SULZER

Sulzer Metco

MAXIT® Low Friction Coatings for Tribological Applications

Low friction coatings

Every year damage caused by insufficient lubrication and wear world-wide is extremely costly. When components are moved under force with respect to each other, properties like coefficient of friction, frictional force and resistance against abrasion have a decisive influence on the operability and service life of widely differing processes and systems. Moreover, the requirements which need to be met by tribological systems are continually increasing. Customers are demanding smaller size and lower weight while at the same time increasing performance and often also customers are demanding lubricant-free operation. Here low friction coatings provide the solution.

Amorphous Metal-Carbon Coatings

Amorphous carbon coatings combine a very low coefficient of friction with low tendency to adhesion and the ability of resisting wear very well. They are thus ideally suited to protect components and tools which are subjected to much tribological wear. These coatings are also known as DLC coatings (Diamond Like Carbon). Coatings based on tungsten as the metal component have been found to be highly flexible and are being used in many industrial branches today.

Here Sulzer Metco offers its MAXIT® coating W-C:H. This coating is deposited in a PVD process (**P**hysical **V**apour **D**eposition) based on magnetron sputtering. The related system technology is being developed, manufactured and offered world-wide by Sulzer Metco.

Typical coatings are 1 to 5 µm thick. The effect of MAXIT® W-C:H relies on several correlated mechanisms related directly to the nano structure: while running dry, the coating from the coated component is transferred to the opposite uncoated component thus smoothing the surfaces. In combination with the distinct characteristic of being chemically inert there thus result extremely low coefficients of friction of 0.15 to 0.25 when running dry against steel; also the excellent emergency running properties are quite noteworthy. During the coating process the temperature is maintained at about 200°C so that also hardened steel like 100Cr6 or 16MnCr5 can be coated.

Services

Low friction MAXIT® W-C:H coatings

MAXIT® W-C:H coatings offer, at good wear resistance, very low friction. By reducing friction, efficiency can be increased significantly and the use of lubricants can be reduced. Thus MAXIT® W-C:H coatings are especially well-suited for refining of running surfaces in tribological systems, like gears or hydraulic components. Investigations have shown that it will in many cases suffice to coat only one friction partner with W-C:H.

As a system supplier regarding surfaces, Sulzer Metco accompanies your product from its creation to final processing. Here Sulzer Metco has only one thing in mind – the reliable and timely implementation of your requirements.

We are taking account of your increasing coating requirements through a close co-operation between our system manufacturing and coating service departments. Thus we are in a position to implement your specific requirements in time by making available our coating capacity. Here the design concepts of our systems are such that we are in a position to cover your coating volumes in a highly flexible way. Thus we are offering to you the benefit of being able, through our coating service, to start on one's own coating technology.

Companies from most varied industrial branches are already relying on MAXIT® W-C:H coatings, for example:
• automotive • printing/paper • electronics • hydraulics • medicine/pharmaceutical • food stuffs • pneumatics • textiles • forming • wind energy and many more

Characteristics	W-C:H	W-C:H mod
Deposition temperature	≤ 200°C	≤ 200°C
Colour	anthracite	black
Composition of the coating	Multi-layer	Multi-layer
Typical coating thickness	1 - 5 µm	1 - 5 µm
Hardness	1000 HV	1500 HV
Coefficient of friction (dry)		
against 100Cr6	0.15 +/- 0.05	0.15 +/- 0.05
Modulus of elasticity	70 GPa	200 GPa