Park Metallurgical Corporation

TECHNICAL DATA

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AAA QUENCH OIL

CHARACTERISTICS:

AAA QUENCH OIL is designed to provide maximum cooling rates for austenitized steels. Its formulation guarantees good stability because the mineral base intensifier will not saponify, stratify, nor filter out. AAA QUENCH OIL can be used as a quench from any heating medium and is especially suitable for developing maximum oil-quenched hardnesses in medium and low alloy steels. It is widely used as a quenching medium for carbonitrided work where uniform quenching rates and clean, easily washed work are so important.

AAA QUENCH OIL achieves its faster cooling rates by an intensified action in the initial stages of quench cooling. Heat removal is rapid in this critical range where transformation to soft structures must be avoided. The quench oil provides slower cooling through the martensitic transformation range, (M_s-M_f), than other competitive oils do. This insures that the higher and deeper hardnesses produced are not accompanied by increased warpage and breakage. Testing demonstrates AAA QUENCH OIL's superior heat removal characteristics which often mean the difference between partial and complete hardening in actual practice.

Distortion in oil quenched parts is more often due to slow, non-uniform cooling than to fast, uniform quenching. This is due to the thermal variations and mixed microstructures which ordinary quenching oils produce. A fast uniform quench is especially important in batch-type carbonitriding furnaces so that all portions of the load are evenly hardened. The quenching rates and viscosity of AAA QUENCH OIL were designed to satisfy this requirement. Moreover, this quenching oil drains well and is easily washed from the work, where necessary. If left on, it provides a thin film of protection from rust.

You can use AAA QUENCH OIL with confidence. Your parts will achieve maximum oil quenched hardness with minimum distortion or breakage. AAA QUENCH OIL will produce exceptionally clean work when used in the recommended temperature range. No matter what the temperature or the austenitized medium, AAA QUENCH OIL will not saponify or separate, neither can the intensifiers be filtered out. The low viscosity maximizes uniformity of quench throughout a batch load and minimizes drag-out.

FORM:

Typical Properties

Appearance:	Light Amber Oil
Viscosity @ 100°F:	14.0 – 19.3 cSt
Hot Wire @ 140°F:	≥ 33 amps
Nickel Ball Time:	9 – 11 seconds
Flash Point:	≥ 340°F

EQUIPMENT:

All equipment for AAA QUENCH OIL baths may be constructed of mild steel.

OPERATION:

Bath Parameters

Temperature:	130 – 160°F (open tank operation) 100 – 130°F (vacuum operation) 200°F Max (under protective atmosphere)
Velocity:	≥ 100 FPM
Time:	As required for appropriate metallurgical transformation

CONTROL:

The quench speed of AAA QUENCH OIL should be monitored and maintained at ≥ 30 amps at 140°F as measured using a HOT WIRE MACHINE (available from Heatbath/Park Metallurgical). If quench speed becomes lower than 30 amps, a 5% addition of QUENCH OIL ACCELERATOR will restore the speed and reinforce the anti oxidizing compounds in the product. AAA QUENCH OIL may need centrifuging or filtering depending on sediment that is dragged in. Sediment level should be maintained at ≤ 0.5%. Absorption of furnace atmosphere can cause the flash point of AAA QUENCH OIL to lower resulting in poor quench characteristics and fire hazard. Should this occur de-gassing the oil at a temperature not to exceed 275°F will remove the contamination. All efforts should be made to avoid water contamination of AAA QUENCH OIL. Water will cause very erratic quench characteristics as well as posing a serious fire hazard.

Electrical immersion heaters used to raise the temperature of the oil should not exceed 10.0 watts per square inch, in a well agitated environment.

SAFETY:

Precautions should be taken to prevent eye contact with product, minimize skin contact and inhalation of vapor or mist.

As with any chemical, read the product label's health and protective measure information statements before using. **Consult the MSDS for full information on health effects and protective measures.** Utilize necessary protective equipment appropriate for the task at hand and potential exposure to the product being used. Whenever in doubt, STOP and consult with your supervisor before using/working with any chemical.

DISPOSAL:

Used quench oils should be removed by a qualified waste oil disposal service.

Under the Resource Conservation and Recovery Act (RCRA) regulations, it is the responsibility of the product user to determine, at the time of disposal, whether a material should be classified as a hazardous or non-hazardous waste.

NON-WARRANTY:

The data contained in this bulletin is believed by Heatbath/Park Metallurgical Corporation to be accurate, true and complete. Recommended parameters are based on a typical process and may be altered to accommodate specific requirements. Since, however, the final use of the product is beyond our control, no warranty of results is expressed or should be implied.