"RECENT DEVELOPMENT IN COLOR PERMANENCY WITH CHEMONITE-TREATED LUMBER"

by

L. Lonning
McFarland Cascade

In the past, the markets for Douglas-fir lumber treated with chemonite have been, in the eyes of some consumers, aesthetically non-pleasing.

In an effort to give the wood a permanent rain-resistant color a number of tests and experiments have taken place in the last several years. The following is a short up-date on those developments.

Approximately four years ago, Domtar in Vancouver was treating lumber with ACA then removing it from the cylinder, kiln drying it, loading the material back on treating trams and putting it in the retort. The cylinder was flooded with a working solution, allowed to sit for a few minutes then the solution was pumped back to the working tank. A final vacuum was applied and the material came out of the cylinder. This process removed the green streaks on the lumber, but if left uncovered and subjected to the rain these streaks reappeared. This process was commanly called a "solution wash".

About a year later, McFarland Cascade in Tacoma began a series of experiments with what was known as an "ammonia wash". It was very similar to the solution wash except that the wash was conducted at the end of a normal treating cycle. After the pressure period, the retort was emptied and a three-hour vacuum was applied. At the end of this vacuum period a low concentration, two to three percent, of Aqua Ammonia was introduced into the cylinder and allowed to remain for about 30 minutes. After the soak period, a four-hour final vacuum was applied. This process proved somewhat successful but still did not guarantee the consistent aesthetically-pleasing wood we were looking for. The ammonia made the wood a darker green color and if rained on the light green spots showed up again.

It was during this period that the supplier of ACA, J.H. Baxter, secured a supply of a higher grade of copper, which was very beneficial for the appearance of the final product.

For the last two years, numerous companies and universities have been continuing testing and experimenting with new methods and concepts. There have been three developments in the last two years, which show considerable promise.

The first development was the use of a higher working strength of NH3 than had been used before. Prior to this development, the ratio had the base mix ratio. The initial work was done by J.H.

Baxter and the University of California. It was right after that when McFarland Cascade began treating full production runs with this new idea with very good results. There was still the problem with rain. If the wood did not have a sufficient time to evaporate the excess ammonia without being subjected to moisture, the green spots would show up.

The second process that shows promise is being worked on by McCormick and Baxter in Portland. They are using a final steaming cycle to drive the ammonia off at an accelerated rate so when the charge is pulled from the retort it will be clean and rain resistant. This is accomplished be injecting live steam after the final vacuum and the controlling of a vent located on the top of the retort. The injection of the steam and the rate at which the ammonia is allowed to escape through the top vent are closely related. An additional step in the above process is the addition of approximately 250-300 gallons of Aqua Ammonia (24%) prior to the injection of the live steam. This step seems to enhance the cleanup cycle. Work is still continuing on this process using commercial size charges.

The third process being worked on is being done at McFarland Cascade's plant in Tacoma. An 8' by 24" test cylinder was modified to include a 6" line with valve connected to the extreme back of the cylinder and a 6" outlet line with a valve located at the top of the cylinder near the door. These lines were hooked up to a high pressure blower. The blower delivers approximately 100 CFM. A 500,000 BTU propane heater was positioned so as to blow into the intake side of the blower. The process calls for a normal treating cycle followed by a "blowing cycle". After the pressure period a 2-hour vacuum is applied using approximately 26" of vacuum. At the conclusion of this vacuum cycle the valve at rear of the retort is opened, the outlet valve is opened, and the blower is turned on. Test charges were treated with the temperature of the air ranging between 100 F and 150 F. The material in which the air movement temperature was around 150 was the most consistant and had the best rain resistance. The most promising aspect of this process is the consistancy.

Work is continuing on both the final steaming and the air movement process and by the first of the year it is hoped that cost estimates can be secured. The progress made in the past year has been significant and in the very near future the consumer will have not only a properly treated product but one that is also aesthetically pleasing for his end use.