

How elastomers are manufactured The elastomer manufacturing process involves combining the raw ingredients of the elastomer and processing it in a variety of methods to achieve the final polymer. Once all the added ingredients are combined, the batch is picked off and processed through the mill again on the tightest setting to ensure the mix is homogenous and well-dispersed. Transfer moulding is typically used for rubber to substrate bonded components or moulds that have multiple cavities. Compression moulding offers the advantage of low tooling cost and low manual labour requirement. The elastomer is then forced into a mould by screw or piston at a high shear rate into a mould to be shaped into the desired format. For valuable materials such as FKM and FFKM the scrap generated by the runner system can make this process uncompetitive. Step by step, this is how elastomers are manufactured: To produce elastomers, the raw materials are first boiled to remove residual water and purify them. The elastomer and water mix is transferred onto a conveyor and dried, functioning as a vibrating sieve. With a small amount of moisture, the crumbs are processed through a baler machine, which makes the polymer into large bales through pressure. Mixing A base polymer can be combined with other ingredients to create stronger and more resistant materials through the process of mixing: First, the polymer is placed in an open mixing mill. Preparing Before being moulded, elastomers are usually altered so that the moulding process is free of potential flaws. For certain components witness lines can also be generated which may be undesirable in dynamic applications or may provide initiation points for tearing. A mechanised whisk then stirs additives into the mixture. The polymer is then pumped into insulated storage tanks, where the ingredients are mixed further. The liquid elastomer, a solvent mixture and water are then pumped into a coagulation unit. The mix of water and rubber crumbs is then continually revolved while awaiting further processing. This mix is pumped into a rotary sieve, which drains off the water as it spins. After inspection, they are then packaged to be shipped and processed into many different types of products. A few in-cuts are made throughout the process to ensure the ingredients are evenly distributed. Firstly, the elastomer is forced through a die to form it into the necessary dimensions, known as preform extrusion. At TRP blanks can be cut by hand for high specification products, or can be automatically cut by machine. The types of moulding for elastomers include: Compression Compression moulding is a highly efficient method of moulding. Another vibrating conveyor further drains off water.