THERMAL TREATMENT

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Thermal Treatment is comprised of hot and cold treating cycles to obtain penetrations and retentions as required in CSA 080 Specification for poles.

Hot Oil Treating Cycle

The length of time the material is subjected to the Hot Cycle does not increase retention of the material. The length of Hot Cycle usually determines the depth of the penetration. This Hot Cycle will only heat the wood fibers and expand the air and moisture present in the wood cells. Poles with deep sapwood or with a high moisture content will require a longer Hot Cycle.
The Hot Cycle will vary in each treating plant, as the result of this cycle would depend on the temperature of preservative when put into the treating tank, the length of time it takes to reach temperatures of 220 F. to 235 F., the temperature of poles to be treated and the length of time it takes to change from hot oil to cold oil. One could experience hot cycles of 8 to 48 hour durations.

Cold Oil Treating Cycle

When the cold oil has replaced the hot oil, the expanded hot air in the wood cells will begin to cool and contract. The air trapped in the wood cells will now begin to be below the atmospheric pressure. Now with the atmospheric pressure being greater on the outside of the material being treated, the preservative will begin to be forced slowly into the wood cells as the wood is cooling.
The temperature of the preservative in the cold bath will affect the penetration and retention. Temperatures close to the allowable minimum of 90 F would impede the depth of penetration and increase retentions in the sampling zone. Temperatures close to the maximum of 150 F, tend to improve the depth of penetration and will allow more migration of preservatives into the deep wood cells even after the treatment is completed and the poles are slowly cooling in the treating tank.
Each plant has to determine what duration the cold oil should be left on the poles to obtain sufficient penetration and retention to meet customers' treatment specifications. Too short a cycle may not provide sufficient penetration or retention. Too long a cycle will result in excessive retention and could cause poles to bleed due to excessive loading of preservative.

Expansion Bath

After completion of the Cold Oil Cycle the hot oil is put back into the treating tank for up to one hour maximum duration. The Expansion Bath would reduce retentions and would normally only be used when one is experiencing excessive retentions.