LUBE TECHNI-GRAM

FROM:

LEWIS FOX
DIRECTOR OF TECHNOLOGY

AUGUST 1995

DIELECTRIC STRENGTH

Dielectric strength is pertinent to the study of lubrication and refrigeration, such as refrigeration compressors, because the insulating value of oils is directly associated with moisture content. Well-refined lubricating oils are relatively free of moisture and will resist the passage of an electric current through them. The less moisture they contain, the better insulators they become.

Where dehydrators can be used, small amounts of moisture may be removed from a system after it enters by whatever means. In cases of hermetically sealed units where every precaution is taken to eliminate moisture, by drying the unit or other means, and on which a dehydrator cannot be used after final assembly, the moisture content of oil becomes an important consideration. Therefore, it is necessary to use oils that have been dehydrated to a condition of high dielectric strength.

Lubricating oils can be dehydrated to a condition of extremely low moisture content, resulting in a dielectric strength of 27,500V (volts) or more. For the majority of refrigerating installations where some moisture enters by various means, the demands for high dielectric strength oils is not necessarily as critical as say hydraulic oil applications, as the moisture may be removed by cartridge dryers.

Hydraulic oil used to operate aerial buckets (commonly called “cherry pickers”) must have a high dielectric strength for safety reasons. The higher the dielectric strength, the better the oil resists conducting current. In the event the bucket comes into contact with a high voltage line, a high dielectric strength oil prevents the voltage from being grounded and consequently prevents serious injuries.

The manufacturers of high liners, pole cats, cherry pickers, and other aerial type buckets generally require a hydraulic oil with a minimum dielectric strength of 15KV. **SWEPCO 703 Multi-Grade Hydraulic Oil** and **SWEPCO 704 Anti-Wear Hydraulic Oil** have a 35KV+rating, which is over twice as high as required by most manufacturers.

CABLE ADDRESS "SAYBOLTOIL"
ALL CODES USED — SPECIFY

INSPECTION OF BULK CARGOES
AND LABORATORY ANALYSIS.
SPECIALISTS IN TANK CALIBRATING

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CERTIFICATE OF ANALYSIS #744-75

SAMPLE OF - MARKED: "SWEPCO #704-20."

FROM - SUBMITTED BY: MR. GEORGE P. NEWSOROFF ON 4-11-74.

FOR - SOUTHWEST PETROLEUM CORP.
P. O. BOX 789 PASADENA, TEXAS INVOICE NO:
FORT WORTH, TEXAS 76101 APRIL 15, 1974 <20L> 1886

DIELECTRIC STRENGTH 35+ KV

E. W. SAYBOLT & CO., INC.

DEPUTY INSPECTOR OF PETROLEUM
APPROVED BY NEW YORK PRODUCE EXCHANGE

E.W. SAYBOLT & CO., INC.
PASADENA LABORATORY OFFICE

CUSTOMER REF. NO(S) :
DATE :

LABORATORY ANALYSIS REPORT
VESSEL :
LABORATORY NO. : 883-661
INVOICE NO.:GC-22243A

DESCRIPTION	ANALYSIS
Sample designated as : Hydrolic Oil Identifying Marks : Multi grade antiwear 10W-30 #703 Submitted by : Tim Wilson on 3-25-88 Client : Southwestern Petroleum	TEST: Dielectric Rating METHOD: D-877 RESULT: 35 KV

NOTES

- This laboratory report may not be published or used except in full. It shall not be used in connection with any form of advertising unless written consent is received from an officer of E.W. SAYBOLT & CO., INC.
- Results were based on analysis made at the time samples were received at the laboratory.
- Samples, if any, shall be retained for a period of 45 days unless a longer period is requested in writing.
- Sample nomenclature is designated by the customer.

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