

PHASE III IS INEXPENSIVE, DISPOSABLE, EXTREMELY ACCURATE AND THE UNIVERSAL ACID TEST KIT FOR:

- Mineral oils
- Alkylbenzene oils like Zerol
- EMKARATE RL and Copeland polyol esters
- Polyvinyl ether (PVE) lubricants

How the Phase III Test Kit works

The concentrate of acid in refrigeration oil is expressed as an acid number in mg of KOH per gram of oil (milligrams of potassium hydroxide per gram of oil). The acid number is a measure of the amount of hydroxide solution needed to neutralize the acid in the oil. The more acid there is in the oil, the more potassium hydroxide is needed to neutralize it and, so, the higher the acid number.

In the Phase III test, an acid number of 0.05 mg KOH per gram of oil has been set as the maximum acceptable acid concentration in mineral oil and alkylbenzene oil. In polyol esters, the number is generally accepted as 0.16 mg. Mineral and alkylbenzene oils with an acid number less than 0.05 mg or POE's with an acid number less than 0.16 mg are acceptable and will cause no change in the color of the test kit's acid indicator. However, if the respective oils have an acid number greater than these limits, it will cause the acid indicator to change from purple to pink or clear indicating that the oil is contaminated.

Advantages

- **Simple**- Phase separation makes it easy to see color changes in acid indicator.
- **Universal**- Use one kit for mineral oil, alkylbenzene, POE, and PVE oils.
- **Convenient**- Only two bottles to work with. No glass to break open since bottles have screw caps.
- **Precise**- Phase III is a highly accurate service tool that can save expensive compressor repair and replacement costs.
- **Effective In The Presence Of Dyes**- Many systems will contain dyes, such as fluorescent colored dyes, for leak detection purposes. These dyes render most acid tests useless; not Phase III. Because of its phase separation, Phase III make it easy to test such systems.

Total System Protection

Phase III Refrigeration Oil Acid Test Kit



- **Handy Size**- Several Phase III Test Kits can be carried conveniently in a tool box.

Packaging

1 box **4320-W8**

Testing oil with a Phase III Kit

The Kit consists of just two bottles which contain the precise amount of solution required to conduct one test. The bottles have screw on caps, eliminating the need to break open glass. To test oil, follow this simple procedure:

1. Pour the solution from the small bottle into the large bottle. The bottom layer of this mixture will be purple.
2. Completely fill the small bottle with oil from the unit being tested. Do this immediately after the oil is removed from the crankcase since exposure to air will contaminate the oil and give a false test result.
3. Pour the oil into the large bottle and shake well.
4. Wait two to three minutes. A phase separation will develop as the oil rises to the top of the mixture and an aqueous layer forms on the bottom.
5. If the bottom layer: **Stays purple**- the oil is satisfactory. **Turns Light Pink to Clear**- the oil is contaminated.

If the Test indicates that the oil is contaminated, the system should be drained and cleaned, then refilled with the appropriate oil of the proper viscosity.

Using Phase III with Inhibited Oils

Many inhibited oils contain additive or inhibitors that tend to react like an acid when tested with the Phase III Test Kit. Even when these oils are new, the additives may cause the Phase III Test Kit to indicate the oil has a higher acid number.

Unsatisfactory results found when testing inhibited oils with Phase III do not necessarily mean that these oils are contaminated or unsuitable for use in refrigeration equipment. The results merely indicate that these oils may contain additives which react like an acid making the Phase III Test Kit results invalid. Refer to the following list of oils to determine those which can or cannot be tested with the Phase III Test Kit.

Satisfactory For Use With PHASE III Test Kit

Nu-Calgon C-3S	Calumet
Nu-Calgon C-4S	Calumet
Nu-Calgon C-5S	Calumet
Zerol® 150	Shrieve
Zerol 200TD	Shrieve
Zerol 300	Shrieve
Suniso 3GS	Witco
Suniso 4GS	Witco
Suniso 5GS	Witco
Texaco WF-32	Texaco
Texaco WF-68	Texaco
EMKARATE RL Series	ICI
EAL Arctic 22CC	Mobil

Unsatisfactory For Use With PHASE III Test Kit

Delvac 1120	Mobil Oil Company
DTE Heavy Medium	Mobil Oil Company
American Industrial 31	Standard Oil (Indiana) Co.
Ursa HD20	Texaco
Regal PC	Texaco
WS-5124	Exxon Company
WS-4672	Exxon Company
Tereso No. 52	Exxon Company
Rimula 54802	Shell Oil Company
Tellus 33	Shell Oil Company
Sunvis 620	Sun Oil Company
Sunvis 931	Sun Oil Company
Icematic SW Series*	Castrol

*For the Castrol Icematic SW Polyol esters, use the Acidcheck Test Kit.

TESTING R-11 AND R-113 REFRIGERANT

Most of the inhibited oils which can be tested with the Phase III Test Kit are used in centrifugal systems, and the Phase III Test Kit can be used to check for acidity in centrifugal systems by testing the R-11 or R-113 Refrigerant, even if oil in the systems cannot be checked.

The following procedure should be followed when testing R-11 or R-113 Refrigerant.

1. Pour the solution from the small bottle into the large bottle. The bottom layer of this mixture will be purple
2. Completely fill the small bottle with refrigerant from the unit being tested. Do this immediately after refrigerant is removed from the compressor since exposure to air will contaminate the sample and give a false test result.
3. Pour the refrigerant into the large bottle and shake well.
4. Immediately after shaking, loosen cap carefully to relieve pressure. Wait two or three minutes. When testing R-113, a normal phase separation will develop as the refrigerant rises to the top of the mixture and the aqueous (color-indicating) layer forms on the bottom. When testing R-11, the color-indicating layer will form on the top.
5. If the color-indicating layer: **Stays purple-** the refrigerant is satisfactory. **Turns Light Pink to Clear-** the refrigerant is contaminated.

If contamination is indicated, necessary steps should be taken to free the system from contamination. Consult the equipment maintenance manual for specific instructions.

PRECAUTIONS

DANGER-Flammable-Toxic.

The test solutions contain isopropanol, methanol and toluene. Vapor harmful. Harmful if swallowed. Avoid breathing vapor. If swallowed, call a physician. Do not induce vomiting. Keep out of reach of children.

Read and understand the product's label and Material Safety Data Sheet ("MSDS") for precautionary and first aid information.

The MSDS is available on the Nu-Calgon website at www.nucalgon.com.

