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Supersedes 2-10-33

SWANN CHEMICAL COMPANY

DIPHENYL AS AN INDIRECT HEATING MEDIUM

APPLICATION:

Diphenyl has been applied as a heat exchange medium, that is a medium to transfer high temperatures between two or more points. The temperatures that may be transferred range from 400°F. to not exceeding 700°F.

It has an application in soap manufacturing plants for the distillation of fatty acids; in alkali plants for the concentration of caustic soda; in varnish plants; in enamelling plants; in various chemical and dye plants; and also in large steam generating plants, particularly those of the public utilities for recovering heat from waste gases and transferring it to other equipment in the plant where it may be useful, etc., etc.

COMPETITION:

Diphenyl heat transfer systems will be in competition with heat transfer systems using high pressure steam or superheated steam, or systems using hot oil, or mercury, or electrical heat, or direct fire; and it will be in more direct competition with diphenyl oxide and mixtures of diphenyl and diphenyl oxide.

ADVANTAGES:

It has a distinct advantage over high pressure steam which requires exceedingly heavy equipment to withstand the pressures; for example, 500° temperature would involve a steam pressure of over 1,000 pounds per square inch.

It has an advantage over superheated steam because it will transmit more heat and at a higher rate than a superheated steam system of the same heating surface, and in addition it may be operated at lower pressures.

It has an advantage over the hot oil system such as the Merrill Process, because of the decomposition of oil at temperatures substantially below that at which the diphenyl may be operated. It is less expensive to install than the Merrill system and at the higher temperatures it will not require as great maintenance expense or as frequent cleaning as the oil system.

It has an advantage over the mercury system largely from the fact that the mercury is extremely toxic and dangerous to the operating personnel and it is also very expensive both as a product as well as the equipment to use it efficiently. Great care must be exercised in the pipe and boiler construction to guard against release of mercury at high temperatures.

Diphenyl system is superior to heating by direct electricity because of its lower cost and better distribution of heat. Electrical heating is subject to local overheating if the elements are not carefully installed.

It is superior to direct fire because it eliminates entirely local overheating and the consequent decomposition of the product processed. It is also much more efficient than direct fire when direct fire is applied to a number of small units in place of a single large diphenyl unit.

It has an advantage over diphenyl oxide or the eutectic mixtures of diphenyl and diphenyl oxide, in that it is more stable at the higher temperatures that is temperatures of approximately 700°F. Diphenyl freezes at approximately 156°F. and boils at approximately 492°F.

DSW 312110

STLCOPCB4072096