Pyranol® Insulating Liquid

For Transformers and Regulators

INTRODUCTION

Pyranol is the trademark of the General Electric Company for cooling and insulating materials which generically are known as askarels. In addition to the desirable characteristics of mineral oil, askarel has the distinctive property of being nonflammable. Transformer Pyranol is compounded to General Electric specifications and is available in several different forms. The type used in any particular transformer can be determined from the nameplate. Types 1488, 1467 and 1470 are obsolete. Currently used types are A13B3B and A50P524. All replacement or make-up orders should be for Type A13B3B.

REQUISITIONS

The Monsanto Chemical Company, St. Louis, Mo., is in a position to supply quantities of A13B3B Pyranol liquid direct to users. All orders for quantities in excess of 100 gallons should be sent directly to the nearest Monsanto Chemical Company office or their St. Louis headquarters.

Emergency requirements and small orders of 100 gallons or less can be obtained in 5-gallon cans or 30-gallon drums from Rome, Georgia. Send requisitions to Renewal Parts Specialist, General Electric Company, Medium Transformer Department, Redmond Circle, Rome, Georgia 30161.

PRICES

MEDIUM TRANSFORMER-R (086)

Net price f.o.b. Rome, Georgia with transportation charges "collect" for A13-B3B Pyranol liquid, including nonreturnable containers:

5 gallons, including can.....$30.00
30 gallons, including drum.....115.00

CONTAINERS

When A13B3B Pyranol liquid is sold at the prices authorized on this page, the containers become the property of the purchaser, and drums as well as cans are nonreturnable

SHIPPING WEIGHT

5-gallon can and Pyranol liquid..... 75 lbs
30-gallon drum and Pyranol Liquid.....425 lbs

PYRANOL INSULATIONS FOR CAPACITORS

Requests for information on, or quantities of, capacitor Pyranol insulation should be referred to the Manager of Marketing, Capacitor Department, Hudson Falls, New York 12839.

Transformer Pyranol should not be used in capacitors.

PYRANOL INSULATING LIQUID FOR OTHER USES

When a request for information or an order is received for Pyranol liquid to be used in equipment other than GE transformers or GE induction regulators, it is necessary for the factory to have certain information before any action can be taken.

If proposed use is an electrical one, it will probably be necessary to negotiate for a license under GE patents. The inquirer should write to the Patent Attorney, Power Transmission Division, 6901 Elmwood Ave., Philadelphia, Pennsylvania, giving proposed use, expected yearly requirements and other general information on the product to be manufactured, so to determine if General Electric Pyranol liquid is suitable.

If proposed use is not electrical, then a license is probably not required and information should be obtained direct from the Monsanto Chemical Company.

PYRANOL TESTING SERVICE

The General Electric Company will, on request, test samples of the liquid from Pyranol transformers and feeder voltage regulators. Two types of test are available — Normal Routine Miantenance Tests and Comprehensive Diagnostic Tests.

Place requisition on Pittsfield Works (Massachusetts) or Rome Works (Georgia) to cover the preparation of each quart sample and the analysis report of tests results of each sample of the liquid from customer apparatus.

Test reports will include:

(A) Routine Maintenance Tests

Dielectric Strength
Refractive Index
Color
Water Content
Acidity
Comments on condition of sample

The net price for routine maintenance tests for each Pyranol quart sample will be.....$46

(B) Comprehensive Tests

Dielectric Strength
Specific Gravity
Color
Acidity
Water Content
Refractive Index
Percent Scavenger
Free Chlorides
Comments on Condition of Sample

The net price for comprehensive tests for each Pyranol sample will be..... $68

New, clean, one-quart bottles filled with Pyranol liquid will be shipped upon receipt of requisition at Pittsfield, Mass., or Rome, Ga. Sampling instructions are on the bottle and in GEI-65080. Invoice will be issued when the original samples are shipped from Pittsfield, Mass., or Rome, Ga., and this charge will entitle the purchaser to obtain the test results of the liquid returned to us for analysis.

If because of emergency reasons the samples are in other than GE sample bottles, effort should be made to obtain brown glass bottles preferably new from a drug store. Fruit jars are not to be used. Aluminum foil should be used to line the caps. Each bottle should be thoroughly rinsed with Pyranol liquid from the unit prior to sampling, plainly marked with the serial number of the apparatus from which the sample was taken, and whether taken from top or bottom. The temperature of the liquid at the time of sampling and all other pertinent data should be given on a tag attached to each sample bottle and repeated on the requisition placed to cover the testing service. Billing will be at the same prices as given in the preceding paragraphs.

REQUISITION SERVICE

Send requisition and direct any correspondence about it to:

Supervisor, Stock Replacement
General Electric Company
Building 34, Room 346
100 Woodlawn Avenue
Pittsfield, Massachusetts 01201

or

Renewal Parts Specialist
General Electric Company
Redmond Circle
Rome, Georgia 30161

Complete revision since Sept. 30, 1963 issue.

NY 700, 701, 702, 711-713, 721-723, 731-737
CW67, SW67, CW67W, SW67W

MCNS 072595

Prices and data subject to change without notice

GENERAL ELECTRIC

Pyranol® Insulating Liquid

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RETURN OF SAMPLES

Samples to be tested should be sent to:
Materials Laboratory
General Electric Company
Building 11-312
100 Woodlawn Avenue
Pittsfield, Massachusetts 01201
or
Advance Development Engineering
General Electric Company
Redmond Circle
Rome, Georgia 30161

FILTERING

If test results indicate that moisture or other contaminants are present, they can usually be removed by passing the insulating liquid through a Pyranol purifier. This device may be used either as a paper filter press for drying or with fuller's earth and paper for purifying. For details of the filtering procedure, refer to instructions GEH-1031, copies of which are available upon request. For information on drying and filtering equipment, contact the nearest General Electric Sales Office.

HANDLING AND STORAGE

For detailed instructions on the handling and storage of Pyranol, refer to GEI-65080.

ADDITION OF SCAVENGER TO PYRANOL LIQUIDS

The advantage of the modern Pyranol materials A13B3B and A50P524 is inclusion of a diepoxide scavenger, D5D70A. This hydrogen chloride scavenger can be added to any of the older Pyranol liquids to improve their ability to neutralize the dissolved hydrogen chloride gas which might result from an internal fault.

Scavenger addition to reclaimed Pyranol liquid may be necessary since both the older scavenger, tetraphenyl tin, and the new diepoxide scavenger suffer some depletion during reming, particularly when activated earth is used. The diepoxide scavenger, D5D70A, will be used to replenish scavenger deficiencies which occur in any of the Pyranol liquids.

The following suggested additions are based on 100 gallons of Pyranol liquid. For quantities other than those shown, either of Pyranol liquid or scavenger, the required value can be obtained by interpolation.

Scavenger Concentration by Analysis (% by Weight)	Pounds of D5D70A Required
0.0	1.90
0.02	1.65
0.04	1.40
0.06	.90
0.08	.40
0.10	.40

PRICES

MEDIUM TRANSFORMER-R (0&6)

Net price f.o.b. Rome for Compound D5D70A, including container and boxing:

1 quart can (2 pounds) $5.00
1 gallon can (8 pounds) 16.00
NOTE: Minimum Order 25.00

Cans should not be opened until the compound is to be put into the Pyranol liquid. Size of can should, therefore, be selected to total the required quantity.

PERFORMANCE OF PYRANOL LIQUID WITH OTHER MATERIALS

Pyranol liquid is stable and chemically inert. It has no effect on the metals and insulation used in Pyranol filled equipment but is, in general, a powerful solvent for most of the gums, binders, paints, etc., customarily used in oil-filled equipment. For this reason, such materials have been eliminated from Pyranol filled equipment and only carefully selected materials which have proved to be unaffected by the Pyranol liquid are used. It has been found that the ageing of these materials under Pyranol liquid will be approximately the same as under oil.

There will be, however, a leaching effect of trace amounts of Pyranol soluble polar compounds from the materials of construction. These trace compounds have an exaggerated effect on certain electrical measurements commonly used to judge the condition of mineral insulating oil. Tests on samples of transformer and regulator Pyranol materials returned from the field, and other tests in the laboratory, indicate that the power factor will be higher and the resistivity will be lower than those of mineral oil.

MIXTURE WITH OIL

Mineral oil is completely miscible with Pyranol liquid and it is practically impossible to separate the two materials once they have been mixed. It is important, therefore, to avoid contamination of the Pyranol liquid with mineral oil or other petroleum oils, the presence of which definitely influences the vital characteristics of the nonflammability of Pyranol material.

PRESSURE CAUSED BY ARCING

All Pyranol insulated transformers above 25 KVA which are to be installed in buildings in accordance with the National Electrical Code are provided with a mechanical, self-resetting relief device.

The pressure reliefs for indoor Pyranol transformers or Pyranol regulators are so arranged that:

(1) A pipe can be attached thereto through which the gases which are products of arcing can be vented to the outside air;
(2) A gas absorber can be attached thereto containing active materials that will absorb the hydrogen chloride which constitutes the major portion of the evolved gases.

PHYSIOLOGICAL EFFECTS

Pyranol liquids, like mineral oils, can be handled at room temperature without fear of toxic effects. With most individuals, exposure of sensitive areas of the skin to Pyranol liquids will produce skin irritations. Cleanliness among workmen handling the material is an adequate safeguard against such effects. Ordinary detergents or medicinal washes will remove any irritation caused by bringing the liquid in contact with an open cut or skin abrasion. A drop or two of castor oil will neutralize any irritation caused by contact of Pyranol liquid with the eyes.

MONS 072596

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PROPERTIES OF PYRANOL LIQUIDS

Property	Pyranol A13B3B	Pyranol A50P524	ASTM Test Method
Acidity, max, mg KOH/g	0.014	0.014	D 974, D 664
Color, APHA, max	150	150	D 2129
Condition	Clear	Clear	(Visual)
Chlorides, inorganic, max, ppm	0.1	0.1	D 1827
Dielectric constant at 100 C and 1 kc	3.8 to 4.3	4.4 to 4.9	D 924
Dielectric strength, min, kv	35	35	D 877
Fire point	none to boiling	none to boiling	D 92
Pour point, max, deg C	−44	−30	D 97
Refractive index	1.4073 to 1.4085	1.4146 to 1.4166	D 1807
Scavenger content, percent D5070A	0.115 to 0.135	0.115 to 0.135	
Specific gravity	1.560 to 1.571	1.412 to 1.423	D 1818
Coefficient of thermal expansion, cm^3/cm^3 deg C	0.0007	0.0007	D 1903
Viscosity, Saybolt Universal, sec at 37.8 C	41 to 45	50 to 55	D 88
Water content, max, ppm	30	30	D 1533

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