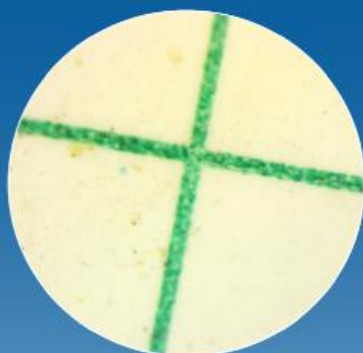


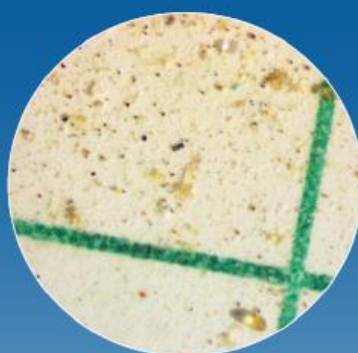


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ISO CLEANLINESS CODE PER ISO 4406



ISO CODE: 18/16/13



ISO CODE: 23/22/18



ISO CODE: 28/26/21

Know Your Numbers: Understanding ISO Cleanliness Codes

Think about this: what's the most critical part of the building you're standing in? Quite simply, there is no building without a foundation. You may not see it or think about it, but it's there, below the surface – that solid base that sets the stage for the structure and everything it holds.

The oils, lubricants and hydraulic fluids you use in your equipment play the same role. A clean lubricant is the foundation for maximizing component life. When contaminants you can't even see reside in lubricants, they threaten equipment reliability. And that can disrupt your business operations and drive up maintenance and equipment costs.

Today's equipment is engineered to exact tolerances and designed to operate at higher pressures, which makes meeting lubricant cleanliness standards more important than ever. Those standards are defined by ISO (International Organization for Standardization) Cleanliness Codes, a universally accepted method of measuring contamination in fluids.

How small are these particles?

ISO Cleanliness Codes identify particle sizes, expressed in microns. The particles in lubricants that typically cause the most damage are in the 2 to 15 micron range. One micron, by the way, equals one-millionth of a meter (there are 25,400 microns in one inch). To put that in vivid perspective, the human eye can only see particles larger than 40 microns.

The only way to identify the [presence of fluid contamination particles](#) is routine and accurate sample analysis. And therein lies another challenge—there are three or four types of particle counting technologies, and as many or more different counting methods. So, even when testing the same fluid sample, you're likely to see varied results.

Sampling methods also can affect accuracy, which is another reason it's hard to ensure that results are always accurate when particles are measured.



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Why use ISO Cleanliness Codes?

Only accurately measured ISO Cleanliness Codes can ensure that fluid contamination is not having an impact on equipment reliability and performance. It's easy to see why they should be used. Consider these two examples:

- Replacing four hydraulic system pumps per year on end dump trailers will cost a sand and gravel hauler \$9,600 for parts and oil, labor and lost revenue. Maintaining the proper ISO Cleanliness Code of the hydraulic fluid can double pump life, effectively cutting that cost in half.
- Using hydraulic fluid without the optimal ISO Cleanliness Code in mining shovels can cut equipment life as much as four times. Using lubricants with the proper ISO Cleanliness Code could save as much as 25% per year in hydraulic system maintenance.

To help ensure performance and wear protection, equipment manufacturers also issue fluid cleanliness recommendations. What's most important, though, is to ensure that lubricants meet ISO Cleanliness Codes from the start.

Aren't new fluids already clean?

Surprising as it sounds, it's not always true that new lubricants meet the equipment manufacturer's requirements. [Fluid handling procedures](#) can introduce contamination every time a lubricant is handled at the manufacturing plant, in distributor and user bulk storage systems, even when it is being transferred in and out of delivery vehicles.

Contaminants also can be introduced during maintenance and repair procedures.

Another common but incorrect assumption is that bulk storage and on-board filtration systems will eliminate particle contamination. That often leads equipment operators to invest in solutions that are not only ineffective, but also convey a false sense of security.

Particle contamination has a direct impact on equipment performance, cost and lifecycles, and remains the number one cause of lubricant-related component failure. Lubricants are the foundation of stationary and mobile equipment. Starting clean, with a [certified lubricant](#) that meets the equipment manufacturer's ISO Cleanliness Code requirements, is the most vital step in maximizing equipment life.

Let us help — [CLICK HERE](#) to find out more about Chevron ISOCLEAN Certified Lubricants and how they can help you meet your equipment manufacturer's fluid cleanliness requirements.

***Editor's Note:** If you were wondering why the acronym for the International Organization for Standardization is not "IOS" it's because there would need to be different acronyms in different languages (in French it would be OIN for Organisation Internationale de Normalisation). Instead, the organization's founders decided to use "ISO" from "isos", the Greek word for equal.*