

MARQUENCH 729

HIGH PERFORMANCE MARQUENCHING OIL

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.

BENEFITS

- short vapour phase
- high ageing resistance
- low-distortion
- high control of dimension and form

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 in Hildesheim by our company 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.

Recommended bath temperatures: 60 - 130 °C. It may be applied at temperatures up to 150°C under protective atmosphere, depending on oxidative load.

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

PHYSICAL DATA

Appearance	black
Density/20 °C (DIN 51757)	approx. 0.870 g/cm ³
Flash point (EN ISO 2592)	> 228 °C
Fire point (EN ISO 2592)	approx. 265 °C
Viscosity/20 °C (DIN 51562/1)	approx. 246.0 mm ² /s
Viscosity/40 °C (DIN 51562/1)	approx. 74.0 mm ² /s
Viscosity/50 °C (DIN 51562/1)	approx. 46.0 mm ² /s
Neutralisation No (DIN 51558)	0.0 mg KOH/g
Saponification No (DIN 51559)	0.0 mg KOH/g
Ash content (EN ISO 6245)	0.25 %
Conradson-Test (DIN 51551)	0.90 %

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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.

AGEING 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/cm².

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.

CLEANING OF WORKPIECES 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.

Take care: Keep the oil always free from water!

HANDLING AND STORAGE

Always observe the recommended use by date on the container.

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