

COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

1967/13

THE USE OF CLAY IN THE PAPER INDUSTRY

by

DR. Z. KALIX

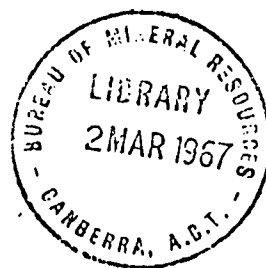


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Clay is one of the most important minerals used by the paper industry. Kaolin or china clay is the type generally preferred for this purpose.

Nearly all paper manufactured contains kaolin in amounts varying from 3 to 35 per cent by weight (usually 8 to 20 per cent), the exceptions being banknote paper, high grade kraft and papers that have to withstand long and constant use.

Clays are prepared to varying degrees of fineness depending on the class of paper being manufactured. Kaolins are used both as a filler and surface coating.

While official statistics on the production of kaolin are to some extent comparable from State to State, in general all white clays, together with kaolin or china clay and bale clay are grouped under a single classification as "kaolin". It is believed, that some kaolin is included under other types of clay (e.g. "fire-clay", "white filler clays" etc.) so data in the Table below might not represent total kaolin production.

PRODUCTION OF KAOLIN (tons)

	<u>1963</u>	<u>1964</u>	<u>1965</u>
Queensland	168	401	453
New South Wales	27,161	22,089	27,608
Victoria	12,462	17,455	24,081
South Australia	3,833	4,542	7,383
Western Australia	920	631	1,631
	<u>44,544</u>	<u>45,118</u>	<u>61,156</u>

The domestic consumption of kaolin filling and coating clays is about 25,000 tons per year of which about 6,000 tons are from domestic produced material (all believed to be from Victoria) and the balance is imported (nearly exclusively from the United Kingdom).

The only limitations to filler grade kaolin are to colour and grit content. The specifications for coating kaolins are more stringent. They must be low in grit (less than 0.01 per cent), of an acceptable whiteness, particles of relatively flat plates of 2 microns or less and the use of clay slurry should contain 60-70 per cent solids.

Filler kaolin must be cheap and usually the raw material is a secondary clay which occurs close to the point of use. Open-cut mine is common. Usually, the raw clay is dried, either naturally or in rotary dryers, crushed in toothed rolls, and dry ground in air-swept hammer mills, sometimes in circuit with an air classifier. Occasionally wet milling is used.

Coating clays are usually prepared wet. After sluicing and screening to remove coarse grit, the finer grit is separated by sedimentation, pounds and mechanical classifiers and by hydraulic cyclones. Filter presses are used for dewatering. For some coating clays, chemical bleaching is used to improve the brightness.

Because of working and other conditions in Australia (high cost local labour, need of small tonnages, high transport cost etc.) only the cruder form of kaolin, that is mainly for filler purposes is produced and transported as a slurry to consumer's store.