

Headline: Moving beyond NSF H1: What the ISO 21469 lubricant standard means for food safety

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Since 1998, when the National Sanitation Foundation (NSF) assumed administration of the H1 registration program from the U.S. Department of Agriculture (USDA), concerns about food safety have only increased. In 2000, the Global Food Safety Initiative (GFSI) was formed to benchmark various food safety standards used throughout the entire food supply chain. Then, in 2011, the Food and Drug Administration (FDA) implemented the Food Safety Modernization Act, which shifted the focus from responding to food contamination problems to preventing them. In the intervening years, the ISO 21469 standard was introduced in 2006. The ISO 21469 standard is voluntarily implemented by lubricant manufacturers who care to do so. This certification creates new benchmarks for lubricant manufacturers that ultimately benefit end-users by taking a holistic approach to the manufacturing of food-grade lubricants, covering the sourcing of raw materials, formulating, blending, filling and shipping.

The ingredients of the NSF ISO 21469 lubricant standard

In general, food-grade lubricants perform typical lubricant functions: reducing wear, friction, corrosion, oxidation and heat buildup. In addition, they must resist microbial growth and degradation from food ingredients, chemicals and water/steam, while being odorless, tasteless and chemically inert.

Specifically, NSF H1 registration indicates the specific lubricant is acceptable for incidental food contact and can be used in food processing areas. H1 lubricants must be formulated from an FDA-list of approved ingredients known as 21 CFR 178.3570, and be properly labeled and reviewed for the proposed end use.

H1 registration does not, however, validate the manufacturing process. The ISO 21469 standard addresses those issues — and others.

The ISO 21469 program evaluates the lubricant in terms of:

- Formulation and label review to ensure ingredient safety and label accuracy
- Risk assessment to ensure the manufacturer has identified and evaluated relevant hazards in the lubricant's manufacture and use
- Production facility audits to confirm adherence to quality procedures and good manufacturing practices
- Analytical testing to verify integrity of product composition

In other words, ISO 21469 looks at both the lubricant formulation and how it is made as a whole. It accounts for the lubricant and its ingredients, as well as the manufacturing process, handling, packaging and storage. The goal of this holistic approach is to ensure the lubricant is not only manufactured in accordance with the standards, but that it is also delivered intact and free from outside contaminants.

The ISO 21469 standard provides a detailed lubricant definition and requires the use of such lubricants for incidental contact – not only with food products, but also cosmetics, pharmaceuticals, tobacco and animal feed.

Furthermore, ISO 21469 specifies that an American National Standards Institute (ANSI) accredited certification program should provide an independent, third-party assessment that the lubricant conforms to the International Organization for Standardization's (ISO) hygiene requirements.

What the ISO 21469 lubricant standard brings to the food-safety table

To become a certified production facility, lubricant manufacturers take steps to meet the standard – including a hygiene strategy that takes into account any chemical risks (such as cleansing agents and non-approved raw materials), physical risks (including adulteration by foreign substances picked up from machinery) and biological risks (presence of pathogens, toxins, etc.) associated with the intended use of the lubricant.

The extra diligence involved with NSF ISO 21469 catches factors that can be overlooked, such as the process of switching from the production of one formulation to another. With NSF ISO 21469 Certification, a risk analysis on cleaning procedures is performed to ensure the separation from alternative industrial lubricants.

Since NSF's ISO 21469 Certification Program was introduced, a wide range of certified products are now available, such as synthetic refrigeration compressor oils that offer high resistance to oxidation. Synthetic gear oils are available that are formulated to resist aging and oxidation, while extending service life and improving gear efficiency. Another product is a fluid grease with a soft consistency that provides good lubrication to the friction point, along with a special thickener for good adhesion and corrosion protection to extend component life.

Certified lubricant manufacturers can also advance end-users on their own quality journey. For example, by analyzing hygiene issues that arise from handling the product, manufacturers certified by NSF to ISO 21469 are in an excellent position to provide better guidance to customers on best practice recommendations within their own facilities.

With the NSF ISO 21469 certification, products are being manufactured through a hygienic process that works to avoid risks for contamination. Support on best practices to the end user can include guidance on the proper storage, handling and use of these lubricants to further mitigate these types of risks and deliver more than food safety. An important best practice recommendation in the food industry is proper product labeling at the application point. The use of clear grease guns, as well as proper labeling and setup of appropriate storage areas, may also be recommended. This ensures the chosen food-grade lubricant makes it into the correct lubrication point.

Automated lubrication methods may also be recommended. These methods may include different types of central lubrication systems. For example, one system can provide grease from one reservoir to multiple bearings — another can deliver oil from one tank that can feed different drip nozzles for a baking oven chain. Single point lubricators may be recommended to provide a slow but continuous and defined volume of lubricant to an application point to minimize outside contamination.

The bottom line benefits for NSF ISO 21469 Certified lubricants

Compared to the existing H1 lubricant registration, the NSF ISO 21469 certification adds significant requirements with which the lubricant manufacturer must comply. NSF ISO 21469 certification verifies formulation and label compliance, requires manufacturing risk assessments, requires third-party

production facility audits, and involves analytical product testing. These points ensure that NSF ISO 21469-compliant lubricant products will consistently meet food safety requirements; this is a significant benefit to the end user.