

HSS crushing rollers for grinding wheels profiling

The crushing rollers for the profiling of grinding wheels, if we exclude the diamond rollers, can be constructed in HSS, carbide or high-alloyed steels.

In any case, they must have a hardness of at least 64 HRC to ensure an acceptable efficiency.

It would be also possible to build the rollers with non-tempered steel but, in this case, the wear would proceed too fast to allow profiling with tight tolerances.

The rate at which proceeds the wear of a roller depends on the depth and type of the profile, but to have an idea about how many rollers can be consumed, we may refer to the profiling of a grinding wheel, starting from the peripheral surface of a cylindrical grinding wheel.

In this case it takes at least 2 crushing rollers to get a good profile tolerance.

Of course, the rollers can then be renewed again with a grinding operation.

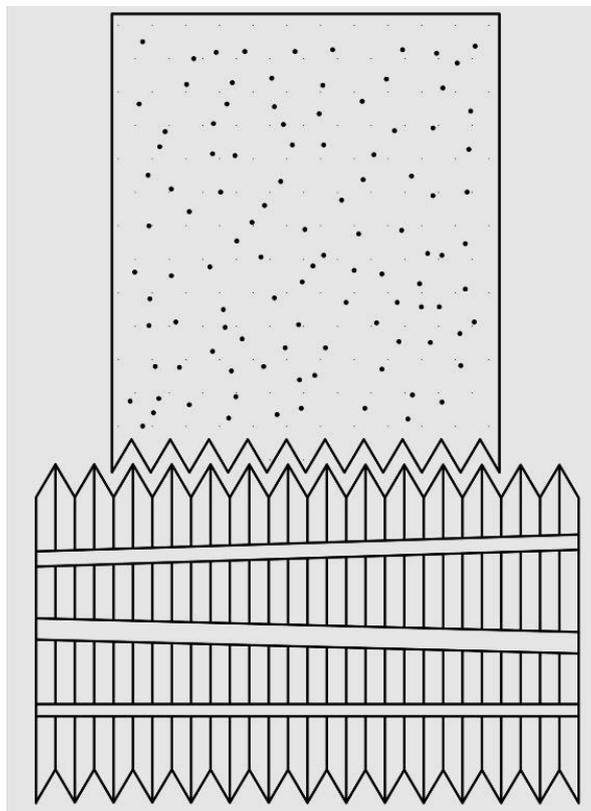


Figure N°1

The longest HSS roller life will be reached with approx. 1m/s peripheral speed of the grinding wheel during crushing. The higher the peripheral speed of the grinding wheel, the higher the speed of formation of the profile of the grinding wheel, that is why the roller wear becomes greater.

By reducing the grinding wheel peripheral speed you increase the profiling time and reduce the roller's wear. Therefore you will have to compromise between the profiling time and the roller's wear.

Any error in the radial or axial rotation of the roller causes a corresponding error on the profile of the grinding wheel. The eccentricity in the radial direction and the runout in the axial direction should not exceed 0.01 mm.

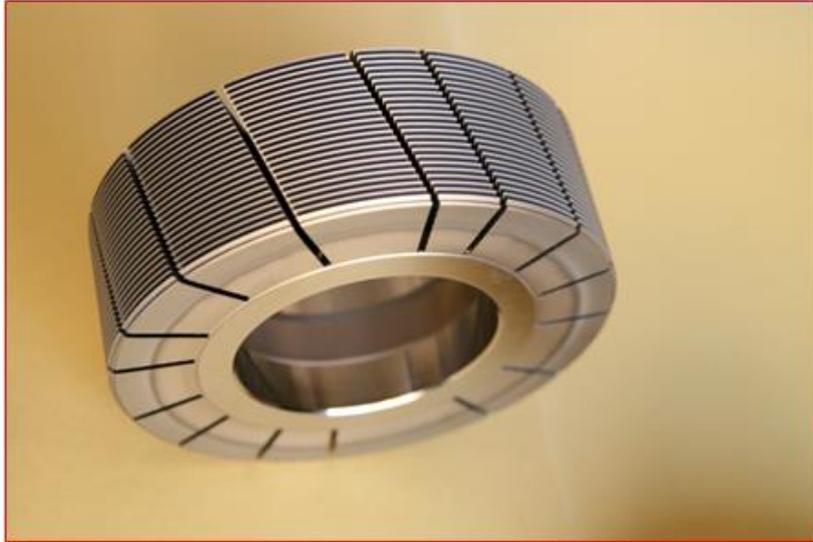


Figure N°2 - *Crushing roller manufactured by **miniToolsCoating** (Padua -Italy)*

During profiling, with a peripheral speed of 1 m / sec, it is very important that there is no slippage between the grinding wheel and the roller: the roller would be worn out immediately.

The best way is that the grinder wheel is motorized and that the roller is driven, because the grinding wheel has a larger diameter and therefore a greater dragging force (torque), and the roller is easily dragged due to its small mass.

You might also drag the grinding wheel by the roller, but this would require a higher pressure of the roller against grinding wheel and there would be danger of slippage, especially in the case of new wheel profiling.

The feeding speed of the crushing roller against the grinding wheel should have a value of 0,5-1 μm /wheel revolution.

miniToolsCoating (Padua - Italy) is specialized in manufacturing and resharpening of HSS crushing rollers.

As a result of the continuous improvement of steels and coatings types, has been developed an optimal combination of these two elements with excellent results for the duration of the roll.

Building the crushing roller with steel S390 and coating with ALTICROME, it was found that the lifetime of the roller doubled to equal conditions of use.



Figure N°3- *Maximum care in packaging and transportation*