

PELLET MILLS



Clarion Food Grade Lubricants include white mineral oils, hydraulic fluids, greases, synthetics and specialty lubricants and are widely used in a variety of food processing operations as well as the manufacturing of drugs and cosmetics. These lubricants meet the most stringent standards of purity and performance and can be categorized into two groups:

- NSF 3H registered products used for applications where the purity of the oil is paramount due to the possibility of direct contact with food for human consumption.
- NSF H-1 registered products used for processing and packaging machinery where the possibility of incidental contact with food product exists.

Following is a Q&A with Sandy Cowan, Clarion grease expert, about pellet mills and food-grade greases.

What is a pellet mill? Animal feed is sometimes formed into the shape of pellets. To pelletize animal feed, a mixture of the feed components is extruded through small holes in dyes and is either cut or broken into small pieces for easy consumption. The equipment used for this process can be exposed to high pressure, moisture, vibration, and corrosive materials. For these reasons, it is important to select an appropriate pellet mill lubricant.

What type of grease should be used in the pellet mills that process animal feed? Selecting the correct pellet mill lubricant is not only important for reducing equipment wear, but using an appropriate lubricant is equally important for the health of our pets and livestock. Pellet mills can vary significantly in size, shape, and configuration. The amount of moisture, the composition of the food, the pressure, the frequency at which the lubricating grease is added, the temperature, the rate at which the feed is extruded, and the abrasiveness of the materials being processed also can vary. For these reasons it is difficult to make one grease

recommendation that is optimum for use in all pellet mills. There are some guidelines, however, that should be considered when selecting the best grease for this application including those outlined in the Food Safety Modernization Act (FSMA) which applies to human food as well as food for livestock and pets.

What is a food-grade grease? Food-grade greases have not always been used in animal feed processing equipment. The trend today, however, is to use an H1 registered food-grade grease in this application. H1 registered greases are acceptable for use in applications where incidental contact with food is possible. The quantity of lubricant contaminating the food cannot exceed 10 ppm. To meet the requirements for H1 registration, the grease must contain components that have been determined to be safe for incidental contact with food. H1 compliant greases are formulated with chemicals listed in the U.S. Code of Federal Regulations 21 CFR 178.3570, chemicals that are generally recognized as safe (GRAS), or chemicals determined to be safe according to other approved sources. Grease types that can be considered for use in H1 registered greases include aluminum complex, calcium sulfonate, polyurea, clay, calcium 12-hydroxystearate, silica, PTFE, and calcium complex. Lithium soap and lithium complex greases do not qualify for H1 registration. Acceptable base oils include food grade synthetic oils and white mineral oils. Additive concentrations and types are also restricted.

Who determines if a grease meets the H1 registration requirements? Prior to 1998, the USDA issued H1 approvals for nonfood compounds which included lubricants. When the USDA discontinued this service some grease manufacturers self-certified their food grade lubricants. Today NSF International and InS Services offer H1 registrations that closely follow the USDA guidelines.

How can I tell if a grease meets the H1 requirements? Products that are registered with NSF International or InS Services have a registration mark and registration number printed on the label. Registrations can also be viewed online at <http://info.nsf.org/usda/psnclistings.asp> or at <http://www.insservices.eu/insservices-non-food-compounds-registration.asp>.

What is the future demand for food pellet mill lubricating grease? It is predicted that the food-grade grease demand for use in pellet mills will increase. The U.S. population is projected to increase, which likely will lead to increased consumption of beef, poultry, and pork products. An increased awareness of the importance of using food-grade lubricants in facilities that process food for livestock would also lead to an increase in the demand.

Are there additional requirements for a pellet mill grease? The load, pressure, corrosiveness, and temperature in pellet mills can be extreme. Therefore, it is generally recommended that the grease consist of a high temperature grease type, be fortified with extreme pressure (EP) and antiwear (AW) additives, and contain additives that resist rust and oxidation. The optimum viscosity of the base oil can be determined by calculations based on the inner diameter and outer diameter of the bearing, the operating temperature of the bearing, and by the speed of the bearing in revolutions per minute. It is critical that a proper re-lubrication schedule be established in order to obtain the optimum bearing life.

Summary. There are many factors to consider when choosing the best lubricant for use in a food processing pellet mill. A grease meeting the H1 requirements for incidental contact with food should be used, the grease type should be appropriate for the operating temperature, and the additives should be adequate to protect against pressure, wear, oxidation, and corrosion. ●

