CPTHERM™ HEAT TRANSFER FLUID
INSTALLATION GUIDELINES

GENERAL INSTALLATION GUIDELINES:

CPTherm™ is an aqueous heat transfer fluid designed for use in a variety of heat transfer applications. To obtain the optimum benefit of this fluid, it is important to follow good engineering practices. CPTherm™ heat transfer fluid is designed to operate in a range between -70°F and 150°F.

INSTALLING CPTHERM™ HEAT TRANSFER FLUID IN NEW SYSTEMS

Design and Evaluation Criteria

Construct the system using acceptable engineering practices for metallic systems designed to contain aqueous fluids. Standard materials of construction can be utilized with CPTherm™ heat transfer fluid. Steel, cast iron, copper, and bronze are all acceptable along with most plastic and elastomers (see CPTherm™ brochure for list of recommended elastomers).

CPTherm™ heat transfer fluid is not designed for use with galvanized steel, soft solder and zinc containing materials. Potential deterioration of the CPTherm™ fluid and system components may occur if zinc components are used. In the presence of CPTherm™ heat transfer fluid, zinc can react with the inhibitor package and cause solids formation. This will deplete the inhibitor package and act as a catalyst for localized corrosion.

CPTherm™ fluids cannot be used in systems containing dissimilar metals without proper insulation between metal types because of the potential for galvanic corrosion. Standard manufacturing practices for system construction should always be followed when using dissimilar metals

System filtration is recommended to help maintain a clean system. Filters used to remove contamination and debris help to reduce the occurrence of corrosion and erosion that may occur. Debris in the system may also result in pump damage. Filters in parallel are recommended to reduce disruption of system operation to inspect or change the filter media. Consult filter supplier to verify material compatibility with CPTherm™ heat transfer fluid.

System Cleaning

After installing the new cooling system, a thorough cleaning must take place. CPI recommends a cleaning solution of 1 to 2 percent of trisodium phosphate in de-ionized water. The trisodium phosphate solution should circulate for at least 24 hours to ensure a complete and thorough cleaning. This initial cleaning is essential for removing construction debris and is also an effective method of determining the total volume of the system.

Before adding the CPTherm™ solution, completely drain the system and check to determine it is clean. Use the fluid in accordance with OEM recommendations. Heat transfer system volume is determined by summing the piping component volumes. If the CPTherm™ concentrate (i.e. LT version) is being used, the volume of dilution water (see minimum water quality requirements for diluting the CPTherm™ concentrate in the CPTherm™ heat transfer fluid brochure) corresponding to the system and component volume is added and adjustments made. Check the system for leaks, and then remove the volume of the dilution water equal to the calculated amount of CPTherm™ concentrate required and replace with the CPTherm™ LT product. If a prediluted version of the CPTherm™ product is being used, the process of adding the dilution water is not required. The prediluted product is already blended with the required amount of deionized dilution water for optimum performance. In this case, ensure system is completely drained of the flushing fluid. If this is not done, the prediluted CPTherm™ solution will further dilute and potentially reduce the effectiveness of the inhibitor package and elevate the freeze point.

Addition of the CPTherm™ heat transfer fluid and dilution water should be performed by filling from the lowest point possible allowing the system to vent at the high points to permit complete filling. This will assist in eliminating pockets of air where corrosion may occur. During the first few weeks of operation, vent valves should be occasionally bled off to help remove residual air.

Sampling

To ensure that the correct dilution was attained, it is recommended to sample and analyze the CPTherm™ charge after it has circulated in the system for at least 24 hours. This will help verify that the optimum level of corrosion inhibition and freeze protection were achieved. On site analysis should include measurement of specific gravity and pH. This service is also offered through CPI Engineering Services, Inc. for a nominal fee. For systems over 500 gallons, CPI will analyze one sample at no charge to verify correct dilution. Contact CPI for more information.

INSTALLING CPTHERM™ HEAT TRANSFER FLUID IN EXISTING SYSTEMS

CPTherm™ heat transfer fluid can be used as a replacement to glycol and other heat transfer products in a number of applications. Existing systems can be retrofitted to use CPTherm™ fluids; however, careful evaluation of the existing system must be performed to verify system compatibility. Operating temperatures and materials of construction must be verified to comply with the recommendations for CPTherm™ heat transfer fluid outlined in the NEW SYSTEMS section of this document. A thorough system preparation needs to occur to help prevent any cross contamination and incompatibility issues.

Design and Evaluation Criteria

Most heat transfer systems utilize good engineering practices and acceptable materials when being constructed. However, verification of system design and acceptable materials of construction should still be reviewed (refer to the NEW SYSTEMS section of this document for more information). This will help ensure materials that are recommended or compatible with the CPTherm™ fluid being used. If this evaluation is not preformed, incompatibility issues may exist, potentially causing system and fluid deterioration. System operating temperatures and freeze points should be reviewed to verify the application is suitable for CPTherm™ heat transfer fluid and that the correct CPTherm™ product is specified.

System filtration is recommended for retrofit applications. CPTherm™ heat transfer fluids can act as a de-scaling agent and will remove rust present in existing systems. Filtration will help remove this contamination in the system. For systems that cannot afford to be shut down, filtration systems in parallel will allow filter changes or inspections while the system is operating. The use of mesh screens to trap particulate matter will prevent debris or scale from disrupting pump performance. Frequent inspections or changes of the filters during initial operation should prevent excessive pressure drop and poor system performance.

System Cleaning

Due to potential incompatibility issues, existing system running with alternative fluids should be thoroughly drained and flushed prior to charging with CPTherm™ heat transfer fluid. Drain existing system and dispose of current heat transfer fluid according to manufactures recommended procedures. System should be drained as much as possible, and then can be flushed with a 1-2 percent trisodium phosphate and water solution. The trisodium phosphate solution should circulate for at least 24 hours to ensure a complete and thorough cleaning. This cleaning is essential for removing residual heat transfer fluid and will aid in removing debris. This is also an effective method of determining the total volume of the system.

Before adding the CPTherm™ solution, completely drain the system and check to determine that it is clean and free from rust, debris, and other contaminants. Use the fluid in accordance with OEM recommendations. Heat transfer system volume is determined by summing the piping component volumes. If the CPTherm™ concentrate (i.e. LT version) is being used, the volume of dilution water (see minimum water quality requirements for diluting CPTherm™ concentrate in the CPTherm™ heat transfer fluid brochure) corresponding to the system and component volume is added and adjustments made. Check the system for leaks, then remove the volume of the dilution water equal to the calculated amount of CPTherm™ solution required and replace with CPTherm™ LT concentrate. If a prediluted version of CPTherm™ heat transfer fluid is being used, the process of adding the dilution water is not required. The prediluted product is already blended with the required amount of dilution water for optimum performance. In this case, ensure system is completely drained of the flushing fluid. If this is not done, the prediluted CPTherm™ products will further dilute and potentially reduce the effectiveness of the inhibitor package and elevate the freeze point.

Addition of the CPTherm™ heat transfer fluid and dilution water should be performed by filling from the lowest point possible allowing the system to vent at the high points to permit complete filling. This will assist in eliminating pockets of air where corrosion may occur. During the first few weeks of operation, vent valves should be occasionally bled off to help remove residual air.

Sampling

To ensure correct dilution was attained, it is recommended to sample and analyze the charge of CPTherm™ heat transfer fluid after it has circulated in the system for at least 24 hours. This will help verify that the optimum level of corrosion inhibition and freeze protection were achieved. This service is offered through CPI Engineering Services, Inc. for a nominal fee. For systems over 500 gallons, CPI will analyze one sample at no charge to verify correct dilution. Contact CPI for more information.

Summary

CPTherm™ heat transfer fluid was designed specifically for low temperature heat transfer applications. Field trials and laboratory testing have provided favorable results compared to glycols and other heat transfer fluids. To ensure optimum performance, it is recommended that the guidelines and recommendations outlined in this document are followed. For additional information on this product contact CPI Engineering Services, Inc. or visit the CPTherm™ website at www.cptherm.com.

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