

Bohai Magnetorheological Fluids

MRF - A172

Description:

Bohai A172 is a hydrocarbon-based magnetorheological fluid, which can be used in active or semi-active control dampers, brakes, clutches, hydraulic valves and other products, especially suitable for intelligent control, vibration reduction and other fields.

Bohai A172 fluid is a suspension of micron-sized, magnetizable particles in a carrier fluid. When exposed to a magnetic field, the rheology of A172 fluid reversibly and instantaneously changes from a free-flowing liquid to a semi-solid with controllable yield strength.

Bohai A172 fluid can be used in valve mode (fluid flowing through an orifice) or in shear mode (fluid shearing between two surfaces). In the absence of a magnetic field, A172 fluid flows freely or allows free movement. Upon application of a magnetic field, the fluid's particles align with the direction of the field in chain-like fashion, thereby restricting the fluid's movement within the gap in proportion to the magnetic field.

Features and Advantages:

- **Quick Response Time:** it can respond immediately and reversibly by changing the magnetic field.
- **Dynamic Yield Strength:** high yield strength in a magnetic field, low yield strength without a magnetic field, and wide controllability.
- **Temperature Resistance:** stable operation in a wide temperature range, meeting the requirements of demanding applications such as automotive shock absorbers;
- **Hard Settling Resistant:** high resistance to hard settling, easy to redisperse;
- **Non-Abrasive:** This product does not cause abrasion to the device.

Instructions for Use:

Mixing: Under flow conditions, there is no separation between the particles and the carrier liquid. However, settlement will still occur under static conditions. If needed, use a paint shaker to redisperse the particles into a homogeneous state prior to use.

Storage: Be sure to keep the container tightly closed when not in use.

Properties:

Density: 2.30 ~ 2.45 g/cm³

Operating Temperature: -40 ~ 140 °C

Viscosity: 0.050±0.02 Pa·s (500-1200 sec⁻¹, 40°C)

Product	Grade	Main Ingredients and Weight Percentage			Magnetic Particles	
		Magnetic Particles	Carrier Fluid	Additive	Wt %	Vol %
MR Fluid	A172	≥72%	≥23%	≤5%	72%	22%
		Fe、C、O、N	C、H	C、H、O、S		

Precautions:

- Before using this product or any Bohai product, please refer to the product manual for accurate product performance and safe operation. Only for industrial/commercial use, not for consumer use.
- The values listed in this technical data sheet represent typical values, and not all materials produced are fully tested. For official product specifications regarding the end use of a particular product, please contact us.

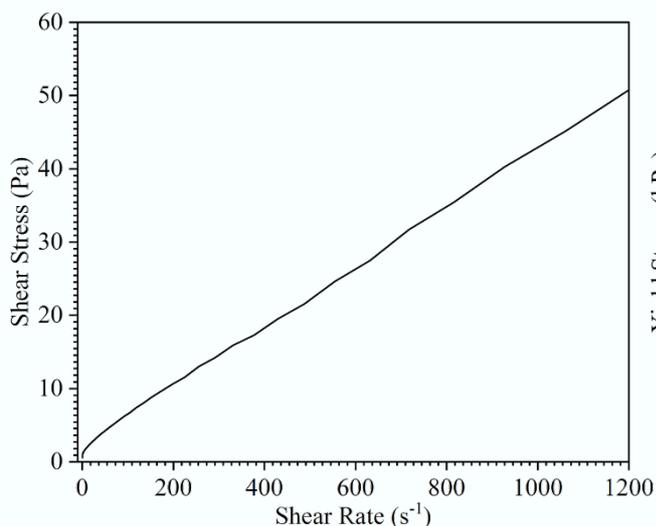


Fig 1: Shear Stress as a function of Shear Rate with no Magnetic Field applied at 40°C

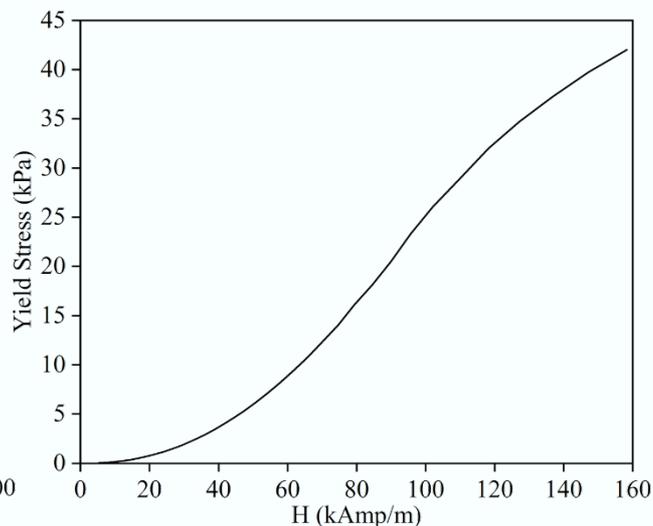


Fig 2: Yield Stress vs. Magnetic Field Strength at 40°C

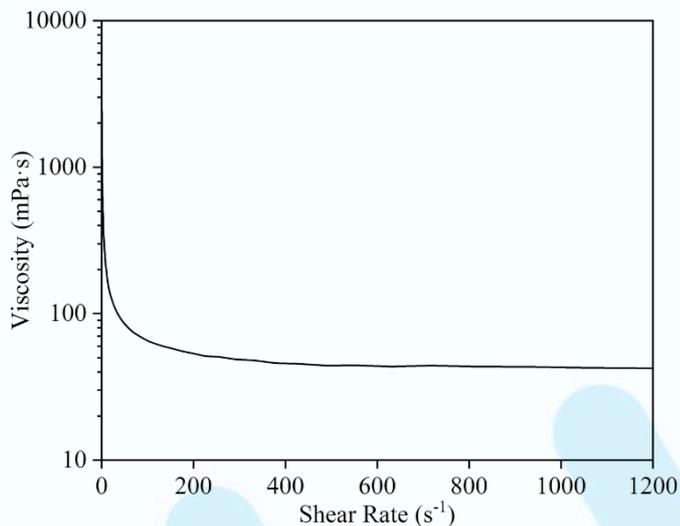


Fig 3: Viscosity vs. Shear Rate at 40°C

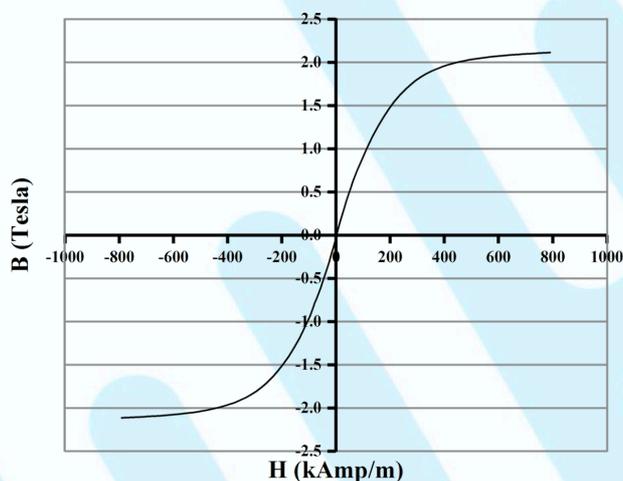


Fig 4: Typical Magnetic Properties

* The information provided in this article is based on reliable testing. If any third party (including but not limited to any product end user) repackages and sells the product, the company cannot guarantee that the performance of the product matches this specification.