



# ROYAL FLUSH

## OIL CIRCULATION SYSTEM CLEANER

### BEYOND SYNTHETIC™

#### FLUSHES AND CLEANS OIL CIRCULATION SYSTEMS SAFELY AND EFFECTIVELY

Royal Purple's Royal Flush is a safe, effective and inexpensive product for cleaning sludge and varnish from equipment while in service. Royal Flush can be used in three ways: First, Royal Flush can be added to an existing oil to clean varnish and sludge from equipment prior to draining the existing oil. Second, Royal Flush can be used as a temporary oil fill to clean varnish and sludge from equipment before refilling with new Royal Purple oil. And third, Royal Flush can be used as a temporary oil fill for cleaning and flushing a polyglycol oil that is incompatible with the new oil to be used (i.e. when changing from a polyglycol oil to a Royal Purple PAO or para-synthetic oil).

Royal Flush is an undyed product.

#### CLEANING SLUDGE AND VARNISH FROM EQUIPMENT

Royal Flush may be used as a temporary replacement oil for cleaning equipment. When adding Royal Flush to an existing oil to clean sludge and varnish, Royal Purple recommends a treat rate of 15 to 25 percent. Because Royal Flush is available in only one viscosity and is not a fully formulated oil, machine loads and oil viscosity requirements should be considered when deciding how best to use Royal Flush. Cleaning time and effectiveness will vary depending upon such factors as the cleanliness of the system, the oil temperature, degree of oil agitation, the amount of Royal Flush added to the system and the duration of cleaning.

Flushing / cleaning procedures can vary depending on the type of equipment, the number and location of oil drain points, how dirty the system is, the quality of filtration and the ability to monitor and / or change filters / screens in circulating systems and other service parameters. Royal Flush has some anti-wear properties, but it is not a full formulated oil. It can be used as a lubricant to clean and flush equipment in service for short periods of time. Whenever possible, it is recommended that Royal Flush be circulated throughout the oil system while the equipment is idle. General guidelines for system flushing / cleaning follow.

Please consult with Royal Purple's technical support group at 281-354-8600 for guidance on specific equipment or circumstances.

#### GUIDELINES FOR CLEANING SLUDGE AND VARNISH FROM OIL RESERVOIRS AND OIL CIRCULATING SYSTEMS

In oil circulating systems, dirt, varnish, lacquer and sludge cleaned from the systems will become partially soluble in Royal Flush and be carried to filters and oil pump intake screens. These should be closely monitored to assure continued oil flow. Deposits are also likely to settle to the lowest point of the oil reservoir. Large capacity, bypass or inline filtration is recommended during cleanup for many dirty systems since the standard filters lack capacity and can quickly plug.

#### FLUSHING POLYGLYCOL FLUIDS FROM ROTARY SCREW AIR COMPRESSORS

Polyglycol fluids are not compatible with other mineral and synthetic oils. When a polyglycol based lubricant has been used in a compressor, the system must be cleaned to remove all traces of the polyglycol fluid before any other type of lubricant is introduced. Polyglycol fluids, especially in the presence of water, will gel with other synthetic or petroleum based lubricants. These gels will clog filters, screens and separators and may even stop lubricant flow to critical bearings.

#### FLUSHING PROCEDURES:

1. Drain all of the polyglycol fluid from the system while it is still warm. Drain from the lowest points possible and be as thorough as the equipment allows.
2. Close all drain points and fill the system with clear Royal Flush.
3. Run the system until it loads and generates enough heat to initiate oil flow through the oil cooler. The polyglycol will dissolve completely in Royal Flush.
4. Drain the Royal Flush. (If the Royal Flush is clear, it is still usable. It becomes hazy when saturated with polyglycol.)
5. If the Royal Flush is hazy, it is best to repeat steps 2, 3 and 4 until clear Royal Flush can be drained from the system.
6. Drain the last of the Royal Flush by opening all of the lowest drain points.
7. Change all filters and separators and check screens for cleanliness. (Filters and / or separators that are saturated with polyglycol can not function properly with other fluids).
8. Close all the drain points and refill the system with the proper Royal Purple lubricant.



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## OIL CIRCULATION SYSTEM CLEANER

TYPICAL PROPERTIES*	ASTM METHOD	ISO GRADE
		<b>46</b>
Viscosity	D-445	
cSt @ 40°C		46
cSt @ 100°C		6.3
Viscosity Index	D-2270	79
Flash Point, °F	D-92	470
Pour Point, °F	D-6892	0
Density, lbs/g	D-4052	7.89

\*Properties are typical and may vary

Royal Flush is available in only two viscosity grades, yet there exists the need to clean oil reservoirs containing oil other than ISO 46 and ISO 1000 oils. The following chart provides a guideline for pre-mixing Royal Flush 46 with Royal Flush 1000 to create a new ISO viscosity grade of Royal Flush to attain the ISO grade desired, whether it's for mixing with an existing oil or as a total replacement of the existing oil.

### PERFORMANCE ADVANTAGES

- Safe and Effective Flushing and Cleaning Fluid for Dirty Oil Circulating Systems and Reservoirs
- Effectively Flushes Poly-Glycol Synthetic Oils
- Cleans and Removes Existing Oxidized Oil and Sludge Deposits
- Can Be Used at 100 percent Strength or Be Mixed with Existing Oils for Cleaning
- Can Be Used to Clean Equipment While in Service
- Has Low Volatility and High Flash Point
- Can Be Matched to Existing Oils Viscosity
- Cost Effective

FOR ROYAL FLUSH ISO VISCOSITY	MIX % ROYAL FLUSH 1000	WITH % ROYAL FLUSH 46
1000	100	0
680	89	11
460	78	22
320	67	33
220	56	44
150	45	55
100	34	66
32, 46, 68	0	100