Article published on June 9th 2012 | Business

Diamond machining is a mechanical machining process using derivative machine tools which include rotary transfers, tum-mills etc. This process with the help of diamond milling is used to fabricate micro optics and injection molds and through this, very small shapes and sizes can be made. Diamond machining is mostly considered to be the finishing operation and is done by diamond tipped tools. It is very effective as diamond is the hardest substance on earth. These tools cannot be used for the complete finishing process as they are delicate and are used with a nominal rake .This technique is said to be developed in American nuclear weapon laboratories where high level precision was required in smallest of parts. Later it came to be used by optics manufacturers as their work also required high tolerances of fit form and finish.

Turret lathes, polishing machines, double-end stone machining are the ones used in this process. diamond machining is toughest on the substances like plastic and other stainless steel products and metals like gold. The costs that come up for the machining vary from $3000 to $9000. Some of the materials that can be diamond machined are plastic optics, infrared optics and materials like germanium, silicon, zinc sulfide and gold rimmed mirrors.

Surfaces that are machined by this process are of an optical quality and are made of glass which is almost scratch resistance and can take a lot of pressure. Other diamond machined metals like copper and aluminum are prone to damage and scratching as they are soft in nature. Inspection of these machined surfaces can be done by using them as reflectors to diffused lights. Through this qualitative method, waviness and diffraction patterns can easily be seen. Diamond machined parts should be handled by the edges only as they are sensitive to scratching and talking over these polished surfaces is highly unadvisable as the marks of the saliva do not go.

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Article Keywords:
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