

HYDRAULIC OILS FOR PLASTIC INJECTION MOLDING

It can be very difficult to choose the right hydraulic oil to obtain optimum performance in a hydraulic application due to the number of fluids on the market. It becomes even more difficult when the hydraulic applications require fluids to possess numerous OEM performance specifications and features. The user will then need to understand and evaluate numerous product specification and data sheets to determine the best performing fluid for their applications.

Most premium hydraulic oils are designed to provide excellent anti-wear protection properties, high oxidation stability for long oil life, good protection against rust and corrosion, fast water separation, good foam inhibition, and low toxicity. There are other performance features that, sometimes, are not well understood, and can have an impact on the performance of the hydraulic fluid. The formulation of a high performance premium hydraulic fluid has a direct impact on whether or not it can improve the productivity and/ or energy efficiency of the application. One way that premium hydraulic fluids are able to increase the efficiency is their ability to stay in the "sweet spot" of the viscosity curve in the overall hydraulic system. Other properties of the premium hydraulic fluids also contribute to this phenomenon through lower fluid friction and/or even lower boundary friction of the moving components. All of these elements together benefit the overall hydraulic system not only in its gains in efficiency, but also in wear protection, and potentially lower overall operating temperatures.

Premium hydraulic fluids are formulated for use as long-life lubricants, with a dramatically longer oxidation stability life (ASTM D943 test) than conventional hydraulic fluids. A longer oxidation stability life equates to longer service life, which may improve the customer's bottom line. This level of oxidation stability is especially applicable in high efficiency (high speed, high temperature, high output) applications where reservoirs may be smaller and severe stress is placed on the hydraulic oil.



Viscosity Sweet Spot



Cleanliness of the hydraulic fluid and the hydraulic application is essential to maintaining the longest possible service life of the fluid and to ensure trouble-free operation of the hydraulic machine. System cleanliness starts with keeping the hydraulic fluid clean and free of contamination during storage and installation. The supplier must ensure that the fluid is clean when it is delivered to the customer. The customer needs to follow proper storage and handling procedures to ensure that the fluid is clean when it is installed in the machine. Following these steps will help prevent contamination of the fluid by materials such as dust, water and dirt.

Even though fluid suppliers are careful to deliver only clean fluids, a filtration system should be used to transfer the fluid to the machine reservoir. The degree of filtration should be the same as the filtration system that is being used in the plastic injection machine. The high cost of equipment downtime and the cleaning and repairing costs of plastic injection molding machines have caused many organizations to place more importance on the care and handling of hydraulic fluids. The level of oil cleanliness required for the hydraulic system of the plastic injection molding machine depends primarily on the machine's precision and in-service reliability. Excessive contamination can cause improper system operation by clogging small orifices and small clearances in the hydraulic system.



Our premium hydraulic fluid product line includes ashless and non-ashless multi-viscosity (high VI) and monograde hydraulic oils (VI = 100).

Classification	Multi-Viscosity (High VI) Hydraulic Oils	Monograde Hydraulic Oils
Ashless	Clarity® Synthetic Hydraulic Oil AW	Clarity Hydraulic Oil AW
Non-Ashless	Rando [®] HDZ	Rando HD

Selecting the right fluid requires:

- Understanding equipment operating parameters (loading, component tolerances, reservoir size, filtration or ISO cleanliness requirements, and desired warranty period).
- Understanding typical operating conditions such as ambient temperature ranges and contamination sources and levels (dirt, water, chemicals etc.).
- Typical user maintenance practices and desired objectives (extended lubrication intervals, extended component service life or moderate-to-light use).

The ashless multi-viscosity (high VI) hydraulic oil recommended for use in plastic injection molding machines is Clarity Synthetic Hydraulic Oil AW. These hydraulic oils are formulated with carefully selected synthetic base stocks and a proprietary ashless, zinc-free additive system that provide a high Viscosity Index, exceptional oxidation stability, water separability, foam suppression, and protection against wear, rust and corrosion. The combination of base stocks, additives, and Viscosity Index improvers are unique and allow for improved hydraulic response time (productivity), energy efficiency, longer oil life, and increased operating temperature range over conventional hydraulic fluids. The response time and efficiency varies within the equipment temperature ranges and are more a function of operating temperature and not ambient temperatures.

We also manufacture an equivalent monograde version, Clarity Hydraulic Oil AW, which is formulated using premium base stocks and a proprietary ashless and zinc-free additive system providing exceptional oxidation stability, water separability, foam suppression, and protection against wear, rust and corrosion.

HYDRAULIC OILS FOR PLASTIC INJECTION MOLDING

Chevron

Rando[®] HDZ 32, 46, and 68 are Chevron's premium zinc-based non-ashless multi-viscosity (high VI) hydraulic oils. They are formulated with premium base oil technology, have a high viscosity index, and are designed to give robust anti-wear protection to hydraulic pumps. These products possess high oxidation stability, with good water separability and foam suppression performance, and protect against rust and corrosion. These products provide improvements in overall hydraulic pump and system efficiency when compared to typical monograde hydraulic oil. Rando HD 32, 46, and 68 are the monograde equivalents to Rando HDZ.

In the United States and Mexico, ISOCLEAN® Certified Lubricant Marketers now offer both Clarity® Synthetic Hydraulic AW and Clarity Hydraulic AW Oils and Rando HDZ and Rando HD hydraulic oils as Chevron ISOCLEAN Certified Lubricants. Chevron ISOCLEAN lubricants have been pre-filtered to specified ISO cleanliness levels to remove particulates and to meet specific OEM recommendations for your equipment. Proper lubrication helps increase equipment life, reduce disposal costs and reduce maintenance and service time. Every delivery of Chevron ISOCLEAN Certified Lubricants has gone through a rigorous testing process. Proper lubricant storage is critical to maintain the product integrity of a lubricant and to ensure that it will perform as expected in the equipment application. Poor storage conditions can introduce particulate and moisture contamination, cause the lubricant to deteriorate and lose performance properties, and become unusable. Disposal arrangements and the handling of waste oils can create unwanted expense. A checklist that can be reviewed for proper storage guidance is presented in a Chevron technical publication "Execute Proper Product Storage and Handling Standards."



chevronlubricants.com



Chevron Reliability — The RBLTM Program is our commitment of business support and reliability: Chevron's lubrication expertise combined with superior products and a tailored service program work together to help your business Run Better Longer.