

## Chinese Papers: Their Development, Characteristics, and Permanence

### ABSTRACT

Since the invention of paper, commonly attributed to Cai Lun during the Eastern Han Dynasty (A.D. 25-220), the Chinese have developed various techniques in making papers for different uses. Generally speaking, there are seven main categories, namely: hemp paper, mulberry paper, paper mulberry, ratten paper, bamboo paper, wheat or rice straw paper, and *xuan* paper. Nowadays, some papers are still available in the market. Most of them are further subdivided into various groups with different names. Manufacturers are keen to offer new kinds of product by just slightly modifying the manufacturing process or fiber composition as well as paper characteristic, such as laid pattern. Despite being made from the same kind of plant fiber, Chinese papers can have different names, such as: cotton stock *xuan* paper (*mianliao*), fine bark *xuan* paper (*jingpi zhi*) and super bark *xuan* paper (*techong jingpi zhi*). They are mainly made of the same plant fiber, *Pteroceltis tatarinowlii* Maxim, but in various percentages of content. It is always difficult to understand the composition of the paper by just referring to the “name” of the paper. Their names are not always clear indicators. This can make it difficult to choose the correct paper to use for conservation treatment or to recognize what was used to make a book or work of art. In the first part of this paper, the development of papers and their respective names in China over the past two thousand years was reviewed and reported.

There are a lot of paper mills in various provinces of China. It is not an easy task to select an appropriate paper for painting or conservation treatment. Even though a correct type of paper could be identified, the quality of it may not be guaranteed. As far as permanence is concerned, in the rest of the study over fifteen different kinds of Chinese

papers available in the market were collected. Samples with the renowned brand name, *Hong Xing*, which has been claimed as the best quality of paper made in China, were specifically selected for the testing. They were manufactured by a state-run paper mill in Anhui province in China. All of the samples were hung freely in an aging chamber for 28 days under 90°C and 50% R.H. The pH, brightness (L\*a\*b\*) and the tensile strength of paper samples were measured before and after the experiment. A ranking system was derived from the data to rank the permanence of the selected fifteen paper samples.

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