Rockit® 606/706

Combat impact and abrasive wear

The reality of complex wear applications

Rockit 606/706 are designed to improve the performance of components operating in environments where both impact and severe abrasive wear occur. Abrasive wear dominates many applications and the current industrial solution is to use MMCs (metal matrix carbides) such as NiCrBSi/WC. However, the impact wear resistance tends to be low, as high abrasive wear resistant materials are brittle by nature.

Rockit 606/706 have a martensitic structure with finely dispersed hard vanadium carbides giving them excellent wear characteristics and a consistent high hardness together with a good impact resistance. On a single layer deposit, the hardness can reach around 66 HRC. The patent filed materials can also be applied in multiple layers and still retain the original hardness as well as uniform wear resistance throughout the deposits, thanks to the uniform distribution of the precipitated carbides.

Rockit 606 is recommended for laser cladding process while Rockit 706 is the choice for Plasma Transferred Arc (PTA) welding process.

Main product features

- Excellent welding properties with nice and smooth deposit
- Homogenous hardness within deposition layers
- Exceptional impact and abrasive wear properties

Typical applications

» Oil & Gas

Stabilizers, bent housings, drill bits.

» Mining & Construction

Hydraulic cylinder parts, rotary vane wheels, crusher rolls & rings, ground engagement tools (GET) such as scraper blades, bucket lips, wear plates.

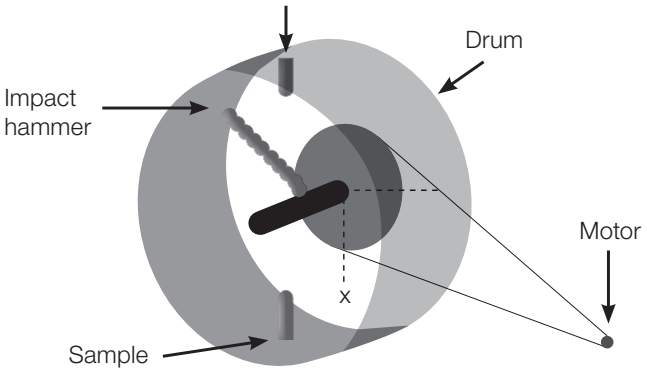
Combat impact and abrasive wear

Abrasive wear resistance of Rockit® 606/706 shows big improvement compared to M2, which is used also for similar applications. Compared to MMC, Rockit 606/706 perform slightly lower in abrasive wear resistance while having much less variation against process conditions. Rockit 606/706 present big improvements of impact wear compared to MMC.

This combination of high impact wear resistance and abrasive wear make Rockit 606/706 unique.

Microstructure

Fine grain martensitic matrix with uniform distribution of hard phase precipitate (etched in Glyceregia).



InnoTech Labs, Alberta Canada

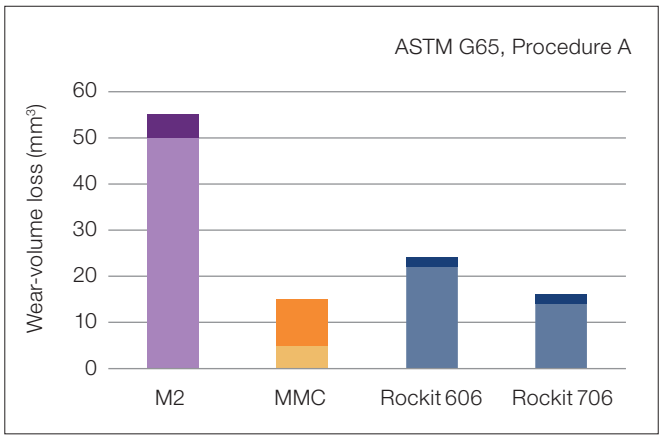
Impact wear test is performed by a mechanical device that holds a sample and rotates a ball bearing tipped hammer on a chain which impacts the specimen.

It delivers repeated impacts with the force of 6 to 10 joules. The test is run for 24 minutes with mass loss being measured in 4 minute intervals.

Typical chemical analysis (%)						
	Fe	**C**	**Cr**	**V**	**Si**	**Others**
Rockit 606	Bal	2	5	6	0.9	<4
Rockit 706	Bal	2.6	5	6	1	<4

**Patent filed for both materials.*

Typical physical properties			
	Recommended deposition method	**Particle size** (µm)	**Coating hardness** (HRC)
Rockit 606	Laser cladding	53-180	64
Rockit 706	PTA	53-180	66



Impact wear	Mass loss (gram)
NiCrBSi + 60% WC/W_2C	1.6
NiCrBSi + 60% Spherical WC/W_2C	0.2
Rockit 706	0.003

MMC consists of WC powders in NiCrSiB matrix where levels of 60% WC are used. The wear value loss shows the interval commonly achieved by PTA welded MMC at different coating process conditions.

Results for M2 and Rockit 706 have been generated on two layer deposit on EN 235 JR steel substrate using PTA welding with typical dilution of 10%.

Results for Rockit 606 have been generated on two layer deposit on EN 235 JR steel substrate using laser cladding with typical dilution of 5%.

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