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THE CLAYS OF CANADA

Memorandum Series
No. 41
September, 1930

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THE CLAYS OF CANADA

By Howells Frechette

Chief, Division of Ceramics and Road Materials

Canada is fortunate in possessing resources in many types of clay employed in the manufacturing industries. In a list of thirty-five lines of manufacture in the Dominion, clay of one type or another appears among the supplies for twenty-four of them. It is used in large amounts in the making of such materials as cement, paper, and textiles. It is even used as a purifier of lard and oils. Its greatest use, however, is in the so-called clay-working industries in which over a million and a half tons of various types of clay enter into the composition of the products each year. These industries represent an invested capital of over thirty million dollars and employ almost five thousand men.

These types of clay differ greatly in physical properties such as colour in the natural and burned state, plasticity, strength when dry and burned, shrinkage, vitrification range and refractoriness. The clays used in the clay-working industries are classified according to the purposes for which they are adapted. For example, there are pottery clays, including china clay or kaolin and ball clay

used in the compounding of porcelain; stoneware clay for making vitrified ware, and earthenware clay for making the more porous earthenware; refractory clays capable of withstanding very high temperatures used for the manufacture of firebrick; sewer pipe clays which produce a dense impervious body capable of taking a salt glaze for the making of sewer pipes and similar products; and brick and tile clays and shales for the manufacture of structural brick and tile and farm drain tile.

The pottery clays cannot be said to be plentiful so far as distribution is concerned but there are a number of deposits of importance, particularly of china clay, in Quebec and British Columbia; of ball clay in Saskatchewan; and of stoneware and earthenware clays in Nova Scotia, Saskatchewan and Alberta.

Fireclays are graded according to their refractoriness or the temperature which they can withstand in service, ranging from low heat duty to modium, and high heat duty. The high heat duty or high grade fireclays are of rather rare occurrence in Canada but the lower grades are of broader distribution. With the exception of Prince Edward Island and Manitoba all the provinces of Canada are known to possess deposits of fireclay though some of the deposits are too remote from the markets to be of immediate value.

Sewer pipe clays occur in Nova Scotia, New Brunswick, Ontario, Saskatchewan, Alberta, and British Columbia.

In the manufacture of building brick and structural and drain tile, common surface clays and shales are used and, to a lesser extent, low grade fireclays. Canada has immense resources of such clays and shales suitable for making good quality building brick of a wide range of texture and colour, distributed through the nine provinces, and there is ample evidence that good use is made of them. Close observers of conditions in Canada and the United States are struck by the much greater proportion of brick structures, especially dwellings, in Canada.

In the Ceramics Laboratories of the Department of Mines which were established for the testing of clays and as an aid to the clay-working industries, a staff of engineers and assistants is engaged on various investigations bearing upon the problems of manufacture. Subjects of general interest to groups of ceramic manufacturers are investigated in detail, and technical advice and assistance in minor problems are freely given to individual manufacturers. The objects constantly being worked for are the improving and cheapening of the processes of manufacture and the aiding of the industry to produce better and wider ranges of ware.