its preparation is the removal of the bark in a "rossing" mill. This is accomplished by the rubbing together of the logs in a revolving drum or by the removal of the bark by revolving knives. This last method produces the cleanest pulpwood but results in the loss of a considerable proportion of the wood itself. This preliminary preparation of pulpwood is frequently carried on at the pulp-mill, but there are in Canada a number of "cutting-up" and "rossing" mills operating on an independent basis, chiefly for the purpose of saving freight on material cut at a distance from the mill or on material intended for exportation. Logs are measured in board feet but the shorter material is measured by the cord (4′ by 4′ by 8′ of piled material), which is approximately equivalent to 500 feet board measure or to 90 cubic feet of solid wood. Generally speaking, it takes about one cord of wood to make a ton of groundwood and two cords to make a ton of chemical pulp.

There are in Canada four methods of preparing wood pulp, one of which is mechanical and three chemical. In the mechanical method, green coniferous woods are preferred; spruce forms over 80 p.c. of the total, with balsam fir, hemlock and jack pine. Soft "hardwoods", such as paper birch, white birch and poplar, are occasionally used. The barked and cleaned wood is held by hydraulic pressure against the surface of a revolving grindstone, the sticks lying with their length parallel to the width of the stone. The stone is constantly washed by water, which carries away the pulp in suspension. Mechanically prepared pulp or "groundwood" is used only for the cheaper grades of paper and board which are required only for a comparatively short time. It contains all the wood substance, a large proportion of which is not durable. Mixed with chemical pulp, it is used for news, wall, cheap book, manila, tissue, wrapping, bag and building papers, and for box boards, container boards and wall boards.

There are three methods of producing chemical fibre in use in Canada—the sulphite, sulphate (or kraft) and the soda process, so-called because of the chemicals used in each case to dissolve out the non-fibrous or non-cellulose components of wood substance. Cellulose, which forms about 50 p.c. of wood substance, is the ideal paper-making material. It is a singularly inert substance, largely unaffected by ordinary chemical agents, atmospheric conditions, bacteria and fungi. High grade paper, being almost pure cellulose, will remain in perfect condition for centuries. Not only do the chemicals used separate out the cellulose, but they remove the fats and resins so troublesome in paper-making, and break down the substance which holds the cellulose fibres together, so that they can be later felted together into a strong sheet of paper.

The sulphite process, which is the most important in use in Canada, depends on the action of a bisulphite liquor (a comparatively weak acid solution of calcium and magnesium bisulphite) on the non-cellulose wood component. This liquor is prepared by burning sulphur or pyrites and absorbing the resulting sulphur dioxide gas in a milk-of-lime solution or in water, in the presence of limestone.

The woods used in this process in Canada are all coniferous. Spruce forms 65 p.c., balsam 24 p.c., hemlock 10 p.c., together with small quantities of other conifers. The previously barked and cleaned pulpwood is chipped in a machine which reduces the wood to particles about an inch long and a quarter of an inch thick, or smaller. These chips are screened, crushed and fed into digesters—large steel tanks lined with acid-resisting brick—where they are cooked by steam in the presence of the bisulphite liquor referred to. The cooked chips are then "blown"