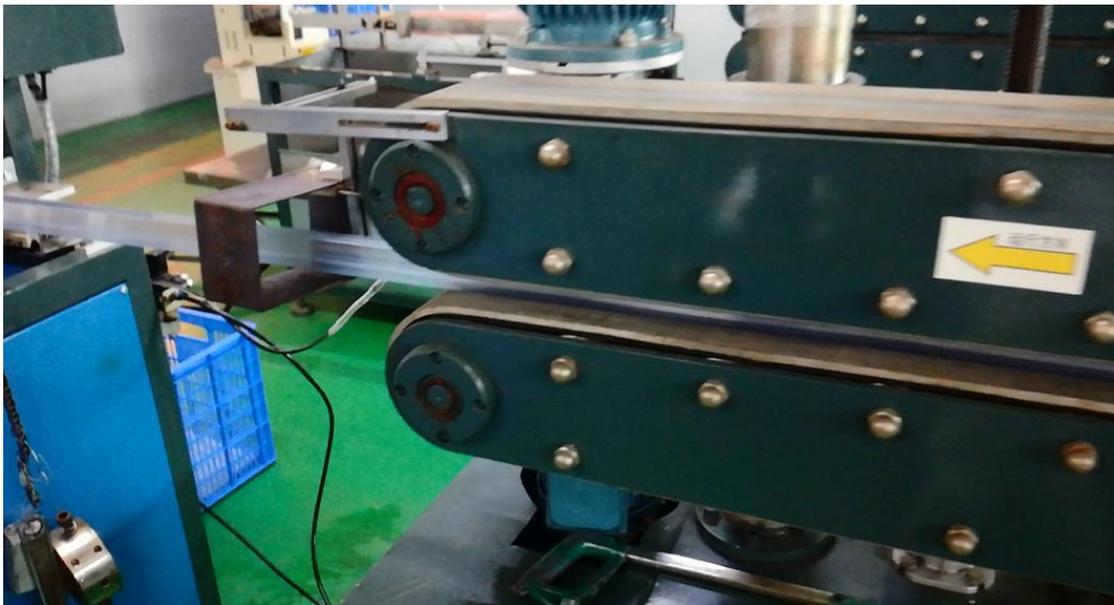
the shaping mold. The tube is cooled and hardened by vacuum adsorption to obtain a tube that conforms to the shape and size of the cavity of the shaped mold.



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The third step Tracting

In order to extract the cooled and shaped packaging tube from the mold and feed it into the cutting machine, it is necessary to configure a tractor with stepless speed regulation.

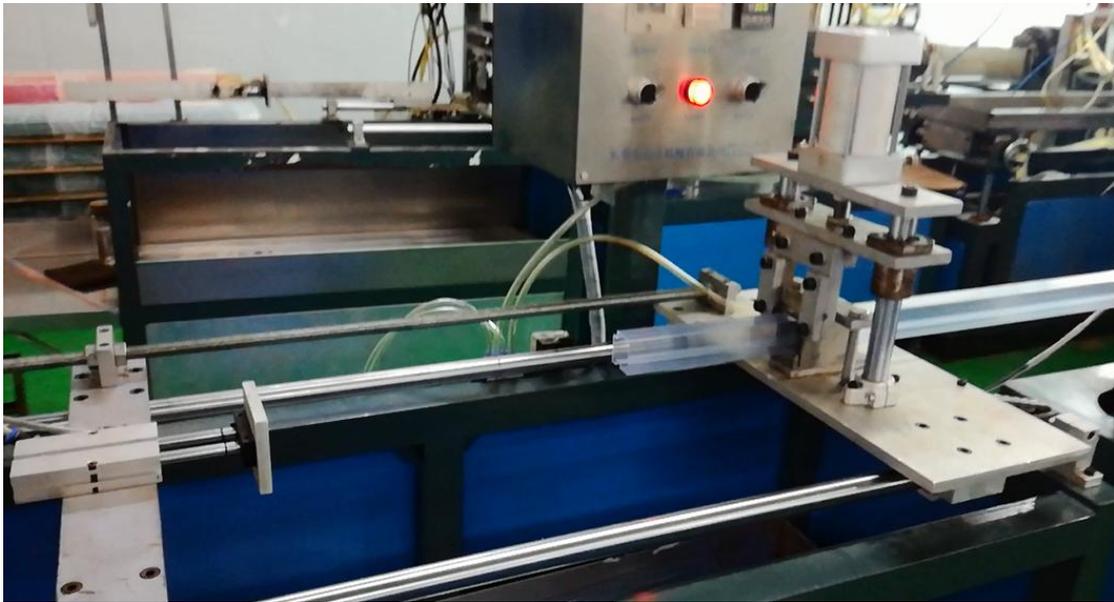


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The fourth step is to cut off the length and automatically discharge

Since the number of components installed in the same packaging tube is constant, the length should also be the same, so a fixed length cutting method must be adopted. We have adopted two methods, one is mechanical fixed length, and the other is by rotating encoder and high speed counter.

When the pipe reaches the specified length, the cutting die frame moves with the pipe (in this case there is no relative movement between the pipe and the cutting machine) and the pipe is cut during the movement. In order to achieve the purpose of no need to deburr after the pipe is cut, we designed a compact precision cutting die. The pipe can be cut off using a general art blade. The life is up to one time and the knife can be cut continuously for 20,000 tubes, and the incision is smooth and does not deform. After the pipe is cut, slide down the simple chute to achieve the purpose of directional discharge. The entire process is automated.



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Step 5: Dip antistatic liquid

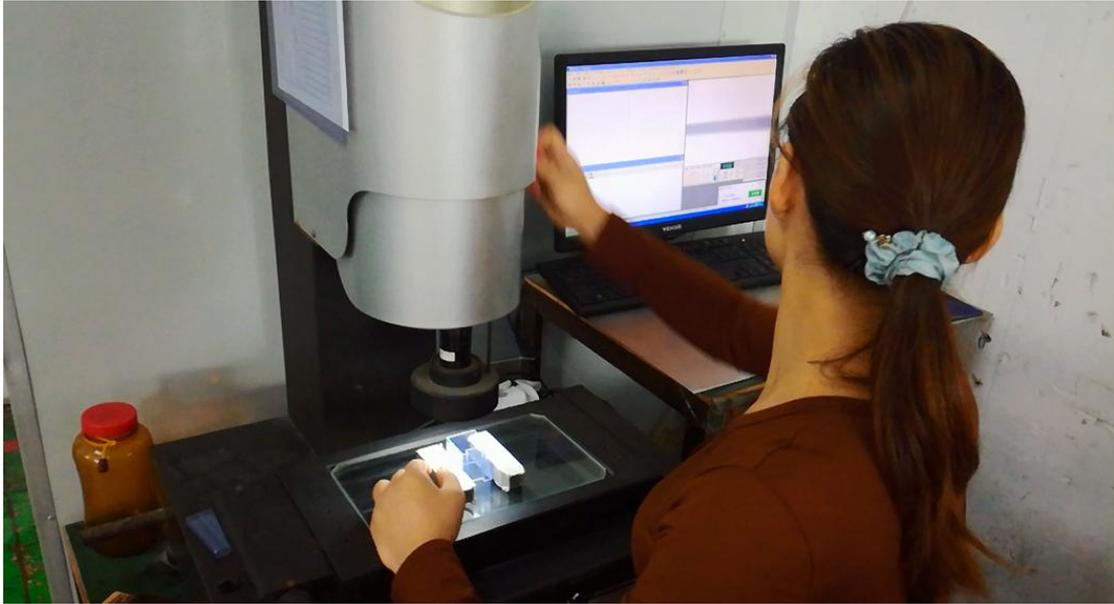
Use JW-916 antistatic stock solution to release it in distilled water at a ratio of 1:100 and mix well. Then, the plastic tube is immersed, fully impregnated, and then taken out to dry to achieve the purpose of antistatic coating.



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Step 6 Detection

The appearance, dimensions and electrical performance of the power module packaging tube are tested according to the drawings. After testing, its indicators also meet the requirements of anti-static packaging tube standards(reference to : [How to identify quality IC Shipping Tube guide](#))



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Final packaging

Put the dried packaging tube into a clean plastic bag and put it into a cardboard box, and put it into the warehouse after inspection. The name, batch number, date of manufacture, quantity, etc. are indicated on the carton.



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Any interest, please contact us as following:

Email:jamestong@sewate.com

phone:+86 13622342848 James

website:www.sewate.com