

New Cover Gas to be Adopted for Die-Casting Production of Magnesium Parts

Taiyo Nippon Sanso Corporation (TNSC) has developed an environmentally-friendly cover gas for magnesium fabrication, through joint research with Tokai Rika Co., Ltd. The new cover gas, named MG Shield® -- whose principal component is fluoroketon -- will be used (for the first time in Japan) in the magnesium die-casting process at the Otowa Plant of Tokai Rika. TNSC will also provide the plant with carbon dioxide for dilution purposes, as well as with the necessary gas supply equipment and piping.

We received an award (involving a financial subsidiary in fiscal 2005) from the Ministry of Economy, Trade and Industry for our success in developing a system employing this new magnesium cover gas, thanks to its contribution to the prevention of global warming. Conventionally, sulfur hexafluoride (SF₆), a gas with a GWP (global warming potential) 22,200 times that of carbon dioxide, has been employed as the cover gas for the prevention of magnesium flaring (combustion) in the magnesium die-casting process. Developed specifically to serve as a substitute for SF₆, MG Shield® has approximately the same GWP as carbon dioxide, and its use instead of SF₆ would thus do much to retard the global warming process.

1. Main features of MG Shield®

- 1) GWP 1
- 2) It is delivered in cylinders, and can be handled in the same way as existing cover gases.
- 3) Thanks to the fact that it incorporates the fluoroketon-based fireproofing agent Novec™612 (made by

Sumitomo 3M), MG Shield[®] displays the same effectiveness in preventing flaring as SF₆.

2. Effectiveness

If the use of SF₆ at Otowa Plant is completely discontinued in favor of MG Shield[®] as a substitute, this would be equivalent to the reduction of carbon dioxide emissions in the amount of 45,000 tons per year.

3. Schedule for use in die-casting production of magnesium-alloy components in the near future

Oct. 2005 - Feb. 2006: Practical tests on commercial model to begin (one production line) at Otowa Plant

Feb. 2006 onward: New gas to be applied step-by-step to all lines at Otowa Plant.

4. Plans for marketing of MG Shield[®]

Five years from now, we project sales of MG Shield[®] in the region of 1,000 cylinders per annum.