

## 1. Some popular questions on MIM are answered !

We have exhibited at MEDIX, Tokyo recently. Due to the advance announcement, many people have visited our booth. During the visits, many questions on MIM were asked. We have sent technical information through our technical news and the web site; however, basic questions on MIM were not always understood. Therefore we are responding to the questions raised during the MEDIX.

### Question ① Density and strength

**Q. When the materials containing resin are sintered, isn't the strength and the density of MIM part lowered like porous material?**

**A. Both strength and density are not lowered.**

MIM process uses materials mixed with resin material called "binder" and metal powder. The final products will be a metal only since there is a degreasing process before the sintering. By the shrinkage of product size in the same direction during the degreasing and the sintering processes, high density of MIM parts without void can be obtained.

### Question ② Dimensional tolerance

**Q. How much is the degree of dimensional accuracy?**

**A. Accuracy less than 10μm can be achieved.**

It is commonly understood that the accuracy in MIM is not high since it involves the sintering process. Normal accuracy of MIM products is about ±0.5%, however an accuracy of ±0.1% can be achieved by our μ-MIM technology.

### Question ③ Geometrical tolerance

**Q. What level of surface roughness can be achieved?**

**A. It is about Ra 0.3 – 1, however better surface roughness can be realized by additional processing.**

About Ra 0.3 can be realized after sintering using the super fine powder. However, further surface roughness can be achieved by secondary processing since it can be post processed in various ways like as other normal metal parts.

### Question ④ Production volume

**Q. How much is the maximum monthly production volume?**

**A. We have experience of 1 million pieces per month.**

Maximum production volume depends on the size of products, however it is most effective if the sizes are small (a few mm), shape is complicated and the monthly production quantity is thousands to hundreds of thousand pieces.

### Question ⑤ Materials

**Q. Do you have an experience of platinum?**

**A. Yes we have experiences.**

By using MIM for platinum which is difficult to machine, mass production with high accuracy can be realized. Due to high reactivity of platinum, we have succeeded in production of small platinum parts using a binder developed solely by us.

### Question ⑥ Gear

**Q. What is the class of gear module?**

**A. We have an experience of Class 3 gear production without additional processing.**

The same accuracy as the machining can be realized without additional processing. Further, MIM can mass-produce with better precision than the machining for irregular shaped gears (internal gears, helical gears and bevel gears). We have an experience of module 0.05 or less. It is also possible to finish with conventional surface processing.

### Question ⑦ Nozzle

**Q. What is the minimum diameter of nozzle hole.**

**A. Dozens of μm holes can be processed.**

It depends on the nozzle length, however dozens of μm can be processed. For the injection of minute nozzles, most of products are few mm to dozens of mm in overall size. This is because it will be difficult to have the cost merits comparing with the other manufacturing technology by high material costs if the nozzles more than dozens of mm is produced by MIM. Please consult us if you are planning mass-production of minute nozzles since irregular shaped orifice, path of flow having branches or free curve can be processed applying our mold technology.

We will continue to answer these kind of questions on our newsletters in the future.

If you have specific questions, please do not hesitate to contact us.

## Titanium Foam awarded in Thailand!

The second prize in industrial sector was awarded by The National Research Council of Thailand to a program of Titanium Foam Development Project researched jointly by Taisei and Dr.Anchalee of Thai national MTEC.

### Taisei Column



My name is Kenji Sorida, joined the company in December 2016. I am now in Production Dept. from April 2017 after gaining some knowledge in the QA Dept. where I was assigned at first when joining Taisei. I have recently attended the exhibition MEDIX, Tokyo as a staff of production dept. Since I have had no opportunity to face the external environment before, I found out that MIM has not been widely known in public and MIM can respond to the needs for the trend in downsizing in various business fields. I felt that Taisei parts are very small compared to other MIM manufacturers and we are able to provide great value to the market needs. Being supported by well-experienced seniors, I am going to try my best to achieve the target of the company that Taisei will be the best MIM manufacturer in the world.