



Press Release

Henkel sets high standards with Multan 97-10 D

The unbelievable cutting fluid

Henkel's water-miscible cutting fluid Multan 97-10 D has been a success since it was launched in the year 2000, and is now regarded as a benchmark. Specially developed for machining all aluminum alloys, it demonstrates its strengths in particular in difficult cutting operations such as reaming and tapping. Users benefit from excellent lubricating performance, longer tool life, lower consumption volumes and altogether more cost-efficient manufacturing processes. The emulsifier combination used to achieve this performance has now been patented. Multan 97-10 D also scores highly in terms of occupational health, due to its good skin compatibility.

Henkel has marketed cutting fluids for more than 30 years as part of its industrial surface treatment products business. In doing so, the company has been a driving force behind the development of innovative products that combine high performance and cost efficiency with stringent hygienic and ecological demands. With Multan 97-10 D, Henkel's chemists have even achieved a first; this finely dispersed emulsion, with its intrinsic outstanding rinsing properties, has lubricant properties that are superior even to those of coarsely dispersed emulsions.

Top marks for machining quality

Multan 97-10 D is suitable for all current cutting tool materials and for machining processes such as reaming, tapping, thread milling, milling, turning, drilling, forming and grinding. Not only aluminum alloys but also steel alloys, cast iron alloys and nonferrous metals can be machined. Companies using the cutting fluid for the first time are often astonished by the outstanding metal-cutting capacity and low levels of tool wear. Build-up edges, for example, are a thing of the past, as the machining of soft

aluminum alloys such as AlMgSi0,5 demonstrates. Sensational results were achieved by one car component supplier, who uses special reamers to manufacture aluminum cases. The tool previously had to be replaced after the production of 20 parts, but with Multan 97-10 D it was still in use after machining 10,000 parts. The high quality of the surface finish was confirmed by studies at the French research institute Cetim. Comparative measurements of form, tolerance and roughness when an aluminum alloy (AlSi6Cu3Mg) was machined with PCD-coated reamers demonstrated the clear superiority of Multan 97-10 D over conventional cutting fluids. The reduced tool wear was confirmed by the same institute by carrying out torque measurements during drilling. The lowest value, indicating the lowest power input and therefore the least wear, was measured for Multan 97-10 D.

High level of cleanliness, low level of consumption

Multan 97-10 D utilizes all the advantages of the good rinsing properties of a finely dispersed emulsion. Measuring instruments and tools remain free from sticky deposits, while the clean removal of the chips has a positive effect on the processed parts. Because the emulsion drains off the parts quickly, they are clean and dry after they have been machined. Moreover, the cutting fluid offers very good corrosion protection. Factors such as temperature fluctuations and ventilation in large production shops are no longer a threat to the parts stored there. The name Multan 97-10 D stands for use at water hardness levels of 5°dH and more. The cutting fluid was initially developed for the Scandinavian region, where soft water (0° to 5°dH) and deionized water is used. In Scandinavia, the D is not included in the product name. Outstanding results were also achieved with this product variety by a German company that is dependent on the highest possible standards of production line cleanliness for the manufacture of high-precision parts. The cutting fluid that was previously used was prepared using municipal water and replenished using deionized water. In the search for a way of preparing the initial batch with deionized water, Multan 97-10 revealed itself as the ideal solution. It generates no foam from the beginning, without the aid of additives, and the low drag-out rate of the emulsion during the subsequent cleaning stage is also impressive. The use of Multan 97-10 to prepare the initial batch with DI water has proven itself in terms of both the qualitative result and the total process costs. The first reason for this is the economy of use of the cutting fluid, for which the typical initial fill concentration is about 6 percent and the top-up concentration 1.3 to 1.5 percent – less than half of the concentration levels of conventional water-miscible cutting fluids. Other factors are the product's excellent microbacterial stability and long service life. While the emulsion prepared with conventional cutting fluids had to be replenished after just four months, due to the production equipment being completely soiled, the emulsion prepared with Multan 97-10 had generated no undesirable soiling after six months (this

is the time for which DI water has so far been used for the production process). The experience of numerous other companies confirms that a service life of two, three or more years can be achieved without any difficulty. Henkel provides a laboratory service to support the companies with the continuous monitoring of the emulsion stability. At the end of the day, factors such as reduced tool wear and lower maintenance costs play a role, alongside low consumption and longer service life, in cutting process costs. The reduced cost of wastewater treatment also enduringly reduces the burden on the balance sheet.

Excellent skin compatibility

The success of Multan 97-10 D is attributable to a novel concept, which still gives Henkel a unique market position. The Company obviously has no desire to make known the formulation of its innovative cutting fluid; it has merely indicated that the product is boron-free and contains no compounds of phosphorus, sulfur or chlorine. The formulation is partly synthetic, containing both mineral and vegetable oils. The crucial element is a patented novel emulsifier combination, which remains a secret of the Henkel chemists. Skin compatibility was one of their major considerations during the development phase, in which they worked closely with dermatologists from the Group's cosmetics research department. As no gloves can be worn while certain metal cutting operations are performed, the composition of the cutting fluids is very important. It was decided that problematic ingredients such as chloroparaffins would not be included in Multan 97-10 D. The low application concentration and good emulsion stability are also factors that contribute to the very good skin compatibility of the cutting fluid. This has been frequently demonstrated by dermatological tests and the excellent acceptance of the product in practice. Many companies have chosen to use the product, not least in the interests of the health of their employees, which is not just a cost factor. For the Henkel developers, the numerous advantages of Multan 97-10 D are no reason to rest on their laurels. With the objective of increasing the technology leader's position, they have long been working to make the successful cutting lubricant even more "unbelievable".

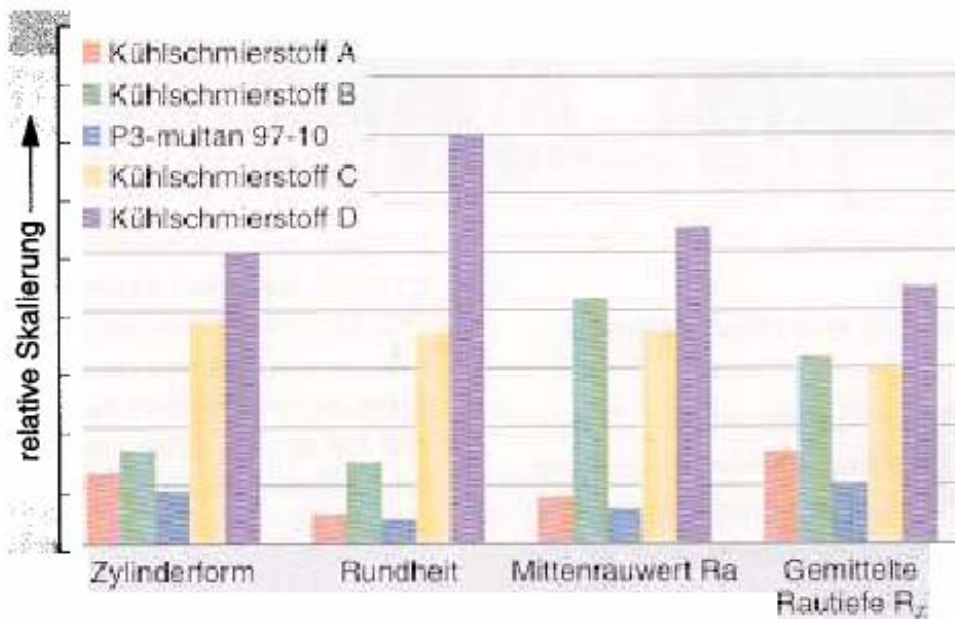
Proposed photos and captions:

1. Motif: Photo showing cutting fluid in use



Excellent surface finish and less tool wear: No build-up edges even on soft aluminum alloys.

Motif: Chart of form tolerance and roughness values



Comparative measurements of form tolerance and roughness values while using different cutting fluids confirm the superior performance of Multan 97-10 D over conventional cutting fluids.

2. *Motif: Comparative photo showing cutting fluid in a unit with DI water*



No foam, no dirty deposits: Multan 97-10 impresses in the initial fill with DI water and through its excellent bacterial stability.

3. *Motif: Bovine udder (skin compatibility test)*



Dermatologically tested using the BUS model (bovine udder); skin protection experts were closely involved in the development work.

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[Grafik, Seite 5]

relative Skalierung = Relative scale

Zylinderform = Cylinder

Rundheit = Roundness

Mittenrauwert = Arithmetic average deviation

Gemittelte Rautiefe = Average maximum height of profile