

“Please leave MIM of soft magnetic parts with us!”

– Possibility of magnetic materials spread by MIM technology –

Material with small magnetic force and large permeability is called soft magnetic material. A soft magnetic material is strongly magnetized in the presence of magnetic field, but once the magnetic field is absence, it does not have magnetic force. Therefore, the soft magnetic material is used in many industries such as household electrical appliances, office equipment, general industrial equipment parts, for example, various solenoid hydraulic equipment, solenoid valves for fuel injection devices of automobile engines, solenoid cores, injector core, the plunger, torque sensor core, the various sensors shield material or the like. Among soft magnetic parts, most precision and fine parts are manufactured by cutting. However, there are problems in processing cost and processing accuracy. One is additional machining strain removal steps are required and the other one is short tool life due to its poor machinability. We have been working on soft magnetic material for over 10 years to develop MIM manufacturing technologies and further functional enhancement of the soft magnetic properties (Ministry of Economy, Trade and Industry, Strategic foundation technology advancement support project in 2007)

Since MIM is a manufacturing technology that does not require the distortion removal process, high-precision mass production can be realized even for complex-shaped soft magnetic material components.

Magnetic properties of major soft magnetic materials

	Coersive force Hc (A/m)	Maximum specific permeability $\mu_m (10^3)$	Magnetic flux density B (T)	Max magnetic flux density Bs (T)
SUS410L	160	2.0	1.08	1.29
Fe-3%Si	20~130	4.5~13	1.66~1.75	1.92~2.12
Fe-Ni (PB)	6.4	19.0	1.5	1.5

– Development trend of magnetic materials –

Many parts of soft magnetic materials are used as element parts that greatly influence the miniaturization, high functionality and high accuracy of the final product regardless of industry or application. In recent years, movement towards electric motorization of the automobile industry is active, and its R&D contents are diverse but mainly aimed at energy saving and resource saving. Approaches toward solution of problems are being actively pursued from the development of new alloy systems, addition of trace metals and surface treatment. However, many of them often have a trade-off relationship with magnetic properties, so delicate adjustment is required.



Many customers are considering changing production method to MIM due to expansion of production quantity and design change to smaller and more complex shape. Also we receive many inquiries regarding new material trial and development for mass production. We have experiences in soft magnetic production, so please do not hesitate to contact us.

Column

Marketing & Business Development Manager in Thailand

Sawasdee ka. I am Tui. I am working at Taisei Kogyo Thailand for 1 year. I responsible marketing and sales. "Ownership" is my motto as I think if you have the feeling of ownership in your task assigned you will do the best and will completely finish the job on time. Travelling is my hobby, I love to travel in both Thailand, overseas when I have time. Today, I would like to promote one of tourist's destination province in Thailand, "Chiang Rai". Chiang Rai province is located in North of Thailand it takes 2 hours by air from Bangkok. The picture above is a famous temple, "Wat Rong Khun". This temple built in white colour with unique decoration which were not usually found in other temples. Come to visit Thailand, "Land of Smile".



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