TECHNICAL NOTE NUMBER 167
FOREST PRODUCTS LABORATORY · U. S. FOREST SERVICE · MADISON, WISCONSIN.

LIMITATIONS TO THE USE OF SAWDUST

Commercial utilization of sawdust is made difficult by the small size of the sawdust particles and by the limited quantities available without transportation. These factors are standing in the way of chemical utilization as well as restricting the mechanical uses.

The manufacture of methyl or wood alcohol from sawdust will probably never be done on a large commercial scale. The minuteness of the wood particles causes considerable trouble in any ordinary destructive distillation process, because the stirring of the charge, which is necessary to heat the sawdust mass, results in a fine charcoal dust which clogs the condenser tubes. Then, too, the charcoal by-product, usually a considerable source of revenue in destructive distillation, is not very salable in its powdered condition. A combination of distillation and the manufacture of producer gas from sawdust avoids mechanical difficulties, and charcoal is not one of the by-products. This process might be quite successful if there were a demand for power in a locality where there is an abundance of hardwood waste. The greatest trouble with any sawdust-distillation process, however, is that hardwood sawdust is not obtainable in quantities large enough to run a commercial plant without much expensive transportation, and the process, therefore, must be economical enough to permit purchasing and grinding up large pieces of wood to use along with the sawdust.

Ethyl or grain alcohol can be produced commercially from sawdust. As yet, however, the process is practical only where there is a very large daily supply (at least 250 tons) of wood waste available.

Sawdust is well adapted to the production of oxalic acid, but as the yield is large and the demand for the product small, no great volume of sawdust will ever be required for this purpose.

Sawdust will probably never be used for paper pulp, for not only does it introduce difficulties in the cooking process, but it also limits the length of the fibers and produces an extremely poor grade of paper.

Because of its insulating, absorbent, and resilient properties, sawdust has several mechanical uses. Among these are heat and sound insulation in walls, floor-sweeping compounds, packing for fragile articles, composition flooring, and wood flour. Although the mechanical uses are numerous, they are chiefly local, owing to the bulkiness of the raw material; and all together they account for a very small part of the sawdust produced.

One of the easiest and in many cases one of the most profitable uses of sawdust at present is for fuel at the sawmill or wood-working plant. Although a specially constructed fire box is necessary to burn such finely divided material, the additional outlay is often a great economy, for it releases for sale larger pieces of wood waste which are more marketable than sawdust for domestic fuel or other uses.