



RTV134

Mold Making F.A.Q

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Q1: What is the best method for mixing mold rubber?

There are many factors that can contribute to mold rubber not curing including cold temperatures, contaminants on a model's surface, etc.

But the most common reason: inadequate mixing of Parts A & B. People mixing rubber for the first time tend to under-mix the material before applying. It is especially easy to under-mix thick materials like silicone or brush-on rubber. Mixing large volumes of material also poses the risk of inadequate mixing.

Mixing Success: A Function Of Time & Technique – Time – Most mold rubbers give you plenty of time to mix and apply, so don't worry about not having enough time.

Your goal in mixing is to be thorough, not fast.

Technique: Don't Be Casual, Be Aggressive – This is where most "first timers" make the fatal mistake of using a "limp wrist", meaning that they are not aggressive enough in mixing the rubber. Use a stiff mixing paddle and employ a firm wrist, making sure that you scrape the sides and bottom of your mixing container several times.

Important material hides on the bottom and sides of your mixing container and failure to get this material into the mix will result in the rubber not properly curing.

The Best You Can Do -

"The Double Mix-And-Pour" Technique - After mixing thoroughly for 3 minutes, empty the contents of your mixing container into a second clean mixing container and mix again for another 2 to 3 minutes before applying over your model. This technique is your best bet for successful mixing and the protection of your mold rubber investment.

Q2: Why didn't my mold rubber cure?

A: This is called "cure inhibition" Cure inhibition occurs when a surface contaminate prevents a material from curing as expected.

Experiencing Inhibition When Making A Mold – When making a mold, cure inhibition occurs when contaminants on a model surface prevent the liquid mold rubber from properly curing. While the cured rubber mold may look fine, you will discover that inhibition occurred at the interface between the rubber and the model's surface. The rubber will be sticky and not fully cured.

For example, applying latex, urethane or silicone rubber directly over a model made of clay containing sulfur will result in cure inhibition. The sulfur in the clay is preventing the rubber from curing. The rubber may appear fine on the outside, but anywhere the rubber touched the clay, it is sticky and will never cure.

Remedy: Apply a suitable sealer.

Not Allowing A Sealing Agent To Dry or time to "flash off" prior to applying release agent or mixing and applying mold rubber over your model.

Remedy: After applying the required number of coats, let your sealing agent dry thoroughly (30 minutes should be enough) before applying release agent (if necessary) or mold rubber.

Be aware; Humidity will affect the evaporation rate of solvents. The more humid the environment, the longer a sealer or sealer / release combination will take to dry. In more humid environments (80% RH), these solvents can take a couple of days to dry or may never dry depending on the solvent.

Also, if you use a solvent based sealer such as shellac or acrylic and then use a liquid release agent over the top of that, the solvent in the liquid release may "re-liquify" the shellac or acrylic and additional time is necessary to let everything dry.

Applying Rubber Into/Over Rubber – Some mold rubbers are not compatible with others. For example, condensation cure silicones will not cure when applied against an addition cure silicone, and vice-versa.

Minimizing Cure Inhibition – Read the technical data sheet for the products you are using. It should tell you under what circumstances inhibition would occur and what you can do to prevent it. For example, applying a sealing agent to a sulfur clay model before applying mold rubber will prevent cure inhibition in most cases.

Q3: What does the term "Shelf Life" of a material mean?

The shelf life of a material in its liquid state refers to how long it can sit on a shelf before it begins to lose its ability to function normally or sets up entirely in the container. You should know how long you can expect a material to last on the shelf to protect your material investment.

Relative humidity and temperature are variables that will affect the shelf life of Inno rubbers, plastics, foams, Matrix products, epoxies, etc.

What you can do to Shelf Life?

Make sure you securely seal the Part A container immediately after dispensing each time.

Your Best Bet – If using urethanes, use what remains as soon as possible once containers have been opened.

Extending The Shelf Life Of Unused Urethanes – After dispensing Part A into a measuring container, spray Dry Gas Blanket (available from Inno or your our distributor) into the container before securely resealing.

Q4: What does 'Shore Hardness' mean?

A. The Technical Answer; There are different Shore Hardness scales for measuring the hardness of different materials. These scales were invented so that people can discuss these materials and have a common point of reference.

The Shore A00 Scale measures rubbers and gels that are very soft.

The Shore A Hardness Scale measures the hardness of flexible mold rubbers that range in hardness from very soft and flexible, to medium and somewhat flexible, to hard

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with almost no flexibility at all. Semi-rigid plastics can also be measured on the high end of the Shore A Scale.

As you can see from the chart, there is overlap on the different scales. For example a material with a Shore hardness of 95A is also a Shore 45D.

Q5: How do I release silicone from silicone?

To release silicone rubber from silicone rubber, use a release agent that does not contain a significant amount of silicone oil. Inno silicone provide especially for releasing silicone rubber from silicone rubber and other surfaces. It goes on as a light mist coating and will not interfere with surface detail.

Option: you can also use petroleum jelly thinned with a solvent such as mineral spirits. Make sure you don't leave brush strokes on the cured rubber's surface as they will be reflected in the mold

Q6: Why are there bubbles on the surface of my rubber mold?

Bubbles that show up on the working surface of a cured rubber mold can ruin detail and result in a mold that is unusable.

Bubbles can come from different sources and there are different variables (most controllable) that will affect the size and quantity of bubbles generated.

Urethane Rubber Mold

FAQ: I made a mold using urethane rubber. I mixed the rubber as directed, but when I demolded next day, my mold had a lot of air bubbles throughout including (worst of all) on the working surface . . . ruined all of my detail and the mold is unusable. What went wrong?

Answer: Urethane mold rubbers are moisture sensitive, and often bubbles found in cured urethane rubber are a result of a reaction between the rubber in its liquid state and moisture coming from somewhere. A moisture reaction can be severe (cured rubber will look like foam), depending on the amount moisture introduced to the urethane rubber mix..

Common sources of moisture that might react with liquid urethane rubber;

1. Humidity – urethane rubbers generally have a long pot life, which gives plenty of time for a moisture reaction in a humid environment.

Remedy: work in a humidity-controlled environment (air conditioning) with as low a relative humidity as possible.

2. Wet Model – If liquid urethane rubber is applied over a model that contains moisture (such as newly cast plaster/gypsum or concrete), you will experience a moisture reaction.

Remedy: when using urethane rubber to make your mold, seal a model containing moisture with high quality spray shellac followed by a release agent before applying mold rubber.

3. Mixing containers and mixing sticks – mixing containers made of wood or paper as well as wooden mixing utensils (paint stirrers) stored in a humid environment may absorb moisture that will react with urethane rubber.

Remedy – use mixing containers made of plastic, metal or glass. Also, use mixing utensils made of plastic or metal.

4. Repeated opening and closing of parts A and B can introduce moisture from the air to the unused material.

Remedy: After dispensing place the lids back on the containers as soon as possible and store in a dry cool place. Also, try using dry gas blanket designed to extend the shelf life of moisture sensitive polyurethane products by displacing the air in the container. If using larger quantities of urethane rubber or plastic, you might want to consider buying dririte tubes to attach to your 5 gallon or 55 gallon containers, or a tank of nitrogen to cap your container after dispensing material.

Q7: WHAT IS Room temperature vulcanized two-component silicone?

To have a better understanding of room temperature vulcanized two-component silicone, you'd better know the answer to the following FAQs first.

1. What is the RTV 2?

Two components of RTV 2 when mixed together cure at room temperature (RTV is the abbreviation room temperature vulcanization).

2. Is mold release necessary?

Yes, on the original, and when trying to separate two silicones halves.

3. Before pouring, is degassing process necessary?

Yes. The silicone will work better if you degas it. By getting away all the extra air, the silicone will pick up better details and have stronger physical properties. But degassing does not effect the curing.

4. Is weighing the silicone product necessary?

The silicone rubber products are formulated to react using a measurement based on weigh.

5. Does temperature effect the silicone and curing process?

Yes. For the addition cure silicone, they will gain work time and cure time in the absence of heat.

6. What causes the condensation to be "wet" on the interface?

Because the condensation mould making silicone rubber is cured by contacting with the moisture in the air. In the process of manufacturing silicone products, the moisture in it is dried out, so it appears like that, without adding any water. To solve this problem, you need to add a little water (about 0.05%), mixing it with our product evenly.

7. How to make the silicone cure faster?

For the addition cure type, higher temperature or higher pressure means higher curing speed. Remember if you decrease the cure time you will also decrease the work time!

Q8: how to make a mold with molding silicone rubber?

Before we begin to know how to make a mold, we must know some basic knowledge. molding silicone rubber is a wondrous material to make molds for many kinds of objects of small or big size, because it has many advantages of odorless, non-toxic, high resistance to tearing, resistance to extreme temperature, high simulation precision, clear texture and lines, long service, sand so on.

So far, we can begin to know the detailed method of how to make a mold with molding silicone rubber, and we take a photo frame mold for example:

Step one: To prepare and dispose of original model.

If the model is smooth and flawless enough, then we can definitely make a perfect mold for it. But if the original model has many weakness, then it is hard to make a good mold, no matter how good the silicone quality is.

Step two: Fasten the photo frame model.

The joint of the frame must be sealed to prevent silicone from leaking. Then, fix the model in the frame.

Step three: Metering, mixing and vacuum deaeration.

For condensation type silicone rubber, the mixing ratio of the two parts of the silicone material is generally 100:2, which should be measured with an electronic scale.

Then deaerate the mixture after stirring.

Step four: casting the mixture

Pour 1/3 mold making silicone into the frame slowly to ensure that silicone is seeped into every corner. After that, pour the rest of the silicone into it.

Step five: demould.

Take out the model when the mold making silicone is completely cured. At last, it is necessary to clean and trim the finished mold.

Q9: Why silicone mould easy to break?

Why silicone mould easy to break? Many customers pose the questions like this. When asked about the time of breaking, some people say the silicone mould easy to break in demoulding time for some small parts, and most people reflect the silicone mould has a short service life. All customers wish that silicone mould has relatively higher reproducing times, and be able to copy large quantities of products, because the cost to produce a silicone mould is relatively high, especially for large and complex products. So, it's time we explore the reasons of silicone mould easy to break.

This problem may largely due to improper hardness of silicone rubber to make silicone mould. There is a limit for silicone rubber, if its hardness is above 50 shore A, the tensile and tear strength will be reduced, and it will be easily broken after the silicone mould has solidified. We should choose favorable hardness of silicone rubber to make mould. Normally, the silicone mould will be in a weak and flimsy manner using the silicone rubber with a high hardness to make moulds for small sized products or intricate and delicate designs.

The explanation for this phenomenon of silicone mould easy to break may be that the mixing ratio of catalyst is incorrect. The amount of curing agent has close relationship with the operating time. The higher the room temperature, the less the amount added. And the silicone mould goes to harden and brittle for excessive use of the curing agent (higher than 2% at room temperature 25°C).

Thirdly, why silicone mould easy to break involves the reason of too frequent use. In the process of work, silicone mould often leads to fatigue fracture under the long-term effect of cyclic stress. The properties of fatigue and fracture for silicone mould are dependent on the performance of the silicone rubber, such as its strength, toughness, hardness, and the content of inclusions in material.

From what has been discussed above, we may draw the conclusion that choosing a high quality silicone rubber with features of proper hardness, wear resistance, toughness, high temperature resistance, resistance to fatigue and corrosion resistance is very important to ensure that the silicone mould is not easy to break. Of course, we can't ignore these small details during the operation and maintenance.

Q10: Why silicone mold appears bleeding oil?

Nowadays, silicone rubber has been widely applied to a variety of fields for making silicone mold. But why silicone mold appears bleeding oil? This question is often asked when customers ask for help for technical guidance. There are no oils contained in the molding silicone rubber, so, the silicone mold will not bleed oil. Of course, a small amount of bleeding oil is a normal phenomenon, but we can't ignore the problem when the silicone mold appears bleeding oil in large quantities.

This phenomenon of silicone mold appears bleeding oil may mainly relate to adding too much silicone oil or having mixed the compound silicone oil which is the compound of silicone oil and white oil in the process of making silicone mold. And the white oil is a kind of petrochemicals but not the pure silicone oil. This is a mean tool by manufacturers in order to save costs of silicone mold because the price of pure silicone oil is much higher than the white mineral oil.

Here, we have to say about the difference between the pure silicone oil and un-graded silicone oil to produce the high quality silicone mold and avoid the problem of bleeding oil. Firstly, you can see with your eyes and smell with your nose directly, because the ungraded silicone oil is in a turbid liquid form and smells bad. Then, you can test it by fire. The burning point of ungraded silicone oil is 100°C, while the pure silicone oil is 320°C. Besides, you can also take the freezing point method, because the silicone oil will remain clear and transparent under temperature of -50°C.

Secondly, the reason why silicone mold appears bleeding oil may be that you add too much curing agent (catalyst) in the production of silicone mold. So, you should reduce the ratio of curing agent, otherwise, this silicone oil added in the silicone rubber is easy for bleeding oil.

Q11: How to extend the service life of silicone mold?

It is generally known that silicone mold plays a mediating effect on the replication and production of products. In order to obtain greater benefits and the lowest cost of a single product, we usually have to consider the best service life of silicone mold which can be affected from the selection of silicone raw materials to the making process of silicone mold to the maintenance of the late. This failure for the silicone mold can be mainly classified into three kinds of wear, fracture, and deformation. Today, this article is to identify the main causes of failure for the silicone mold and how to extend the service life of silicone mold.

I have mentioned that we can extend the service life of silicone mold from pre-production, production and post-production. Firstly, you are supposed to choose the superior products with suitable hardness before making silicone mold. This selection of silicone rubber should be based on the texture, shape and size of products. For large products, we ought to choose the silicone with higher hardness to prevent the silicone mold from deformation. And, the soft silicone can be applied in making silicone mold for the small size products with detailed patterns.

In the production process of silicone mold, please do not blindly increase the amount of hardener in order to catch the production schedule. And the silicone rubber and curing agent must be mixed evenly to extend the service life; uneven curing conditions can affect the service life of the silicone mold and reproduction times. Then, the content of silicone oil should also be appropriate, preferably in the range of 5%-10%. Adding too much silicone oil, the silicone mold will be easy to become soft and durable. In addition, it had better for placing 24 hours or more before putting into production for the silicone mold.

To extend the service life of silicone mold, any customers also should place considerable emphasis on the post-production. The following points need to be placed in your heart. At first, too frequent use goes ill with the silicone mold. So, the soft silicone mold should have at least 10 minutes intervals in a single production after releasing. Secondly, it's best for spraying some release agent before using. And, thirdly, the silicone mold used in the production process should be placed smoothly, and this inclination should not exceed 20 degrees. Next, this operation for the silicone mold should be gentle in the process as far as possible in order to extend the service life, avoiding uneven tearing force. Besides, when it is not used temporarily, silicone mold should be shelves and storage, and cannot be separated with outer mold. At last, regular care and maintenance for the mold is necessary. It is no problem for the silicone mold to extend the service life, if it is well-maintained, and the service life is 3-4 times higher than ordinary silicone mold.

Q12: What is the application of addition silicone rubber?

Addition silicone rubber is usually made of vinyl-terminated polydimethyl siloxane, a low molecular weight silicone oil, silicone resin, platinum catalyst, etc. According to the requirements of the application of silicone rubber, you can also add the appropriate fillers, additives, and inhibitors. We all know that the application of silicone is very extensive. Then, have you heard the new high-tech, green environmental addition silicone rubber and what is the application of addition silicone rubber.

Since the advent of addition silicone rubber, it was widely applied and attracts the attention of various industrial sectors. As yet, the application of addition silicone rubber has been involved in electronics, electrical appliances, aviation, aerospace, medical, machinery manufacturing, food mould, etc.

Below, I will introduce several main applications of addition silicone rubber.

1. Application of silicone rubber in Electronics:

Addition silicone rubber with excellent dielectric properties, excellent high and low temperature resistance, excellent weather resistance, and better adhesion widely used for sealing, bonding, dipping, coating, etc. in electronics, electrics.

2. Application of silicone in aerospace:

This material used in the aerospace generally has more stringent requirements than the ground applied materials. The addition silicone rubber, which can be vulcanized at room temperature and heated conditions, has been widely used in the aerospace field in recent years due to its excellent electrical insulation, high and low temperature resistance, good thermal stability, ozone resistance and radiation resistance, mainly as a sealant and putty. Its greatest feature of addition silicone rubber is the low thermal vacuum weightlessness. Besides, as an ideal space with high polymer material, the metal and polyimide adhesive strength of addition silicone rubber can reach 2MPa.

3. Application of silicone in medicine and health care:

The addition silicone rubber won't produce any by-products in the process of sulfide, and it has these characteristics of short curing time, low linear shrinkage, non-toxic, odorless, physiologically inert, and stable for fungicides. So, addition silicone rubber has been applied broadly in medical industry for several years, such as dental

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impression materials, denture base soft liners, prostheses, medical tubes, cosmetic and so on. The addition silicone rubber compared to condensation silicone rubber has better water imbibition, hydrophilicity, resistance to permeability, which is the most suitable for soft denture liner material. Moreover, the application of silicone is also reflected in medical catheter. Medical silicone rubber catheter is the fastest-growing and the most widely used silicone rubber products, and addition silicone rubber is mainly used on these occasions contacting with blood or needing to be embedded in the body. In addition, the application of silicone in the make-up and cosmetic fields has come into vogue, because addition silicone rubber.



Contact Us

When you have questions,
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