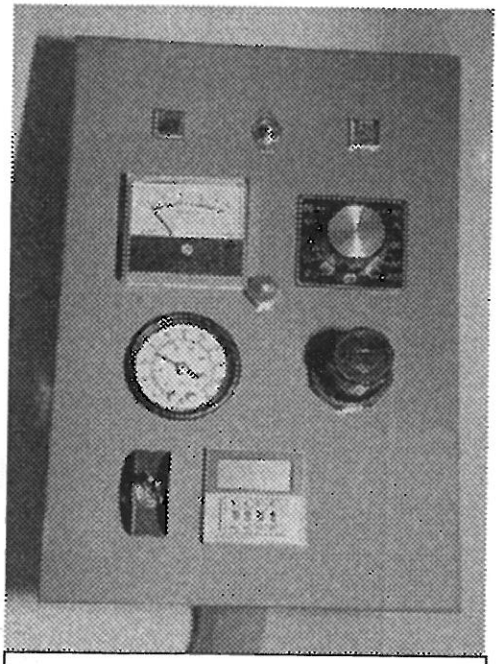
SECTION TEN
INSTALLING & STARTING-UP CONQUEST SPIN-CASTERS

All Conquest Spin-Caster units are tested in our factory and are ready to be installed. There are only two connections required during installation.

1. Plug the unit into an electrical outlet.

2. Attach your air supply to the unit. Each unit uses very small volumes of air per cycle and several casters can actually be run off a small 1-HP compressor. You should have at least 100 PSI capabilities from your air supply, even though, in most cases the unit will run at much lower pressures. The unit requires very little maintenance. The electrical motor is permanently lubricated and totally enclosed. The unit is fitted with an air pressure regulator, filter, gauge and lubricator. Keep twenty-weight non-detergent oil in the lubricator at all times. This will keep the air cylinder lubricated and operating properly. New or old units, which have been used for an extended period of time, will require a few extra drops of oil placed directly into the cylinders. This is done by removing the rotating base plate on which the mold sits and dropping oil through small drilled holes adjacent to the center shaft. The shaft should also be oiled. Clean and drain the filter from time to time.



UNIT CONTROLS

Start-Up

1. Turn the unit with the On/Off toggle switch.

2. Adjust the direction of rotation with the reversing toggle switch.

3. Adjust the pressure required via the regulator gauge.

Note: Always adjust pressure with mold and mold cover plate locked in the machine. When reducing pressure, it does not register on the gauge until the machine's air system is cycled.

4. Adjust the speed by turning the knob located at the right of the DC meter.

5. The automatic cycle time is adjusted by the timer.

6. Opening and Closing the cover of the unit actuates the motor and air clamping system.

7. The standard casting unit has a total of 3 7/8" mold height capacity. The pounding crucible height is adjusted by the screws on the side of the flange. If any metal ever gets stuck in the pouring crucible, always remove it by turning the crucible upside down and carefully pushing it up the crucible. It is tapered for this purpose.

- If you do not plan to move the caster from one location to another, bolt the legs to the shop floor. This helps cut down on any vibration.

- Always keep the inside of the machine drum, clamping, up-rights and mold coverplate, clean of metal or plastic flash. NEVER attempt to clean out the machine unless it is turned off completely.

PRECAUTIONS

- **Always shut off the machine while adjusting pressure.**

- **Never attempt to lift the cover of the machine until the bottom indicator light shuts off and the top one goes on. Always wait until the machine completely comes to a stop.**

- **Never put your hands in machine while its spinning.**

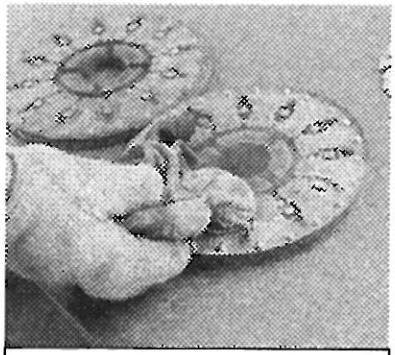
- **Always shut off the machine and air supply.**

SECTION ELEVEN
METAL SPIN-CASTING PROCEDURE

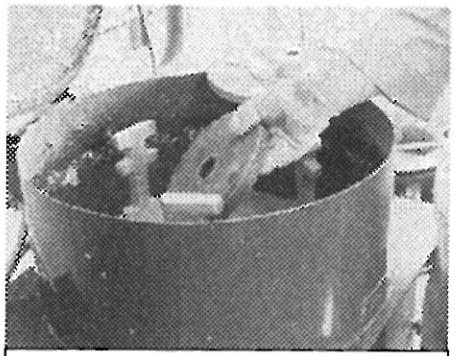
The basic variables that come into play during the casting cycle are:

- Speed or RPM
- Casting Cycle Time
- Direction of Spin
- Temperature of the Mold
- Quality of Metal
- Selective Mold Pressure
- Clamping Pressure
- Pouring Temperature of Metal
- Spraying of the Mold
- Speed of the Pouring
- Metal Cleanliness
- Eliminating Cavity and Mold Distortion

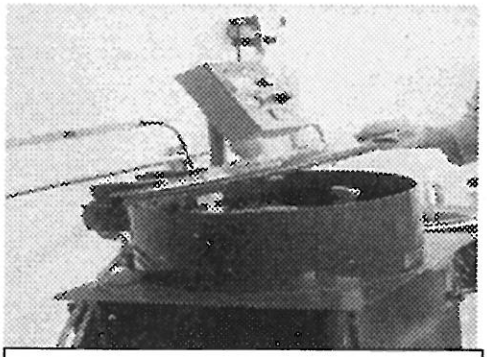
To Start the Casting Cycle



TALCING THE MOLD



POSITIONING THE MOLDS

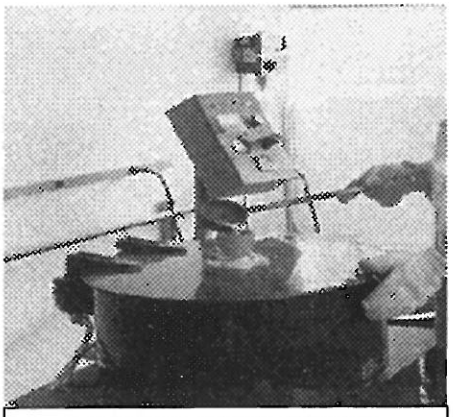


CLOSING THE COVER

1. Talc both halves of the mold, slap them together, removing excess talc, then place the mold together.

2. Position the molds on the caster. Place the mold cover plate and turn it under the uprights.

3. Start the casting cycle by closing the cover of the machine.

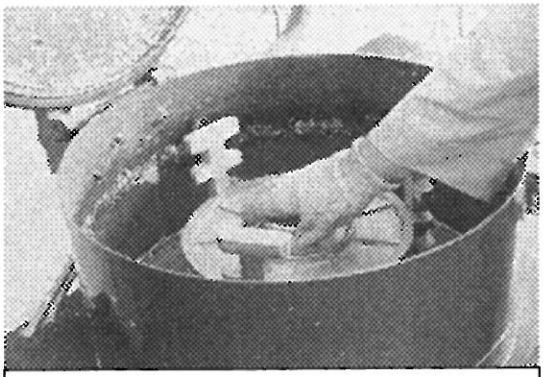


LADLING IN THE METAL

4. Ladle in the metal.

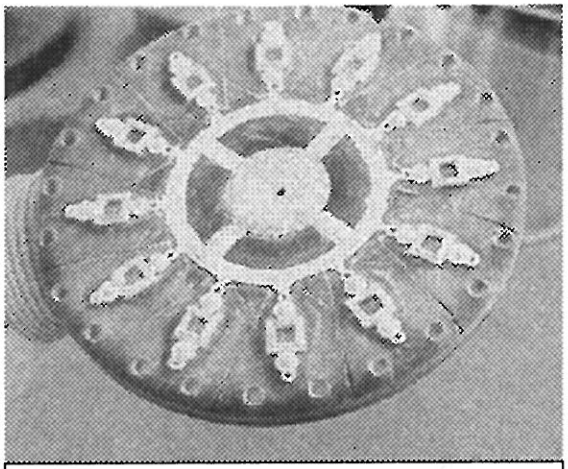
5. Wait for the cycle to finish and the machine to come to a halt.

6. Open the machine's cover and take off the mold cover plate.



PLACING THE COVER PLATE

7. Remove the cast mold.



THE CAST SET-UP

8. Open the mold and remove the cast set-up. This entire cycle, especially when casting zinc, should be less than 45 seconds. The operator usually has enough time between Step 5 and 6 to talc and prepare the next mold for casting.

One worker can easily operate three air casters at a time, but they will need and assistant to help in talcing and preparing the molds, opening the molds and removing the cast se-ups, and breaking off the castings and inspecting them.

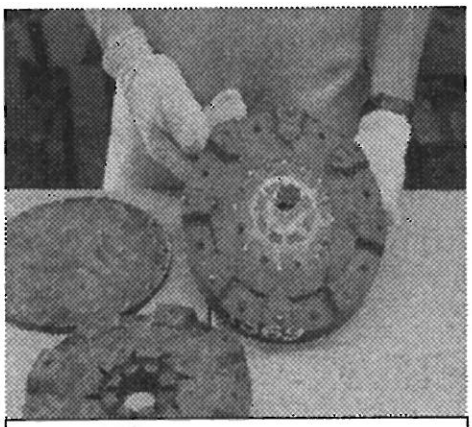
Speed or RPM

Most parts cast between 300-600 RPM. Very small or difficult to fill components might require higher speeds. The larger the mold diameter, the slower speed required. Very high speeds might be required in casting very thin components. A good rule of thumb to follow is after you have obtained good castings, keep the clamping pressure and temperature of the metal and mold constant, lower the speed by 100 RPM after each cycle until it doesn't fill the cavities, then increase it 50 or so RPM's until it does fill, and maintain the lower speed.

Clamping Pressure

The smaller the diameter of the mold, the lower clamping pressure required. The clamping pressure ranges to follow the various diameter molds, which are:

9"	20-40 PSI
12"	40-60 PSI
15"	50-80 PSI
18"	60-90 PSI
24"	70-100 PSI



OPENING A MULTISECTION MOLD SET-UP

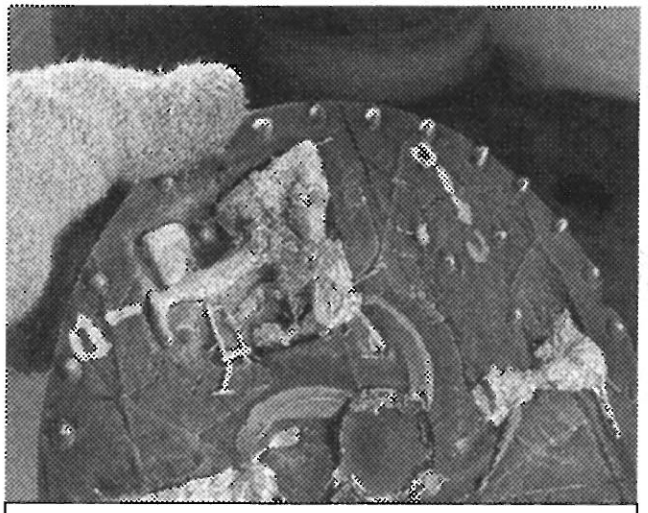
In order to obtain the best dimensional stability form part to part, you must keep the pressure constant and as low as possible. You will find that thicker molds will often need less clamping pressure as long as the cavity configurations are spread out and the parts have uniform wall sections. Thicker parts, that have heavy sections, which have been laid out near the outside of the mold, might require higher clamping pressures. Larger quantities of metal, when being pushed into a mold cavity with heavy sections, have a tendency to try to push the mold open.

You must always keep in mind that your mold is made of rubber, not steel and you can distort the cavities by over clamping. Try to keep the pressure on the mold as low as possible for the best results.

After you have found the right pressure and there is no parting line flash or fins, keep the speed, metal, and mold temperature constant. Then back off on pressure 10 PSI after each casting cycle until the mold flashes or parts begin to fin. At this point, bring the pressure back up in 5 PSI intervals, or until you eliminate the finning or flashing. The speed of the machine and temperature of the metal will also have the same type of effect on parting line flash and finning. Keep two of these variables constant, i.e., speed, pressure, and temperature, then reduced the others until you reach the most ideal casting conditions and results with all the variables as low as possible.

Cycle Time

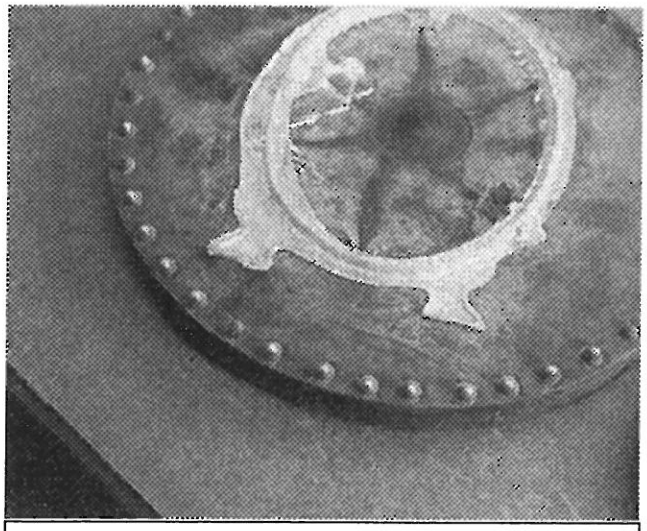
Cycle time and solidification rate of the metal is mainly dependent upon the size of the cavities that have to be filled. In the majority of cases the casting cycle, which is started by the timer as soon as the cove of the machine is closed, will vary between 20-120 seconds. Notice that the gating system, which is the last to solidify, falls apart in your hand as you are removing the cast set-up from the mold. Remove the cast se0up from the molds as quickly as possible to prolong the rubber mold life. The mold will be exposed to less high temperature by removing the set-up quickly.



REMOVING CAST SET-UP

The Pouring Temperature of Metal

- The pouring temperature is adjusted externally via a temperature controller operating with your melting furnace. The pouring temperature is dependent largely on the alloy's constituents and its melting range. Conquest Industries can provide this data. In most cases, attempt to pour the alloy about 20-30 degrees above its liquids, to reduce porosity and shrinkage problems.

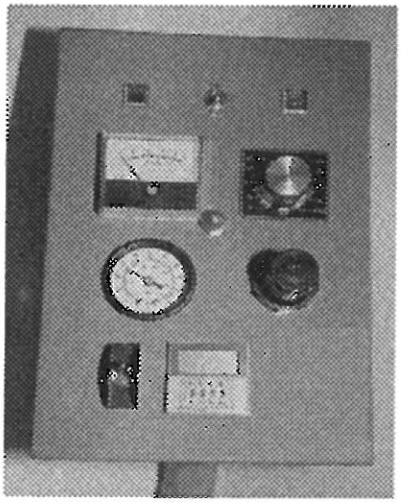


FLASHING & FINISHING AT THE PARTING LINE

- Keep the pouring temperature as low as possible when filling the cavities. After you have completely adjusted the speed and clamping pressure, try to lower it 10 degrees after each cycle until the cavity doesn't fill. Before you raise the temperature again, try increasing speed about 50 RPM to see if this helps fill the cavity. If it doesn't, bring the speed to its original setting and increase the temperature 5 degrees.

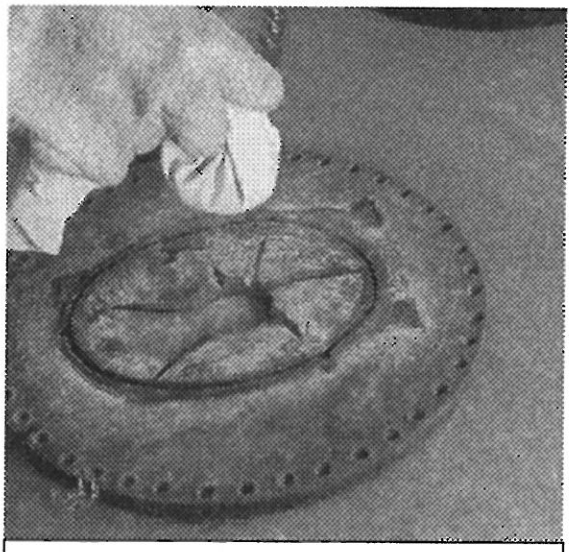
- If the pouring temperature is too high, the metal becomes very fluid and will have a greater tendency to flash and fin at the parting line. In addition, too high a temperature will prematurely burn out the rubber mold.

- So there won't be a big drop in temperature during the pouring cycle, let your ladle stay hot by floating it on top of the molted metal.



- As previously discussed, the mold should be laid out with the **Direction of Spin** in mind. On some occasions, if you are unable to cast the part properly after adjusting the speed, pressure, and temperature, try reversing the **Direction of Spin.**

NEVER reverse the direction of spin while the machine is spinning!



TALCING THE MOLD

Talcing The Mold

- You must talc both sides of the cavities and gating systems of the old before every casting cycle. This helps preserve the rubber mold life and improve metal flow. After talcing the mold, always slap the two halves together, which blows off any excess talc. Do not allow the talc to build-up. Do not talc the mold for one or two castings cycles or clean the mold cavities with warm soapy water. Do not use solvent.

Temperature of the Mold

The temperature of the mold is extremely important in spin-casting. Cold, or at room temperature, the rubber mold is slightly smaller than it will be at its expanding casting temperatures. The parts produced for a cold mold will also be slightly smaller than from a warm mold. The temperature of the mold before casting should be approximately 120-140 degrees. The mold will cast best at these temperatures and should be maintained for uniformity of results. The worst thing you can do is cast the mold when it is too hot!

The Result of a Hot-Casted Mold:

- Mold casting life will be reduced considerably, possibly in half.
- Mold has a great tendency to flash and fin at the parting line.
- Cavities will be distorted.
- You will lose uniformity of dimensions.
- Poor casting results.

If you are casting one mold at a time, you must wait until it cools down before casting again. If you are running production molds, at least 6 or 7 should be cycled at a time. This allows the molds to cool down and by the time you have finished casting the sixth or seventh mold, the first mold should be at approximately the correct casting temperature. It will also be helpful to use a fan to blow air over the molds as they are cooling down, especially if less than six are being run. DO NOT put the cast mold into cold water for fast cooling.

Speed of Pouring

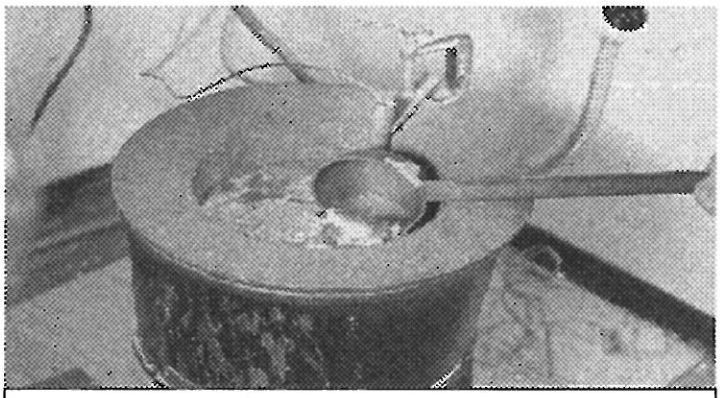
The speed of Pouring metal into the mold under certain conditions can affect the casting results. A medium speed pour will work best in most cases, but sometimes getting the metal into the mold faster is advantageous, especially when it comes to thin or difficult to fill cavities. A very slow pour can also be helpful in large cavities or ones that have a tendency to easily distort, but you must match the metal temperature since it will be somewhat cooler when you finish the pour. Only ladle enough metal to completely fill the cavities and round section on the gating system. Too much metal poured will keep the mold hot.

Quality of Metal

The metal quality will have definite effect on casting results. We suggest you use only the high purity casting alloys. If the metal is not high purity and is made from reclaimed or scrap metal, it will have a tendency to be more sluggish and to create porosity and shrinkage near the in-gate locations. It also won't provide a good surface finish.

Maintaining Cleanliness

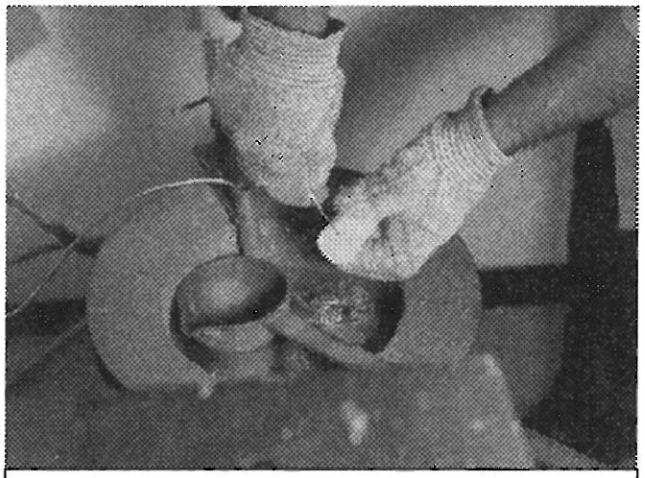
It is important to maintain cleanliness. Since you are starting with a high purity alloy for the reasons mentioned above, you will want to maintain this purity level at all times.



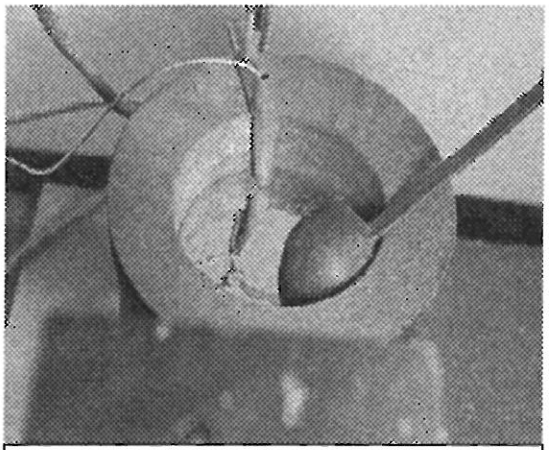
MIXING THE METAL

- Mix the metal wells with the ladle after every third of fourth shot and always before the first shot of the day and after any long periods like lunch, etc. This helps keep the alloys constituents in complete suspension.

- Fluxing is an important part of metal cleanliness. Dross or oxide forms on the surface of the pot due to a reaction between oxygen in the air and the metal. A small amount of flux, added to the melt at the "good" metal. This will reduce the loss of good metal during dross removal. After fluxing, the dross can be skimmed using special ladle. Fluxing and skimming "cleans" the pot and keeps the metal fluidity at the proper level. It is not necessary, however, to flux and skim so often that the surface of the pot is completely free of dross. A thin film of dross is actually good for the metal as it protects it from the air and inhibits the formation of more oxides in the pot.



FLUXING THE MELT



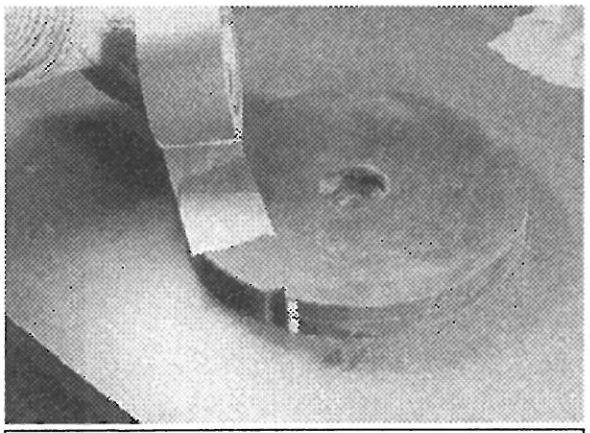
PUSHING THE DROSS TO THE BACK OF THE MELT

Before taking a ladle of metal, always push the dross to the back of the melt with the bottom of the ladle. This will keep the metal removed for the pour as clean as possible.

When the dross can no longer be pushed back and you're getting dross in the ladle of good metal, the pot should be skimmed and the dross removed. Fluxing and skimming should be done when the alloy in the pot has been reduced to 75% of the original amount and before gates and new metal are added.

How to Flux A Pot

Before fluxing, the temperature of the metal must be 50°F above the alloy's liquids temperature. If you have used 25% of the metal in a 160 pound pot, you will need to add 1 tablespoon of ammonium chloride flux. Using a long-handled ladle, push the flux to the bottom of the pot and work it around and up until you reach the top surface. Skim the excess dross and then add the new metal or gates. Remember not to add more than 50% gates to new metal. NEVER put back any of the flash that accumulates inside the drum of the caster or very thin rejected parts.



SELECTIVE MOLD PRESSURE

Selective Mold Pressure

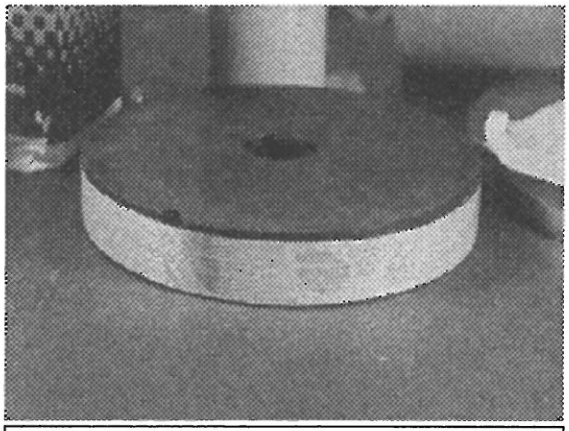
It is very useful to use Selective Mold Pressure in areas where the high centrifugal forces are causing the mold cavities to excessively flash or fin in specific locations and very thin cavities where regular clamping pressure causes the cavity to thin out too much and restrict metal flow.

Place on top of the mold several strips (usually 3-4 pieces) of 1/2" to 3/4" wide masking tape directly above the locations that are excessively flashing. This will apply Selective Mold Pressure to these problem areas. This is done without having to resort to the use of more clamping pressure just for these locations. In most cases, these masking tapes strips will be located towards the outside of the mold and can be used wherever required. This is better than using too much clamping pressure, which could distort the rest of the cavity.

- Direct above the cavity, cut out a thin section from the mold by using either the rectangular route of the BP #25 knife blade. In some cases, it might also be necessary for you to remove rubber from the bottom half of the mold. It will be necessary for you to cut more than 1/6" – 1/8" rubber to relieve pressure.

Eliminating Cavity and Mold Distortion

When casting heavy parts, the weight and centrifugal forces behind the metal will cause the cavity and mold to distort and flash. You can provide extra stability to the mold by wrapping it with regular tape.



TAPE WRAPPED AROUND MOLD HALVES

Before wrapping, clean off the surfaces with a solvent, then wrap regular 1/2" wide 3M fiberglass reinforced tape around the outside of both mold halves. Three light wraps minimum. It will be necessary to first. The tape should be applied when the mold is at room temperature. This procedure may cause the mold to balloon slightly after casting but it will flatten out again as it cools down.

Improved Vulcanizing Procedure for Conquest Silicone Molds

A good rubber mold vulcanized Bond or Cure will enable you to produce the best possible Conquest Silicone molds. They will provide the longest productions along with excellent and elongation characteristics.

SECTION TWELVE
PROBLEMS & PREVENTION

Problems

- **Trapped air** found between the 1/4" – 1/2" rubber mold discs and to lesser extent, sometimes in line location on all your vulcanizing frame rings gases that have not properly escaped during vulcanizing. Trapped air and gases can inhibit curing the rubber.

- **Oil and Water** left on the surface of the rubber will inhibit the cure.

- **Insufficient Vulcanizing Pressure** will not: a) Squeeze out pressure. b) Allow the rubber to flow and produce accurate cavities. c) Set up the rubber inside the mold cap settings, they will fall out.

- **Insufficient Vulcanizing Time and Temperature.** The catalyst in CONQUEST silicone starts vulcanizing the compound at 320°F and the minimum time required is 1 1/4 hours per mold inch.

- Lacquer and some plastic coatings on the metal models will inhibit the cure of the rubber in and around the mold cavities.

Prevention Procedures

- Drill 10-12 3/64" vent holes at about parting line location on all your vulcanizing frame rings.

- Before vulcanizing, place a sheet of newspaper or thin cotton ducting material on the top and bottom surfaces of the rubber mold.

- Bump the mold by applying full vulcanizing on the mold frame immediately after vulcanizing is complete. Wait a minimum of 40-60 minutes for the mold to coo.

- It is of critical importance that after removing the treated paper form the discs, clean off the top and bottom surfaces with a quick drying solvent like acetone for silicone or lacquer thinner for organic rubber.

- Place the clean discs on top of each other, making sure to apply heavy uniform pressure, which helps in squeezing out air trapped between layers.

- The proper pressures to use on Vulcanizers equipped with hydraulic jacks and gauges are as follows:

9" Mold	2-3,000 PSI
12" Mold	3-4,000 PSI
15" Mold	4-5,000 PSI
18" Mold	5-6,000 PSI

- Conquest silicone comes right on 1/4" – 1/2" thickness. On thin or small models, which do not displace much rubber, make sure the cover of the frame doesn't bottom up against the ring. Pressure will be exerted on the ring, not the rubber. This can be prevented by using a spacer on a regular basis.

- The ideal vulcanizing temperature and time for Conquest and time for Conquest silicone is 355°F for 1/4 hours per mold inch thickness.

- Make sure you start the timing cycle when the mold frame is at temperature.

- As a standard practice, immerse all models in a lacquer thinner and or acetone and wipe clean.

HELPFUL TIPS

- **Read The Manual First!**
- Keep your models in a safe and clean area.
- Classify your mold by numbers.
- When Vulcanizing, watch your mold for the first 10-15 minutes for signs of extrusion.
- **Do Not** use more pressure than required.
- Gating and Venting techniques are very important for good casting.
- **Avoid distortion** when casting – **Do Not over –pressure your mold.**
- Keep your variables (Speed, Temperature, Pressure) as low as possible.
- When setting up a mold, change only one variable at a time.
- Keep your molds at a stable temperature.
- **Do Not** overheat the molds, it shortens their life.
- **Do Not** overheat the metal.
- Maintain your pots. Keep them clean and painted.
- **Do Not** handle liquids near and around the melting equipment.
- New frames are coated with a small amount of oil. Clean with thinner or degreaser before use.

Suggestions For Maximum Service of Cast Iron

- This pot has been purposely seasoned to help prolong its life. Metals containing zinc, aluminum and other alloys have a deteriorating effect and special care should be taken not to overheat or to allow metal to freeze solid in pot.

- Carry a neutral or slightly reducing flame at all times. A flame that is too blue is oxidizing and will cause rapid sealing of the pot, greatly shortening its life.

- Remove all sludge or sediment from the pot at least once a day and even more often if the furnace is being operated continuously. If allowed to remain, it acts as a heat insulator causing local overheating and premature failure.

- Never force the furnace in bringing the metal up to temperature or in an attempt to speed up production. Forcing the fire results in excessive combustion chamber temperatures, shortening the life of the pot and furnace lining.

- Remove the pot from the furnace at regular intervals and thoroughly clean the inside surface.

- Keeping the pot covered will reduce radiation losses and increase furnace efficiency.

- A Cast Iron Pot is recommended for Lead, Tin, Zinc, Aluminum, Babbitt or their alloys. DO NOT overheat the metal, Zinc should be kept below 900°F. Have pot empty at the end of the days' use. These metals should NOT be allowed to freeze solid in the pot.

- When using zinc or zinc alloys, care should be taken to protect the life of the cast iron pot. A ladle wash is available at Conquest. This wash should be used on pots and ladles. Simply mix the wash with water and paint two light coats on the interior of the pots and bowl of the ladle. This should be done on a regular basis.

Instructions For Soft Metal Melting Furnace

1. Unpack furnace carefully—Examine packing for loose parts.

2. Install burner through top-bottom of furnace. Venture air mixer to produce under pilot hole. Burner head will fit into receiving lugs on furnace bottom case.

3. Gas line should be of ample size and with the least number of bends. Your local gas company will make recommendations. A tee is recommended near the gas cock to allow for pressure readings when necessary and should be taken when burners are on. This unit adjusted for _____. BTU _____ gas at _____ pressure.

4. Install pot and charge with metal to be melted.

5. Lighting: Adjust pilot tip to allow flame to enter furnace through hole provided for it. Light pilot and keep burning while furnace is in use.

6. Main burner can now be turned on full and adjust with primary air shutter on the air mixer.

7. Burner flame must not burn yellow. A soft blue flame with a light blue inner cone is desirable. The air shutter is the only adjustment. When proper flame is obtained, lock shutter in place with locknut.

- Keeping pot covered will reduce radiation losses and increase furnace efficiency.

- This unit is adaptable to automatic temperature control.

- Pot recommendations:

  For Lead or Tin ---------- Cast Iron
  For Zinc, Aluminum, Babbitt, or their Alloys ---------- Cast Iron or Alloy Pots

PLACE SPRUE FORMER

PLACE THE SPRUE FORMER ONTO THE CENTER OF THE MOLD
Important - do not omit this step.

PLACE TOP HALF

PLACE THE TOP HALF OF THE TEKSIL INTO THE PREPARED BOTTOM

1. Prepare correct thickness for the top half of your mold. A typical 1" thick mold will have a 1/2" thick top. Follow Section A: 1 through 4.
2. Completely spray the top surface of the mold with parting spray. Talc the mold also. Place the sprayed side of the TEKSIL mold half over the models, taking precautions not to disturb them, and make sure the sprue former is still centered.
3. Evenly push the TEKSIL mold down by hand.
4. Place a sheet of paper liner over the top of the rubber as described previously. When using an aluminum spacer, you should use two sheets of paper.
5. Place completed mold into your mold frame, using correct size frame.

CLOSE VULCANIZING FRAME

CLOSING THE VULCANIZING FRAME:

1. Place the top plate over the rubber, making sure that it fits inside the ring.
2. Push down the top plate by hand, using body weight.
3. Cut off the excess liner paper that is overlapping.
4. Care should be taken that the top plate does not press down on the ring frame. If it does, a 1/4" or 1/2" spacer should be applied under the ring frame so that the top plate puts pressure on the rubber, not the ring frame.

PREHEAT VULCANIZER

PREHEAT THE TEKCAST VULCANIZER:

1. Set each temperature controller (top and bottom platen) at 335°F (168°C).
2. When the controller's green light goes on it indicates you have reached temperature.

TO VULCANIZE A MOLD

VULCANIZING THE PREPARED MOLD:

1. Properly center the vulcanizing frame on the already preheated vulcanizer's bottom platen. There should be machined rings or pin positions indicating correct placement for each size frame. Non-centered mold frames can cause a poorly vulcanized, uneven or non paralleled mold. Under some conditions this could severely damage your vulcanizer.
2. Your release valve should be closed securely counterclockwise.
3. Apply 1,000 psi to the mold to lightly seat the models into their cavities.
4. Wait 6 to 8 minutes. You should see a pressure rise of at least 300 to 500 psi or more according to types of rubber compounds you use. Do not proceed further unless you observe a pressure rise.
5. After obtaining a pressure rise within the prescribed levels, then turn the release valve counterclockwise to lower your pressure to almost zero (still keeping low pressure against the frames top). Wait 10 seconds and then apply pressure at the following levels:

9" mold—2000 to 3000 psi
12" mold—3000 to 4000 psi
15" mold—4000 to 5000 psi
18" mold—5000 to 6000 psi
20" mold—6000 to 7000 psi
24" mold—3000 to 4000 psi
30" mold—4000 to 5000 psi

IMPORTANT: 24" and 30" vulcanizers are equipped with a 100 ton jack and require only one half (1/2) these pressures to vulcanize.

TO VULCANIZE A MOLD cont...

6. Hold these pressures for another 20 seconds, then repeat No. 5 and release the pressure again to almost zero. Wait a few seconds, then apply the correct pressure again per size mold. You should repeat this procedure one more time for a total of three times. This is called "bumping the mold". It allows entrapped air to release when dropping the pressure to zero.

7. The vulcanizing timer should be set for the following time periods per thickness of your mold.

Total Mold Thickness	Vulcanizing Time At Temperature
1"	1 1/4 hours
1 1/2"	2 hours
2"	2 1/4 hours
2 1/2"	2 3/4 hours
3"	3 1/4 hours

Vulcanizing time is approximately: 75 minutes per inch for TEKSIL silicone; 60 minutes per inch for organic rubber.

8. **EXTRUDING RUBBER** - TEKSIL silicone rubber when heated, flows extremely well. If the vulcanizing frame becomes worn or goes out of tolerance and the rubber starts to extrude out between the ring and the top or bottom plate, do the following:
   a. Release the jack pressure completely, but keep the top plate of the vulcanizing frame against the top platen.
   b. Keep the pressure off for a period of 10 minutes.
   c. After 10 minutes, apply the required vulcanizing pressure as described previously, and continue the vulcanizing cycle.
   d. Repeat a, b and c if the extruding continues. It should definitely stop after the 2nd try. If it doesn't, it's time to order a new vulcanizing frame.

OPEN VULCANIZING FRAME

OPENING THE VULCANIZING FRAME & removing the vulcanized TEKSIL mold.

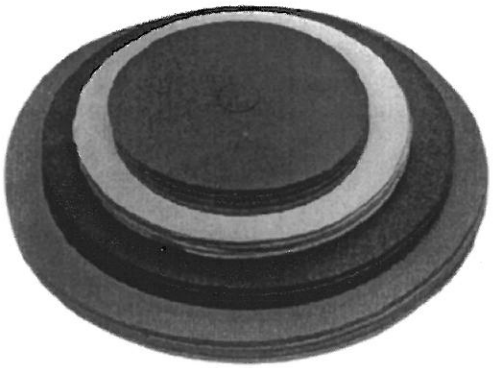
1. IMPORTANT - After timer shuts off, allow the mold to cool down for 45 minutes to one hour, then release the jack pressure completely and remove the vulcanizing frame. Use heavy duty leather gloves while handling the hot mold frame.
2. Pry off the top and bottom plates using a large screwdriver or a miniature crowbar.
3. Allow the mold to cool down slightly, and it can then easily be pushed or pulled through the ring.

OPEN VULCANIZED MOLD

OPENING THE TEKSIL VULCANIZED MOLD:

1. A mold that was talced and sprayed properly with Teflon parting spray will separate easily.
2. If it does not separate immediately, use a small screw driver and pry around the parting line until it opens and can be separated by pulling it apart by hand.
3. The models will drop out, or they can be gently removed from the vulcanized mold at this point.
4. If the models will not release easily, simply use a jeweler's mallet and tap the back or center of the mold until the model falls out. This should be done on a table so the models will not be damaged by falling to the floor.

TEKSIL MOLD COMPOUNDS



The standard sizes 9" x 1" through 30" x 1" sets are made up of four 1/4" thick discs. The 9"x 3/4" and 12"x 3/4" TEKSIL mold sets are made up of two 3/8" thick discs.
Minimum Order: 1 Box (15% surcharge for orders under 1 Box)
5% Discount: 10 to 24 Boxes
10% Discount: 25 to 49 Boxes
15% Discount: 50 Boxes or more per order

Further discounts can be arranged for Quantity Orders or Blanket Orders with scheduled releases.
Sizes and Compounds can be combined to qualify for discounts.

METRIC MOLD SIZE EQUIVALENTS

9" x ¾" .. 229 x 19.1 mm	18" x 1" ..... 457 x 25.4 mm
12" x ¾" .. 305 x 19.1 mm	20" x 1" ..... 508 x 25.4 mm
9" x 1" ... 229 x 25.4 mm	24" x 1" ..... 610 x 25.4 mm
12" x 1" ... 305 x 25.4 mm	30" x 1" ..... 762 x 25.4 mm
15" x 1" ... 381 x 25.4 mm	

TEKCAST has developed a series of proprietary TEKSIL™ heat-cured silicone rubber mold compounds and offers a complete line of mold materials.

Mold compounds are available in a variety of grades and are sold in disc and bulk form. Grades are selected according to conditions of use, such as casting temperature, the desired precision or dimensional accuracy, mold complexity and length of production run.

Our advanced technology provides you with mold compounds of unequalled performance. TEKCAST'S proprietary formula products are of such superior quality that other companies' highest grade materials may only be equivalent to our general purpose grades. Our highest grade mold compounds are without equal.

TEKSIL™ *Silicone Rubber* grades are for the more demanding applications of higher strength metals and thermoset plastics, offering high resistance to heat and chemical attack that typically occurs during polymerization of thermosets.

Organic Rubber grades are used for the lower melting temperature lead and tin-based metals.

TEKSIL mold compounds are all TEKCAST proprietary formulations and are unconditionally guaranteed for performance. In the uncured (unvulcanized) condition, they all have a greater than 1 year shelf life. Vulcanized molds can be stored indefinitely. Recommended TEKSIL silicone vulcanizing temperature is 335°F / 170°C.

Made in the USA by TEKCAST INDUSTRIES, INC.

TEKSIL SILICONE RUBBER MOLDS-DISCS

TEKSIL WHITE—*HT-1M*

Duro-65. Highest temperature resistance and longest lasting Silicone Mold Compound, making it perfect for use with Zinc and Zinc Alloys. Recommended for large components, thick wall sections and for very high production requirements in zinc alloys. Yields 40 - 50% more casting cycles than any other high temperature silicone compound in use world-wide. Also suitable for very short volumes on small aluminum components.

Item #	Size	Lb Weight Per Set	Kg Weight Per Set	Sets Per Box
4-1604-09	9" x ¾"	2.5 lbs	1.1 kgs	13
4-1604-12	12" x ¾"	4.0 lbs	1.8 kgs	13
4-1609	9" x 1"	3.2 lbs	1.5 kgs	10
4-1612	12" x 1"	5.6 lbs	2.5 kgs	10
4-1615	15" x 1"	9.0 lbs	4.1 kgs	5
4-1618	18" x 1"	13.4 lbs	6.1 kgs	5
4-1620	20" x 1"	16.0 lbs	7.3 kgs	5
4-1624	24" x 1"	21.8 lbs	9.9 kgs	5
4-1630	30" x 1"	34.9 lbs	15.9 kgs	5

TEKSIL RED—*HSR*

Duro 55. This is our highest strength, medium cost and highest tear resistant Silicone Mold Compound, *similar to Organic Rubber,* offering outstanding undercut resistance and mold life when casting Pewter, Tin, Lead and Plastic.

Perfect for figurines and decorative items of any complexity. It can be easily flexed to allow easy release without cracking or tearing. Not to be used with zinc.

Item #	Size	Lb Weight Per Set	Kg Weight Per Set	Sets Per Box
4-404-09	9" x ¾"	2.1 lbs	1.0 kg	13
4-404-12	12" x ¾"	3.0 lbs	1.4 kgs	13
4-409	9" x 1"	2.6 lbs	1.2 kgs	10
4-412	12" x 1"	4.5 lbs	2.1 kgs	10
4-415	15" x 1"	7.5 lbs	3.4 kgs	5
4-418	18" x 1"	11.0 lbs	5.0 kgs	5
4-420	20" x 1"	13.4 lbs	6.1 kgs	5
4-424	24" x 1"	19.0 lbs	8.6 kgs	5
4-430	30" x 1"	30.0 lbs	13.6 kgs	5

TEKSIL TRANSLUCENT WHITE—*HTW*

Duro 60. Good heat resistance. *Highest tear resistant Silicone Mold Compound, for use with Zinc.* Has excellent elongation and best resistance against tearing and splitting with undercut parts. Can be used for medium production requirements with Zinc and very high production with tin or lead base alloys.

Item #	Size	Lb Weight Per Set	Kg Weight Per Set	Sets Per Box
4-304-09	9" x¾"	1.8 lbs	.8 kg	13
4-304-12	12" x¾"	3.6 lbs	1.6 kgs	13
4-309	9" x 1"	2.5 lbs	1.1 kgs	10
4-312	12" x 1"	4.7 lbs	2.1 kgs	10
4-315	15" x 1"	7.2 lbs	3.3 kgs	5
4-318	18" x 1"	10.8 lbs	4.9 kgs	5
4-320	20" x 1"	15.2 lbs	6.9 kgs	5
4-324	24" x 1"	19.8 lbs	9.0 kgs	5
4-330	30" x 1"	31.3 lbs	14.2 kgs	5

TEKSIL GREY—*GP-1*

Duro 70. Very good heat resistant Silicone Mold Compound for Zinc, Tin or Lead Alloys. Excellent chemical resistance for plastic and pattern wax. Used for medium production requirements with Zinc. *Offers the best dimensional stability.*

Item #	Size	Lb Weight Per Set	Kg Weight Per Set	Sets Per Box
4-604-09	9" x ¾"	2.6 lbs	1.2 kgs	13
4-604-12	12" x¾"	4.3 lbs	2.0 kgs	13
4-609	9" x 1"	3.4 lbs	1.6 kgs	10
4-612	12" x 1"	5.9 lbs	2.7 kgs	10
4-615	15" x 1"	9.8 lbs	4.5 kgs	5
4-618	18" x 1"	14.6 lbs	6.6 kgs	5
4-620	20" x 1"	17.4 lbs	7.9 kgs	5
4-624	24" x 1"	24.9 lbs	11.3 kgs	5
4-630	30" x 1"	39.3 lbs	17.9 kgs	5

TEKSIL BROWN—*LC*

Duro 75. Designed to be used as an *inexpensive bonded backup* for our TEKSIL HT-1M and GP-1. Also used for casting Lead, Tin, Plastic and Wax, and short runs in Zinc. Helps improve dimensional stability of the other TEKSIL silicone compounds.

IMPORTANT: When used as bonded backup it will reduce the costs of TEKSIL HT-1M mold by 35% and Teksil GP-1 mold by up to 20%, when making 1" thick molds.

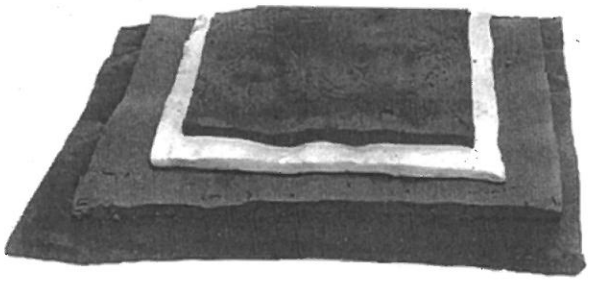
Item #	Size	Lb Weight Per Set	Kg Weight Per Set	Sets Per Box
4-704-09	9" x ¾"	2.7 lbs	1.2 kgs	13
4-704-12	12" x ¾"	4.7 lbs	2.1 kgs	13
4-709	9" x 1"	3.6 lbs	1.6 kgs	10
4-712	12" x 1"	6.3 lbs	2.9 kgs	10
4-715	15" x 1"	10.6 lbs	4.8 kgs	5
4-718	18" x 1"	15.8 lbs	7.2 kgs	5
4-720	20" x 1"	18.9 lbs	8.6 kgs	5
4-724	24" x 1"	27.0 lbs	12.3 kgs	5
4-730	30" x 1"	42.7 lbs	19.4 kgs	5

TEKSIL BLUE—*BK*

Duro 60. The *least expensive of our Silicone Compounds.* Offers excellent economics and good mold life when casting Pewter, Tin, Lead and Plastic, plus some thin-walled Zinc parts.

Item #	Size	Lb Weight Per Set	Kg Weight Per Set	Sets Per Box
4-804-09	9" x ¾"	2.6 lbs	1.2 kgs	13
4-804-12	12" x ¾"	4.3 lbs	2.0 kgs	13
4-809	9" x 1"	3.4 lbs	1.6 kgs	10
4-812	12" x 1"	5.9 lbs	2.7 kgs	10
4-815	15" x 1"	9.8 lbs	4.5 kgs	5
4-818	18" x 1"	14.6 lbs	6.6 kgs	5
4-820	20" x 1"	17.4 lbs	7.9 kgs	5
4-824	24" x 1"	24.9 lbs	11.3 kgs	5
4-830	30" x 1"	39.3 lbs	17.9 kgs	5

BULK MOLD COMPOUND TEKSIL SILICONE RUBBER



TEKSIL™ Silicone Mold Compounds are available in "bulk" form, supplied as slabs measuring approximately ½" to ¾" thick by 24" x 24". The slabs may be used in the thickness supplied and cut out to desired mold diameter as required. For thinner size, the slabs can be cold press squeezed to the desired thickness, using your own TEKCAST hydraulic vulcanizing press. (Easy to follow instructions will be provided.)

Any excess material or trimmings can be simply pieced together and press squeezed to the desired thickness. TEKSIL compounds will easily coldflow and piece themselves together in this manner so that all bulk material can be salvaged and fully utilized to make mold sets.

Made in the USA by TEKCAST INDUSTRIES, INC.

TEKSIL SILICONE—BULK

Fabricating your own mold sets from our bulk material can result in savings to you of 23% to 55% over the cost of ready to use sets (depending on compound selected). *Bulk material is sold by the pound and by the kilogram, with a minimum order of 75 lbs, or 34 kilograms.*

4-1600	TEKSIL WHITE—*HT-1M*	Per lb
4-300	TEKSIL TRANSLUCENT WHITE—*HTW*	Per lb
4-400	TEKSIL RED—*HSR*	Per lb
4-600	TEKSIL GREY—*GP-1*	Per lb
4-700	TEKSIL BROWN—*LC*	Per lb
4-800	TEKSIL BLUE—*BK*	Per lb

TEKSIL SILICONE MOLD RUBBER COMPARISON CHART

TEKSIL RUBBER TYPE	UNCURED MOLDMAKING & HANDLING CHARACTERISTICS				OPERATING PERFORMANCE CHARACTERISTICS OF COMPOUND AFTER VULCANIZING									
								CAST METAL HEAT RESISTANCE		CHEMICAL RESISTANCE				
	EASE OF USE	MAKING SIMPLE MOLD	MAKING COMPLEX MOLD	DETAIL PICK-UP	MOLD DUROMETER HARDNESS (SHORE A)	UNDERCUT & TEAR RESISTANCE	OPERATOR ROUGH HANDLING CAPACITY	600°F+ (316°C)	800°F+ (427°C)	THERMO-SET PLASTIC	LIQUID WAX	% MOLD SHRINK	DIMENSION STABILITY	PRICE
TRANSLUCENT WHITE (HTW)	Good	Excellent	Very Good	Excellent	60 ± 5	Excellent (120)	Very Good	Excellent	Good	N/A	N/A	3	O.K.	Highest
WHITE (HT-1M)	Very Good	Excellent	Very Good	Excellent	65 ± 5	O.K. (60)	O.K.	Superb	Superb (Best)	N/A	N/A	2	Good	High
RED (HSR)	O.K.	Good	Good	Superb	55 ± 5	Superb (210)	Superb (Best)	Excellent	Poor	Superb	Superb	3½	O.K.	Medium
GREY (GP-1)	Excellent	Excellent	Excellent	Excellent	70 ± 5	Good (75)	Good	Superb	Excellent	Superb	Superb	1½ (lowest)	Superb (Best)	Medium
BROWN (LC)	Excellent	Very Good	Good	Very Good	75 ± 5	Good (80)	Good	Good	O.K.	Excellent	Superb	2	Very Good	Very Low
BLUE (BK)	Very Good	Very Good	Good	Very Good	60 ± 5	Very Good (100)	Good	Good	Fair	Excellent	Superb	2	Very Good	Lowest

RATING REFERENCE: LOWEST ← POOR • FAIR • O.K. • GOOD • VERY GOOD • EXCELLENT • SUPERB → HIGHEST

TEKSIL RUBBER TYPE	SPECIAL CHARACTERISTICS	USE WITH	RECOMMENDED CASTING APPLICATIONS
TRANSLUCENT WHITE (HTW)	Finest combination of heat stability and tear strength of any silicone compound. ***Excellent undercut properties*** and ***good heat resistance*** make it ideal for use with zinc.	ZINC	***Detailed parts:*** buckles, jewelry, small figurines & hardware
		PEWTER, TIN, LEAD	Models with detail and undercuts; resists abrasion wear. Large figurines, jewelry and buckles. ***Outstanding mold life.***
		PLASTIC, WAX	N/A
WHITE (HT-1M)	***Highest temperature resistance*** for zinc casting, regardless of part size. ***Longest production runs.*** Suitable for thick walled and large parts. Not recommended for undercut parts. This is the highest temperature resistant silicone compound in use world-wide.	ZINC	Medium to large size industrial or hardware parts with no or small undercuts. Decorative accessories. Thick wall sections. ***Extremely high production.***
		PEWTER, TIN, LEAD	Decorative or functional designs. Large, thick wall or heavy parts with no undercuts. Extremely high production.
		PLASTIC, WAX	N/A
RED (HSR)	***Highest tear strength*** of all our silicone compounds. Low durometer allows ***maximum flexing*** and ***easy part removal*** of intricate and delicate castings. ***Lasts 4 to 5 times longer than any organic rubber.*** Excellent for pewter, tin and lead.	ZINC	N/A
		PEWTER, TIN, LEAD	Best for large, complex figurines and detailed designs. Decorative parts: jewelry and buckles. ***Highest undercut resistance.*** Very high production.
		PLASTIC, WAX	Easy part release. Use for large complex, undercut figurines, jewelry and industrial parts.
GREY (GP-1)	***Superb dimensional stability, lowest shrinkage,*** *above average tear resistance.* ***Excellent heat resistance with good undercut resistance*** for Zinc casting. Easy to mold and cut. ***Superb chemical resistance*** for plastic casting. Outstanding properties have made it the best all purpose silicone in use world-wide.	ZINC	Small to medium size industrial and decorative parts, buckles, medallions and buttons. Superb for prototypes and castings that require ***accuracy and close tolerance.*** High production on moderate undcuts.
		PEWTER, TIN, LEAD	Buckles, jewelry, decorative accessories and trophies. Outstanding for fishing lure industry. Large or thick sections; moderate undercuts. Very high production.
		PLASTIC, WAX	All applications, moderate undercuts. Dimensional stability makes it ideal for large designs. Excellent chemical resistance for plastic and wax. Very high production.
BROWN (LC)	Low-cost, ***high durometer, dimensionally stable.*** Universally used as an inexpensive backup rubber on other silicone compounds to control movement and add dimensional stability. ***Very good heat transfer properities, good undercut resistance.***	ZINC	Low production of small, low undercut, functional or decorative parts. Models / patterns.
		PEWTER, TIN, LEAD	Reproduce sub-masters and close tolerance parts. Battery terminals, buttons and paperweights. High production of fishing lures and flat jewelry. ***Excellent economics and low mold cost.***
		PLASTIC, WAX	Large industrial and decorative parts, picture frames, prosthetic parts and jewelry. High production and excellent economics. Close tolerances.
BLUE (BK)	*Lowest cost.* Exceptional flow characteristics and ***very good undercut capabilities*** make it ideal for figurines. Perfect for pewter, tin and lead with very good undercut properties and good mold life. ***Easily flexed for part removal.*** Best combination of high economics and mold life.	ZINC	Short runs on small decorative parts: jewelry, key tabs, buttons and buckles.
		PEWTER, TIN, LEAD	Fishing lures, pewter figurine and sculpture, jewelry, buckles and medallions. Excellent for undercut parts. ***Best combination of low cost, excellent tear resistance and very good mold life.*** High production.
		PLASTIC, WAX	Excellent flexing and bending allows most castings to release easily. Decorative and functional parts. High production and low mold costs.

CASTING PARAMETER GUIDELINES

The following parameters are suggested starting settings to use when casting new molds. These settings may need to be adjusted according to individual mold requirements and casting results obtained.

METAL – ZINC AND TIN/LEAD

MOLD SIZE (in/mm)	TIME (Min/Sec)	PRESSURE (PSI)	SPEED (RPM)
9" (229)	:30	25	550
12" (305)	:40	35	475
15" (381)	:50	45	400
18" (457)	:50	50	375
20" (508)	1:00	55	325
24" (610)	1:00	60	300
30" (762)	1:15	70	250

PLASTIC AND WAX

MOLD SIZE (in/mm)	TIME (Min/Sec)	PRESSURE (PSI)	SPEED (RPM)
9" (229)	10:00	20	600
12" (305)	10:00	30	500
15" (381)	10:00	40	475
18" (457)	10:00	45	450
20" (508)	10:00	50	400
24" (610)	10:00	55	350
30" (762)	10:00	60	300

VULCANIZING PARAMETER GUIDELINES

The following parameters are suggested starting settings to use when vulcanizing new molds. These settings may need to be adjusted according to individual mold requirements and vulcanizing results obtained.

MOLD SIZE (In/mm)	VULCANIZING PRESSURE TEKSIL™	ORGANIC
9" (229)	2000 – 3000 PSI	2000 – 4000 PSI
12" (305)	3000 – 4000 PSI	3000 – 5000 PSI
15" (381)	4000 – 5000 PSI	4000 – 6000 PSI
18" (457)	5000 – 6000 PSI	5000 – 7000 PSI
20" (508)	6000 – 7000 PSI	6000 – 8000 PSI
24" (610)	3000 – 4000 PSI	3500 – 4500 PSI
30" (762)	4000 – 5000 PSI	4500 – 5500 PSI

VULCANIZING TIME	TEKSIL™	ORGANIC
	75 min. per inch	60 min. per inch