

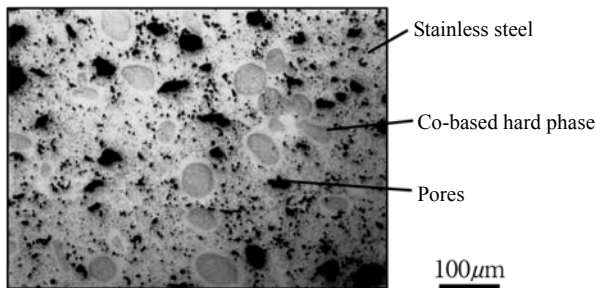
NIKKALOY SUTG Series with High Sliding Property and Heat Resistance

Technical background

With heat resistant bearings for exhaust system applications, increased wear and noise are problems due to the severe environment, which is characterized by high contact pressure, etc. Because higher wear resistance and sliding properties than in conventional products have been increasingly required in recent years, Hitachi Powdered Metals developed a new material capable of demonstrating high quality based on the conventional material.

Conventional technology

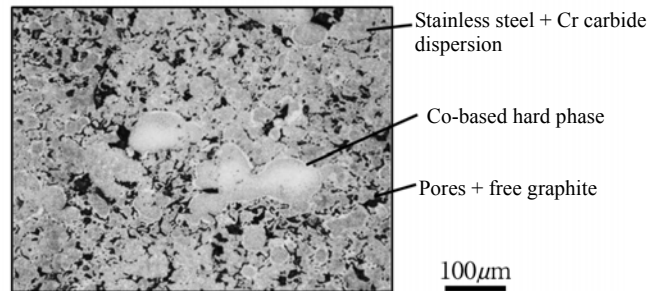
SUT is a Hitachi Powdered Metals' material with high temperature oxidation resistance and wear resistance, in which 20% Co-based hard particles are dispersed in an austenitic stainless steel matrix under high NIKKALOY temperature. However, in some cases, adhesion wear and noise occurred due to metal-to-metal contact under severe environments.



New technology

NIKKALOY SUTG is a material grade with improved wear resistance and sliding property in comparison with SUT.

- (1) Wear resistance: Improved matrix hardness by Cr carbide dispersion, resulting in improved adhesion resistance.
- (2) Sliding property: Improved self-lubricating property by free graphite dispersion.



Features of the new technology

■ High temperature wear test (SRV)

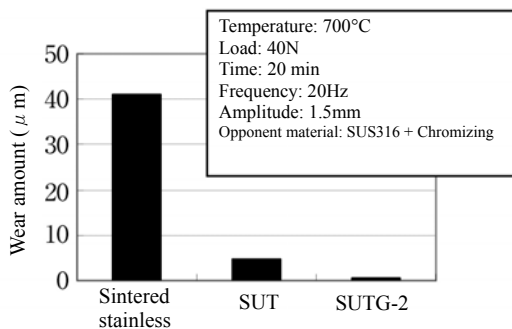


Fig. 1 Wear resistance of SUTG

Wear resistance is greatly improved in comparison with SUT → Effect of carbide dispersion and free graphite.

Table 1 Chemical composition (mass %)

	Cr	Co	Ni	Mo	Si	C	Fe
SUT	15	11	11	9	1		Bal.
SUTG-2	15	11	11	6	1	3	Bal.
SUTG-3	21	11	16	6	1	3	Bal.
SUTG-4	15	11	11	9	1	2	Bal.

Table 2 Properties

		SUT	SUTG Series		
			SUTG-2	SUTG-3	SUTG-4
Density	(Mg/m ³)	6.7	6.1	6.1	6.3
Apparent hardness	HRB	83	70	60	74
Tensile strength	(MPa)	215	250	180	
Thermal expansion	(X10 ⁻⁶ /K)	16.2	15.2	15.5	15.8
Features			Standard product	Improved oxidation resistance	Improved oxidation resistance Increased content of free graphite

Material variations responding to detailed needs

Examples of applicable products

- Variable exhaust valve bearings (motorcycles, automobiles)
- EGR valves
- Turbocharger parts

Applied products

- Variable exhaust valve bearings for motorcycles

20mm



Cost comparison

SUT = 100, SUTG = 100