TESTING and CLEANING

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New or overhauled systems must be TESTED FOR LEAKS and THOROUGHLY CLEANED OUT. This can be done in one operation as follows:

Fill the empty system with cleaning solution (5 lbs. caustic soda and 5 lbs. of soda ash in each 1000 lbs. or 120 gal. of water).

Thoroughly vent the system to insure complete filling. Close the vents and start the circulation pump.

Start the burner at low fire, heat liquid to 180°F. Circulate solution at least 24 hours.

During this time, periodically drain off from a low spot some of the solution and replace this volume with clear water. Do this until the fluid in the system is clear. This takes about 24 hours.

When clear, raise the exit fluid temperature to 215-225°F., then turn the burner and pump off.

Next drain the entire system and open all vents. Residual heat will dry out the moisture. When inspection shows the system is thoroughly dry, close all drains and vents.

Now fill the system with Monsanto Aroclor 1248 until the expansion tank gauge reads 1/4 full.

Start the circulating pump and turn the burner on at low heat. Heat the fluid to 250°F. (return temp.) over a two-hour period. During this time, vent the lines every 10-15 minutes to allow any residual water vapor and air to escape. Reinspect the entire system for leaks while fluid circulates. Again inspect the expansion tank to make sure it is 1/4 full.

Finally, set the burner for full heat. Bring system up to normal operating temperature. Adjust all controls for full modulation. Examine all pipelines for expansion, adequate bracing and leaks. Proceed with normal operations.

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Card No. 2 of 3 on operation of Aroclor 1248 heat transfer systems.

GENERAL RECOMMENDATIONS FOR OPERATION and MAINTENANCE of aroclor 1248 HEAT TRANSFER SYSTEMS

The following instructions apply to all Aroclor heating systems and are supplemental to manufacturers' recommendations for the equipment proper.

Start-up Procedure

(follow these instructions any time a system has been shut down long enough for the Aroclor to cool below 150°F.).

1. Start circulation pump and check expansion tank (should be 1/4 full).
2. Start burner on lowest heat and maintain full circulation until return fluid temperature reaches 180°F.
3. Set burner for full heat. Resume normal operation when fluid reaches proper temperature.

Shut-down Procedure

(follow these instructions to prevent localized over-heating when system is being shut down).

a. Shut burner off but maintain full circulation for at least 1/2 hour to dissipate high residual heat in combustion chamber.

b. If air temperature is under 50°F., keep fluid circulating constantly at 200°F.

Precautions in Case of Power Failure

Power failure automatically interrupts the burner operation. When power resumes, start the circulation pump to get rid of any vapor pockets that may have formed in the heater tubes. If fluid is still hot (above 180°F.), full heat may be resumed when pipe knocking (if any) has stopped.

If returning fluid has cooled below 180°F. during power failure and initial circulation, follow Start-up Procedure above.

For more details, consult Monsanto's booklet on "Aroclor 1248 Heat Transfer Data", or contact

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Industrial Fluids Sales, P. O. Box 478—66, St. Louis, Missouri

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Card No. 3 of 3 on operation of **Aroclor 1248** heat transfer systems

GENERAL MAINTENANCE of aroclor SYSTEMS

Observe the manufacturers' recommendations for maintaining all equipment in the system and watch these additional points:

Mechnical Check-points

1. Keep all moving parts lubricated.
2. Routinely check accuracy of readings shown by safety and temperature limit controls.
3. Periodically check heater components (heater tubes, burner, refractory linings).
4. Keep heater surfaces and fuel filters clean.
5. Check water cooling of the circulation pump.
6. Repack stuffing boxes as needed, according to supplier's recommendations.

Aroclor Check-up

Aroclor 1248 is very stable when properly used. Its condition is indicated by its viscosity (see Fig. 6 of Monsanto's booklet, **"Aroclor 1248 Heat Transfer Data"**).

Once or twice a year take a sample of the circulating **Aroclor** fluid and make a viscosity determination. Most plants have the simple equipment needed for this operation. Others send it to an outside laboratory. The fluid will be checked free of charge if a one-quart sample properly packed is shipped to

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In systems operating normally at temperatures not over 600°F. and not subject to frequent power failures (with consequent overheating of fluid), an annual check of the circulating fluid is usually sufficient.

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Aroclor: Reg. U. S. Pat. Off. Trademark for Monsanto chlorinated polyphenyls.

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