



TECHNICAL DATA

102 Barton Street, St. Louis, Missouri 63104

In-State (314) 865-4100/Out of State 800-325-9962/Fax (314) 865-4107 <http://www.schaefferoil.com>

#287 FOOD GRADE FLUSHING AGENT

Food Grade Flushing Agent is a non-toxic, non-drying, anti-wear flushing and cleaning lubricant that can be used to clean and flush all types of processing and packaging equipment in food, beverage, feed, and pharmaceutical processing plants where there is a possibility of the possibility of incidental contact with food, foodstuffs, beverages, pharmaceuticals and drinking water, or potable water. Food Grade Flushing Agent can also be used in applications where a switch from a H-2 to an H-1 food grade product is required.

Food Grade Flushing Agent is a petroleum hydrocarbon based fluid that is blended from ingredients that comply with the requirements of the United States Code of Federal Regulations 21CFR 178.3570, 178.3620(b), and 573.680 of the United States Food and Drug Administration's Regulations is registered with and meets NSF International's guidelines for use as a lubricant with incidental contact (H1) in and around food processing areas. Food Grade Flushing Agent is fully compatible with petroleum based lubricants such as USP White Mineral Oils, Technical White Oils, Paraffinic or Naphthenic based mineral oils and synthetic based fluids such as Polyalphaolefins (PAO), Synthetic Hydrocarbon based, Polyol Ester and Diester based fluids. Food Grade Flushing Agent is also compatible with seals and elastomeric materials, paints and coatings which are known to be compatible with petroleum based lubricants.

Food Grade Flushing Agent can be used along with the existing lubricant in order to lean and flush bearings, gear cases, hydraulic systems, chains, airlines, pneumatic tools and other type of equipment of carbon and varnish deposits, debris, sludge, dirt, etc, without teardown and dismantling of the equipment. This results less downtime and savings in labor costs.

While Food Grade Flushing Agent has excellent cleaning and load carrying capabilities it should always be used along with the existing lubricant at the recommended treatment levels for flushing and cleansing.

(Continued on Next Page)

TD-287 (12/2009)

The following procedures should be followed when using Food Grade Flushing Agent.

Gear Box Cleaning Procedure

Clean the gear boxes in accordance with periodic maintenance schedules. Attention should be given to breather seals, sight glasses and fittings.

It is recommended that water and moisture should be removed first from the gear boxes using the following procedure:

1. Open drain plug
2. Drain until milky fluid and/or water and sediment stops running out of the gear box.
3. Replace the drain plug.
4. Clean breather and sight glass.
5. Fill to the required level.

Change-Out Procedure

1. Drain approximately 10 to 20% by volume of the existing lubricant being used in the gear box.
2. Add a charge of 10 to 20% by volume of Food Grade Flushing Agent to the existing lubricant one to five days prior to change-out. The percentage of Food Grade Flushing Agent to use depends upon the severity of contamination.
3. After the unit has ran for one to five days with Food Grade Flushing Agent, while the unit is still warm pull the drain plug and drain the system completely.
4. If possible add a small charge of new oil under pressure to flush any remaining contaminants that may be left behind.
5. When the gear box is empty clean the breather, sight glass, screens, and the heat exchange systems if they exist.
6. Change any filters and recharge the system with 276 Synthetic Food Grade Gear Lube H-1 in the appropriate ISO viscosity grade.

(Continued on next page)

Gear Box Cleaning Procedure Continued

Change-Out Procedure When Switching From H-2 Gear Oils

1. Drain approximately 10 to 20% by volume of the existing lubricant being used in the gear box.
2. Add a charge of 10 to 20% by volume of Food Grade Flushing Agent to the existing lubricant one to five days prior to change-out. The percentage of Food Grade Flushing Agent to use depends upon the severity of contamination.
3. After the unit has ran for one to five days with Food Grade Flushing Agent, while the unit is still warm pull the drain plug and drain the system completely.
4. When the gear box is empty clean the breather, sight glass, screens, and the heat exchange systems if they exist.
5. Fill the gear box with a mixture of 90 to 95% 276 Synthetic Food Grade Gear Lube H-1 in the appropriate ISO viscosity grade and 5 to 10% of Food Grade Flushing Agent.
6. Run the mixture for 8 hours at low pressure and loads.
7. While the gear box is still warm completely drain the system.
8. When the gear box is empty clean the breather, sight glass, screens, and the heat exchange systems if they exist.
9. Change any filters and recharge the system with 276 Synthetic Food Grade Gear Lube H-1 in the appropriate ISO viscosity grade.
10. Take a sample after 150 – 200 hours of operation in order to monitor the fluid's condition.

Hydraulic System Cleaning Procedure

Change-Out Procedure

In the cleaning of hydraulic systems the recommended procedure to use will depend upon both the size and the condition of the system. For smaller systems drain up to 50% of the hydraulic fluid and replace it with the Food Grade Flushing Agent. This mixture should be used for no more than 2 hours of normal operation. After two hours of operation the hydraulic fluid should be drained, the filters changed and the system charged with #280 Food Grade HTC or #269 Hydraulic Oil H-1 in the appropriate ISO viscosity grade.

For larger hydraulic systems or where it is not practical to drain as much hydraulic fluid from the system, it is recommended draining off enough hydraulic fluid so that the addition of 10% to 30% of the Food Grade Flushing Agent can be added to the system. This mixture should then be run for a period of two to four hours to thoroughly clean all deposits and debris. Next drain the system, change the filters and refill with 280 Food Grade HTC or 269 Hydraulic Oil H-1 in the appropriate ISO viscosity grade. Frequently check the filters as this is the key for collection of any discharged residue.

Note: If the hydraulic system is unusually dirty, the initial run may have to be done without filters and an open line to discharge chunks of thickened hydraulic fluid, dirt and debris. Immediately follow this flush briefly for 30 minutes with a mixture of Food Grade Flushing Agent and clean unused hydraulic fluid to thoroughly lean lines, valves, etc. Change the filters and recharge the system with 280 Food Grade HTC or 269 Hydraulic Oil H-1 in the appropriate ISO viscosity grade.

. Change-Out Procedure When Switching From H-2 Hydraulic Fluids

1. Follow the directions found in the above procedure for flushing and cleaning the system.
2. Completely drain the hydraulic system including the oil catchers and cylinders.
3. Change the filters and fill the system with a mixture of 90% to 95% 280 Food Grade HTC or 269 Hydraulic Oil H-1 in the appropriate ISO viscosity grade and 5 to 10% Food Grade Flushing Agent.
4. Run the mixture for 8 hours.
5. While the system is still warm completely drain the hydraulic system including the oil catchers and cylinders.
6. Change any filters and recharge the system with 280 Food Grade HTC or 269 Hydraulic Oil H-1 in the appropriate ISO viscosity grade in the appropriate ISO viscosity grade.

Note 1: Regardless of which change-out procedure is used the hydraulic system reservoir should have the following:

1. Venting that is kept clean.
2. Easy drain plugs (magnetic plugs if possible).
3. Baffle or a baffling system to control fluid motion. Entry and exit ports should have extended piping and bias cut close to the reservoir bottom.
4. Fittings, piping, exit and entry ports should be machined (no burs to control agitation).

Continued on next page

5. **A filtration system to help control moisture or a desiccant type filter on the breather.**

Valves, gauges, pressure and operating temperature should be monitored regularly. The use of routine oil analysis is advisable especially if operating temperatures are in excess of 150°F/65°C.

Bearing Flushing and Cleaning Procedures

1. Remove bottom bearing cap plug if one exists.
2. Prepare a grease gun with a mixture of Food Grade Flushing Agent and grease.
3. Inject the mixture into the bearing and run for no longer than 2 hours.
4. If necessary, repeat steps 2 and 3 a number of times, then charge the bearing with new grease.
5. Replace the bottom bearing cap.

For severely contaminated bearings use the following procedure:

1. For motor bearings and other bearing housings where there is a drain plug, apply a small quantity of Food Grade Flushing Agent to the bearing housing (remove the zerk fitting).
2. Allow the bearing to run for at least 15 to 20 minutes.
3. Remove the drain plug to permit the resultant mixture to be drained out.
4. Replace the plug and fill the housing to approximately 1/3 capacity and run again for 15 to minutes and drain.
5. Repeat step 4 again if the housing is unusually dirty or loaded with carbon deposits.
6. After the unit is thoroughly cleaned and drained, pump the bearing with either new grease, 195 Supertac Food Machinery Grease or 271 Food Grade Grease until it appears at the drain plug.
7. Replace the drain plug when the grease ceases to ooze from the drain hole.

(Continued on next page)

Procedure for switching from H-2 Greases:

1. Follow the above listed bearing and flushing procedures.
2. After following the procedures fill the bearing with either, 195 Supertac Food Machinery Grease or 271 Food Grade Grease until new grease comes out of the bearing.

Cleaning Air Tools

.Food Grade Flushing Agent is recommended for use in the cleaning of all types of air-operated impact wrenches, rotary grinders, reciprocating air tools and other air operated equipment. To clean and flush air-operated tools and equipment Food Grade Flushing Agent can be fed directly through the airline lubricators or it can be injected into the airline by an oil pump. In cases where air-operated equipment has become sluggish the introduction of Food Grade Flushing Agent through the airline system will flush and clean the unit, eliminating disassembly for cleaning purposes. For continued optimum operating efficiency after the tool is cleaned, use either 280 Food Grade HTC or 269 Hydraulic Oil H-1 in the appropriate ISO viscosity grade.

Rotary Screw Air Compressors Flushing Procedures

Food Grade Flushing Agent is recommended for use in the cleaning and flushing of air compressor where an H-1 type product is specified for use. For non-food grade applications consider the use of #131 Neutra Fuel Stabilizer and follow the directions found in Technical Bulletin 080303 Compressor Change-Over Procedures For 112 HTC, 254 HTC Supreme and 158 Pure Synthetic Compressor Oil

1. Drain the compressor oil immediately after shutdown while the fluid is still warm. This should include all possible drain points.
2. Check all the filters as well as the air/oil separator. If they are in good condition proceed to step 3. If the filters and air/oil separator are heavily contaminated, change them at this time since the use of Food Grade Flushing Agent may result in the carbon deposits and varnish being removed during use. Fill the compressor with a mixture of 50% Food Grade Flushing Agent and 50% new clean oil.
3. Run the compressor **under no load** for a period of 2 to 24 hours. The run time will be decided in part by the severity of contamination and the condition of the air compressor.

(Continued on next page)

Rotary Screw Air Compressors Flushing Procedures Continued

4. Drain the mixture from the air compressor at all drain points as completely as possible. This should be done immediately after shutdown.
5. Change the filters and air/oil separator to ensure that all contaminants and oxidized oil are removed from the compressor.
6. Refill the compressor with either #280 Food Grade HTC or #269 Hydraulic Oil H-1 in the appropriate ISO viscosity grade.
7. An initial sample should be taken after 100-150 hours of operation. Oil analysis will determine the condition of the oil and if further flushing is necessary.

Procedure for switching from H-2 Air Compressor Oils

1. Completely drain the compressor Drain the compressor oil immediately after shutdown while the fluid is still warm. This should include all possible drain points.
2. Follow steps 2 through 5 as found in the Rotary Screw Air Compressor Flushing Procedure.
3. Change the filters and air/oil separators and fill the system with a mixture of 90% to 95% 280 Food Grade HTC or 269 Hydraulic Oil H-1 in the appropriate ISO viscosity grade and 5 to 10% Food Grade Flushing Agent.
4. Run the mixture for two to four hours.
5. While the system is still warm completely drain the air compressor. This should include all possible drain points.
6. Change any filters and air/oil separators. Recharge the system with either 280 Food Grade HTC or 269 Hydraulic Oil H-1 in the appropriate ISO viscosity grade.
7. Take a sample after 100 – 150 hours of operation in order to monitor the fluid's condition.

Cleaning Chains

For contaminated chains, Food Grade Flushing Agent can be applied directly to the chain by the means which the chain lubricant is dispensed. If Food Grade Flushing Agent is applied under pressure this will increase the effectiveness of the cleaning process. Food Grade Flushing Agent should not be used in chain applications that exceed 200°F/93°C.

Note2. : The flushing cleaning and change-over procedures that are mentioned in this technical data sheet will always be superseded by specific flushing and cleaning instructions that may be listed in the manufacturer's original equipment manual. Schaeffer Mfg stresses the need to follow the OEM's instructions prior to the introduction of Food Grade Flushing Agent.

NSF Registration Number for 287 Food Grade Flushing Agent is 140925.

Typical Properties

Specific Gravity @ 60°F/15°C	0.8588
Viscosity @ 40°C, cSt, ASTM D-445	22.00 – 25.00
Viscosity @ 100°C, cSt ASTM D-445	4.00 – 5.50
Flash Point °F/°C (ASTM D-92)	248°F/°120C
Pour Point °F/°C (ASTM D-97)	-20°/-29°
Four Ball Wear Test (ASTM D-4172) (1 hour/40kg/130°F/54°C Wear Scar Diameter, mm	0.5
Rust Test (ASTM D-665) Procedure A (Distilled Water)	Pass
Procedure B (Salt Water)	Pass

Packaging: #287 Food Grade Flushing Agent is available in 5-gallon pails, 55-gallon drums and 275-gallon totes.