MARQUENCH 729

high performance marquenching oil

PETROFER
industrial oils and chemicals

Application

In former times only salt baths had been used for martempering (hot-quenching) operations. With the development of sealed furnaces (batch-type and pusher as well as pit-furnaces) the application of quenching salt baths became more and more limited. Salt residues which will unavoidably be carried with the racks and baskets into the furnaces, can destroy ceramic material as well as heat-resistant steel and may influence the carburizing atmosphere.

Replacing salt baths with quenching oils, which were applied in the normal temperature range, sometimes led to undesirable distortion.

The first oil baths which were employed at hot-quenching temperatures had poor quenching properties and low aging stability.

In the early 70s the MARQUENCH oils were developed for application especially in the above described furnaces. They guarantee optimal aging stability as well as the required quenching properties.

The most widely used type of this range, MARQUENCH 729, has widely spread over all industrial branches where high hardness and minimum distortion are required. Due to its interesting quenching characteristic, it is not only applied in the temperature range of 120 - 150°C but also at lower temperatures (60 - 100°C).

Typical applications for MARQUENCH 729 are quenching of:

- gears and shafts
- bearing rings and needles
- all kinds of stamped parts made from thin sheet as e.g.:
- parts for knitting and weaving machines
- needles and pins

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PETROFER CHEMIE, Römerring 12-16, D-31137 Hildesheim; Phone + 49 51 21 / 76 27-0, Fax + 49 51 21 / 5 44 38
Mail: info@petrofer.com, Web: http://www.petrofer.com

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Physical data

Density/20°C	DIN 51757	0,875	g/cm³
Flash point	EN ISO 2592	235	°C
Fire point	EN ISO 2592	265	°C
Viscosity	DIN 51562		
at 20°C		246,0	mm²/s
at 40°C		75,0	mm²/s

Quenching properties

The extremely short vapour phase in combination with the evaporation stability guarantee for the single part as well as for a batch a very uniform and rapid cooling of the whole workpiece surface.

For a gear e.g. this means the most minimal temperature differences between tooth-tip and tooth-ground, all flanks are cooled practically at the same time which avoids unnecessary thermal stresses.

The low quenching rate at the end (in the temperature range of martensitic transformation) reduces thermal stresses even more.

This quenching characteristic sets the limits for MARQUENCH 729 on the other hand. Heavy cross-sections of pieces from steels with lower hardenability will probably not show full hardness. So the application of MARQUENCH 729 should be limited to smaller work.

For heavier workpieces, which should be hot-quenched, the application of MARQUENCH 875 is recommendable.

Aging stability and service life

MARQUENCH 729 has an extraordinarily good aging stability and provides long service life. The volume of the bath should be in a proper relation to the weight of the quenched work. For open baths the minimum ratio is 10:1, for sealed furnaces the ratio 7:1 is recommended; referring to the gross weight of one batch or the amount of quenched work per hour.

Heat exchangers should not provide a strain of more than 1 W/cm^2.

Do not use copper for the cooling components or other attachments in the bath, because copper accelerates the aging speed of mineral oil products significantly.

Avoid incorporation of air by a too vehement agitation.

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Cleaning of work-pieces after quenching

Furnaces as described above, in which MARQUENCH 729 is mostly applied, are usually equipped with washing machines.

Residues from MARQUENCH 729 can be removed in soaking or spray washing machines with aqueous hot cleaners (e.g. FEROCLEAN N-SF). It can also be removed with all kinds of solvents.

If the MARQUENCH 729 E-version is applied, it can be washed off with pure water. Ask for special information on E-quenching oils

Control

Bath temperatures for MARQUENCH 729 vary in a wide range depending on the application. Temperatures below 60°C should not be applied because the viscosity remains too high. In open tanks temperatures above 110°C are usually not applied.

The upper range of the application temperature 120 - 150°C (maybe 180°C) is used under protective resp. carburizing atmosphere.

Take care: Keep the oil always free from water!

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