

Brilliant Slide: MSA® for Spherical Bearings

Maurer Söhne develops new sliding alloy with high corrosion resistance.

Munich. Enhanced corrosion protection, resistance against industrial air and improved economics – these 3 characteristics feature the new metal alloy MSA®. MAURER Sliding Alloy was especially developed for calottes of spherical bearings. The Deutsche Institut für Bautechnik (German Institute of Civil Engineering) awarded the national technical approval, and in this type approval Maurer Söhne included two further modifications: the inclusion of cylindrical bearings as well as the extension of the upper temperature limit for the use of the sliding material MSM® to 70°C.

„Like all great inventions the material was developed in response to adversity“, reports Dr. Christian Braun, Managing Director at the Structural Protection Systems Division at Maurer Söhne, Munich. The hard chromium plating of the hitherto calottes made of steel was entrusted to third parties, and required a long processing time as well as considerable efforts in transporting these sensible calottes.

Special: Material plus Surface

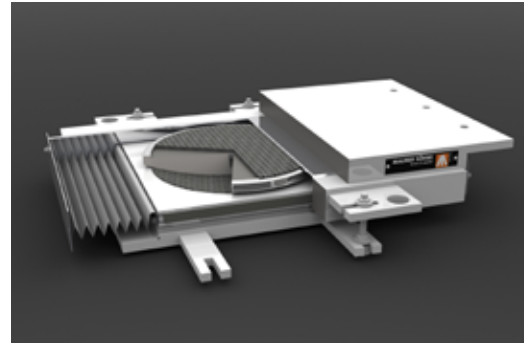
Result of the efforts is a special metal alloy with a special surface treatment, which firms under the registered trade mark MSA®, MAURER Sliding Alloy. As compared to the hard chromium plated steel calottes, the highly shining MSA®-calottes display a much higher corrosion resistance. A further advantage compared to the hard chromium plated calottes is the fact that the sliding alloy is resistant against fluorine and chlorine in acid solution, as it may occur in some industrial areas.

Also the original objective was achieved. The entire production and surface treatment of the MSA®-calottes is carried out in own premises, which adds up to advantages in production time and efficiency.

Sustainability by way of long life time

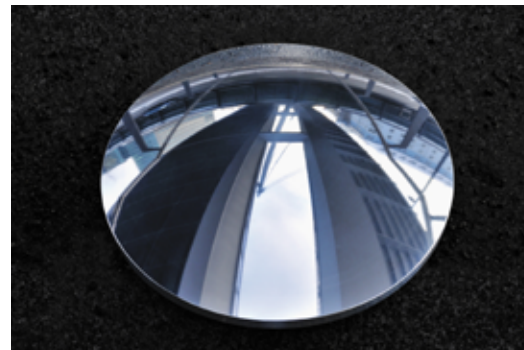
In combination with the sliding material MSM® introduced in 2003, MSA® guarantees a life time of at least 50 years. This means that also under challenging environmental conditions (moisture, flood, industrial air) no premature and cost intensive replacement of these shining calottes is required.

The material characteristics of the new sliding alloy were tested in a third party test laboratory. MSA® proved its durability in long term sliding tests at an accumulated sliding path of 10,000 m, a displacement velocity of 15 mm/s and a contact pressure of 60 N/mm². No wear could be observed, neither an increase of the friction resistance. The latter even lies below the values which are required for polished stainless steel or for hard chrome. Also, the corrosion resistance according to DIN EN 1337-9 could be demonstrated. Composition and surface treatment of MSA® are confidentially registered with Deutsche Institut für Bautechnik (German



Section through a spherical bearing with special sliding material MSM® (black), which is chambered in a calotte made of new sliding alloy MSA®.

Graphic: Maurer Söhne



Shining Chrome? Forget it. Calottes which are made of the new sliding alloy MSA® derive their shine from a special surface treatment. MSA®-calottes not only display a superior resistance against corrosion as compared to hard chromium plated surfaces, but are also resistant against aggressive industrial air.

Photo: Maurer Söhne

Contact for the press

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Institute of Civil Engineering) and with MPA Stuttgart. The European Approval (ETA) is being applied for.

Further Modifications in the Approval

In the course of reviewing the national technical approval AbZ Z-16.4-436, next to the adoption of MSA® two further changes were made:

- Increase of the upper temperature threshold for MSM® from 48° to 70° C
- Inclusion of cylindrical bearings

MSM® also for high temperatures

Since its introduction in 2003, MSM® displays its superior performance as compared to PTFE with a remarkably enhanced performance and reaches even under extreme conditions a life time of at least 50 years. Special characteristics of MSM® as compared to PTFE are the double contact pressure (loads of up to 20,000 to), the five-fold accumulated displacement and the 7.5 fold displacement velocity.

So far, the use of MSM® was regulated in the European Technical Approval ETA for a temperature range from -50 to +48° C. Now, in the course of this approval, this temperature range was extended to +70° C. This extends the use of MSM® to practically all climate conditions world wide.

Cylindrical Bearings

Newly adopted in the national technical approval AbZ Z-16.4-436 were also the cylindrical bearings. A cylinder instead of the calotte means that only rotations around the cylindrical axis are possible. In case that structural constraints call for this characteristic, then geometrical advantages can be created, for example when replacing roller bearings or in special geometrical conditions, because these cylindrical bearings are of a rectangle dimension in ground view, and the side by side relations are almost arbitrarily selectable. Of particular advantage is the use of cylindrical bearings as sliding isolation pendulum bearings for the structural protection in the following situations. In case of earth quake, or in case of "elastic" support, when the movement of the pendulum should occur only in one direction, or, when two combined pendulum bearings should be used in crossing directions that is, each one moving in its plane.

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