AAA QUENCH OIL

CHARACTERISTICS:

AAA QUENCH OIL is a clear, gold colored product designed to provide maximum cooling rates for austenitized steels. Its formulation guarantees good stability due to its accelerator package which will not stratify out at any temperature nor can it be filtered out. AAA QUENCH OIL can be used as a quench from temperatures as high as 1750°F and is especially suitable for developing maximum oil-quenched hardness in medium and low alloy steels. It is widely used as a quenching medium for carburized and carbonitrided work as well.

AAA QUENCH OIL is known as a fast quench oil, achieving rapid cooling rates in the nucleate boiling stage immediately following a short vapor phase. It also provides a slower cooling rate through the martensitic transformation range (M_s-M_f) than competitor's fast quench oils. This ensures higher and deeper hardness levels are created without accompanying distortion of parts. Testing demonstrates AAA QUENCH OIL's superior heat removal characteristics are the difference between partial and complete hardening in actual practice.

Overall, distortion in oil quenched parts is proven to be caused by sluggish, non-uniform cooling rates. This is due to the thermal variations and mixed microstructures in the initial stages of the quench which slower quench oils produce. A fast uniform quench is especially important in batch-type carbonitriding furnaces to provide all portions of the load becoming evenly hardened. The quenching rate provided by AAA QUENCH OIL was designed to satisfy this requirement. Additionally, this low viscosity quench oil drains off parts quickly resulting in less drag-out and is characteristically easier to wash off work after quenching. 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 cracking. Lastly, AAA QUENCH OIL will produce exceptionally clean, bright work when used within its recommended temperature range.

FORM:

Properties of new AAA Quench Oil

Anti-oxidation Agent:	Present
Appearance:	Clear, Gold Colored Oil
Viscosity @ 100°F (38°C):	14.0 – 19.3 cSt
Nickel Ball Time:	9 – 11 seconds
Flash Point:	≥ 340°F (171°C) [Typical test value = 370 °F]

OPERATION:

Bath Parameters

Temperature:	77 – 180°F (25 - 82°C) (open tank operation) 77 – 130°F (25 - 55°C) (vacuum operation) 200°F (93°C) Max (under protective atmosphere)
Velocity:	≥ 100 FPM (0.5 MPS)
Immersion Time:	As required for appropriate metallurgical transformation

EQUIPMENT:

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.

CONTROL:

The quench speed of AAA QUENCH OIL can be obtained through testing by DuBois Chemicals. Test method ASTM D6200 - Standard Test Method for Determination of Cooling Characteristics of Quench Oils by Cooling Curve Analysis is performed on as-used samples submitted by customers. If as - used AAA QUENCH OIL quench speed becomes slower resulting in lower hardness levels, a 5% addition of QUENCH OIL ACCELERATOR by volume of the quench system will restore the speed, increase hardness levels and reinforce the anti-oxidizing agent in the product. AAA QUENCH OIL may need centrifuging or filtering depending on sediment dragged into it during production.

Sediment level should be maintained at ≤ 0.5%. Absorption of furnace atmosphere can cause the flash point of AAA QUENCH OIL to become lower than 340°F (171°C) resulting in poor quenching characteristics or create a possible fire hazard. Should this occur, de-gassing the oil at temperatures between 250 - 275°F (121 - 135°C) will remove the trapped gases. Agitation during the de-gassing process is recommended. All efforts should be made to avoid water contamination of AAA QUENCH OIL, because it will cause very erratic quench characteristics as well as posing a serious fire hazard. Water contamination can be removed from the oil by slowly elevating its temperature to 250°F (121°C) for two hours with agitation.

SAFETY:

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

As with any chemical, users should read the product label's health and protective measure information statements prior to handling. Consult the SDS for full information on health effects and appropriate PPE for workers handling AAA QUENCH OIL. In general, whenever in doubt, STOP and consult with your supervisor with any safety concerns before using/working with any chemical.

DISPOSAL:

Use a licensed waste disposal company to remove spent quench oil.

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 information contained in this bulletin is believed by DuBois Chemicals to be accurate, genuine and complete. Recommended parameters are based on typical processes and may be altered to accommodate specific requirements. However, the final use of this product is beyond our control; therefore, no warranty of results is expressed or should be implied by this technical data sheet.