

TYPES OF INDUSTRIAL OILS

Industrial lubricants include hydraulic fluids, gear oils, turbine oils, metalworking fluids and greases. Hydraulic fluids and gear oils are described in the following sections. Grease requirements are covered in the *Ready Reference for Grease*, which is available from your Lubrizol representative. In general, specifications for these products are set by original equipment suppliers and standards organizations. Following are the performance requirements for general industrial lubricants.

ANTIWEAR (AW) OILS

Typically, mineral oil-based lubricants contain an antiwear agent. The antiwear agent can be zinc-containing, such as zinc dithiophosphate (ZDP), or non-zinc based on sulfur/phosphorus. These lubricants can also contain demulsifiers, antifoam agents, rust inhibitors, oxidation inhibitors, metal passivators and other additives. Viscosities range from ISO 22 to ISO 220. Multigrades are also used.

CIRCULATING OILS

The bearings in machine equipment operate at high speeds, under heavy loads and for long periods of time. These severe operating conditions generate high temperatures at the bearing surfaces, which in turn lead to high lubricant temperatures. The high temperatures cause accelerated oxidation of the lubricant, leading to shortened lubricant life and other maintenance problems. To avoid or minimize these problems, the lubricant is circulated through the bearing and allowed to cool before returning.

Circulating oils are typically mineral oils formulated to provide long oxidation life and thermal stability. They should also provide rust protection, good water separation and good antifoam characteristics. Viscosity can range from ISO 32 to ISO 1000, depending on the application.

COMPOUND OILS

Compound oils are typically mineral-based lubricants containing animal or vegetable fats to improve slipperiness or lubrication. They were some of the first formulated lubricants used.