

## White Lubricant/Mold Release Agent for Hot Forging

### Technical background

White-colored lubricant/mold release agents are demanded from the viewpoints of factory beautification and improvement of the working environment for personnel. To respond to these needs, Hitachi Powdered Metals commercialized a white lubricant/mold release agent utilizing the design technology cultivated with conventional graphite-based lubricant/mold release agents, making it possible to satisfy both lubricant/mold release performance and improvement of the working environment.

### Conventional technology

- Graphite-based lubricant/mold release agents have been adopted in order to prevent galling and burring of the work utilizing the lubricant property of graphite. However, because graphite is used in the lubricant/mold release agent, it is difficult to maintain the cleanliness of workplace.
- The conventional white-colored lubricant/mold release agents have various problems due to non-uniformity of the coating film, including galling and burring of the work, and shear drop and damage of the die.

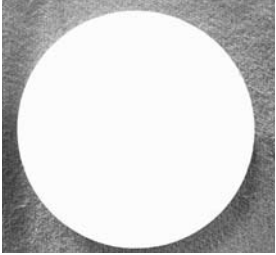
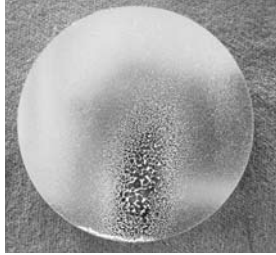
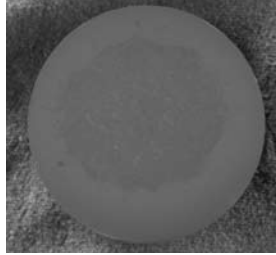
### New technology

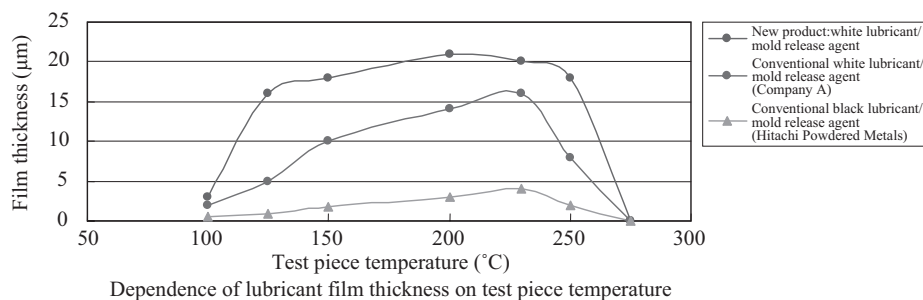
- The new product is a white-colored lubricant/mold release agent, in which a new material is adopted in recognition of safety, and has a compacting load similar to that of graphite-based agents and an improved friction coefficient in comparison with the conventional product.
- The new product enables stable production because a thick, uniform coating film is formed in a wide range of die temperatures from low to high temperatures.
- Beautification of the working environment is easy due to the white color of the product.

### Features of the new technology

Table 1 External appearance and properties of coating film using various release agents (dilution solid fraction: 3%)

1) Coating test conditions; spraying pressure: 4kg/cm<sup>2</sup>, spraying time: 3sec, test piece temperature: 200°C

New white lubricant/mold release agent			Conventional white lubricant/mold release agent (Company A)			Conventional black lubricant/mold release agent (Hitachi Powdered Metals)		
								
Film thickness <sup>1)</sup>	Outer edge	21μm	Film thickness <sup>1)</sup>	Outer edge	16μm	Film thickness <sup>1)</sup>	Outer edge	4μm
	Center	13μm		Center	2μm		Center	2μm
Spike test (compacting load): 84.3t			Spike test (compacting load): 86.3t			Spike test (compacting load): 84.2t		
Friction coefficient: 0.15			Friction coefficient: 0.20			Friction coefficient: 0.08		



### Example of applicable products

- Hot/warm forging products

### Applied products

- Hot forging products  
Gear blanks, crankshafts, connecting rods, etc.

### Other features

- Hitachi Powdered Metals' white lubricant/mold release agent is environment-friendly, improves die life, reduces underfilling and sticking, and enables a reduction in the amount of lubricant/mold release agent used, thereby maximizing cost performance.
- Customers who are currently studying a change-over from graphite-based to white lubricant/mold release agents and customers who are having problems with their current white lubricant/mold release agent are invited to contact Hitachi Powdered Metals when studying white lubricant/mold release agents.