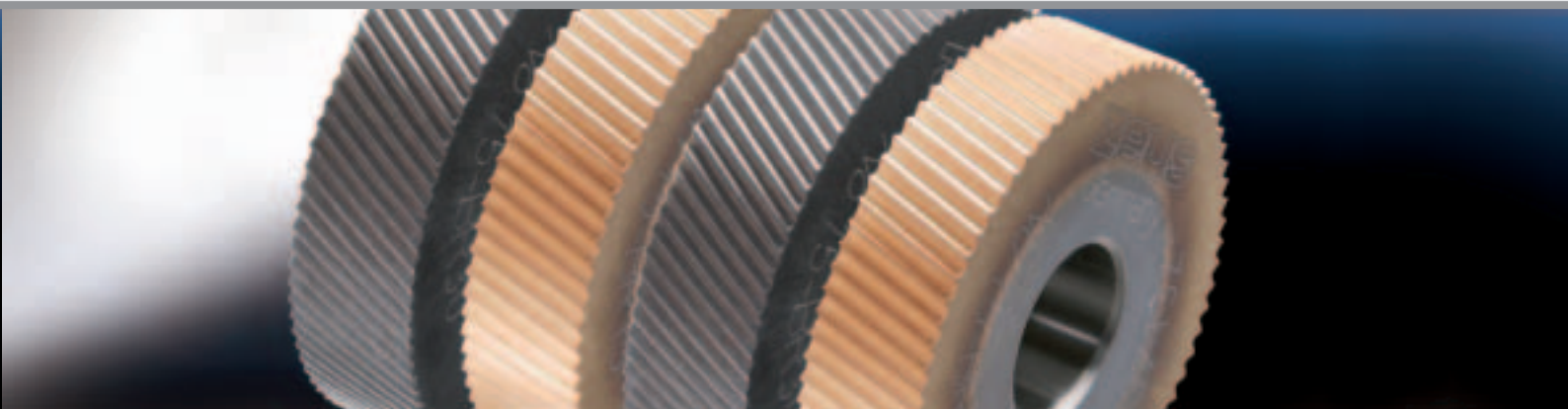


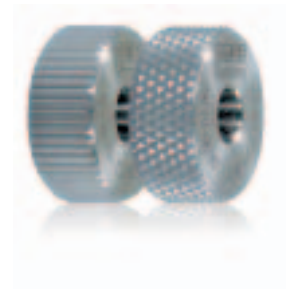
AFTER-TREATMENT FOR INCREASED TOOL LIFE



With an optimal surface finish that is adjusted to the material processed, a substantial increase in tool life can be realized. The optimal after-treatment depends in all cases on the application itself (knurling technique applied, material processed, knurling wheel dimension, feed and speed rate, etc.). The following options are available:

■ POLISHED KNURLING WHEELS

For adhesive materials that require an optimal chip-flow, we recommend fine-polished knurling wheels. zeus® knurling wheels are polished in-house with a special technique that allows a highly-precise rounding of the edges and excellent surface smoothing. The precise edge rounding of the tooth flanks enhances the edge stability and prevents built-up edges. Premature breakage of the knurling wheels' teeth can thus be prevented. Moreover, polished knurling wheels are a cost-effective alternative to ground carbide knurling wheels, that are commonly used for adhesive materials.



■ HEAT TREATMENT – TENIFER®-TREATMENT (NITRIDING)

TENIFER®-treatment in salt-bath plants is applied for increasing the knurling wheel's wear resistance and endurance strength. By the nitrocarburizing treatment, the material's case hardness is augmented.



■ SURFACE TREATMENT – PVD COATINGS

Further possibilities to increase tool life is to apply an application specific PVD coating. As a standard we can offer TiN, TiCN, TiAlN, TiAlCN, which are especially suitable for cut knurling applications.



The ideal after-treatment should always be determined by a field experiment, considering the application parameters, i.e material processed, feed and speed rates, knurling technique, etc.