



CrN-SS

SuperSlip coating for plastics tools

The Tribology Centre has developed an extremely effective coating for injection molding tools, which provides both wear protection and significantly better release than traditional CrN PVD coatings. The new chromium nitride coating has been named CrN SuperSlip (CrN-SS).

The coating is specially developed for forming tools for plastics, such as e.g. cores. By using the CrN-SS coating, Winther Mould Technology A/S, a highly specialized Danish mould technology manufacturer, has achieved significantly shorter cycle times through an improved demoulding. At the same time, the operational temperature window for the moulding process was widened considerably, which allows a much more robust production.

The coating is used routinely within injection moulding of a number of medico-related and other high-precision products. One of Denmark's largest plastics manufacturers concludes that they have achieved significant demoulding improvements, using the CrN-SS coating.

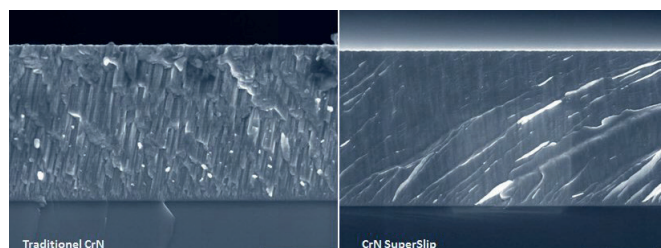
Example of threaded cores coated with the new CrN SuperSlip (CrN-SS). The cores are produced and performance-documented by Winther Mould Technology A/S.

The coating is fundamentally different from the standard PVD coatings usually available on the market.

As can be seen from the Scanning Electron Microscopy (SEM) images below, the CrN-SS coating has quite another crystal morphology, where the characteristic larger columnar crystals and associated grain boundaries are basically avoided.

The result is a smoother and more dense coating in accordance with the impression, the images below give. In addition to this, the chemical composition in the surface of the CrN-SS coating is altered by ion implantation to optimize the release properties against the most commonly used plastic materials.

Below a SEM image of the crystal morphology of a traditional CrN coating and the new CrN SuperSlip coating. The CrN-SS crystalline structure is more dense and thus provides other surface properties. Moreover it is approx. 10% harder because of the denser CrN phase.



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