oxidation of titanium tetraoxide is described in U.S. Pat. 3,214,284. This patent is incorporated herein by reference in toto to eliminate the need to substantially reproduce a detailed description of such oxidation reaction. The titanium dioxide produced by vapor phase reaction, sometimes called "chloride" pigment, does not generally contain residual soluble salts, such as found in sulfate pigment, and, therefore, does not require an additional washing step to eliminate such salts. In addition, the rutile crystal structure to "chloride" pigment is highly developed during the oxidation or hydrolysis step when rutileizing agents, such as aluminum or zincium are present, and, therefore, rutileization by calcination is not a required operative step for such pigment.

Titanium dioxide pigment, as well as other pigments, that have not had their surface chemically modified, for example, the deposition of hydrous metal oxides or organic coatings thereon, are commonly referred to as "raw pigment." Examples of raw TiO₂ pigment include: calcined sulfate-based titanium dioxide pigment, calcined wet milled sulfate-based titanium dioxide pigment, chloride-based TiO₂ pigment, as received from the vapor phase reaction, and degassed chloride-based TiO₂ pigment. Such "raw" pigment can, and often is, subjected to a dry milling before further treatment, such as hydroclassification and coating with hydrous metal oxides. This initial dry-fluid energy milling pulverizes gritty or aggregative material existing in the titanium oxide product and provides pigment particles having a more even particle size distribution for coating procedures which typically follow. A hydroclassification typically follows such grinding step in order to eliminate large aggregates and over-sized particles before further treatment. Coating procedures are employed to optimize the essential pigmentary properties of the titanium dioxide pigment and typically involves coating the titanium oxide particles with hydrous oxides of titanium, aluminum, silicon, and other metals such as magnesium, zirconium, tin, zinc, and cerium. A typical coating procedure is described in U.S. Pat. 5,416,419. Such patent is incorporated herein by reference in toto to eliminate the need to substantially reproduce a detailed description of such coating procedures.

In the case of titanium dioxide pigment, the amount of titania, silica, and alumina hydrates deposited on the surfaces of the pigment can vary respectively from 0.05 to 10 percent, 0.01 to 10 percent, and 0.05 to 15 percent. Other metal hydrates can be deposited in amounts of from about 0.01 to about 5 percent. The total amount of hydrous metal oxide coating placed on the pigment typically varies from about 2 to about 20 weight percent, based on the weight of the pigment.

One of the steps suggested for developing the pigmentary properties of, for example, uncoated titanium dioxide or hydrous metal oxide coated titanium dioxide particles, has been to dry-fluid energy mill the pigment with air or steam. Such fluid energy milling or dry grinding, as it is commonly known, typically recovers the oil absorption and improves the tinting strength of the pigment. Dry grinding of the coated pigment is usually performed by passing the pigment into a fluid energy mill employing superheated steam or air as the gaseous fluid supplying the grinding energy. While dry grinding of the coated pigment in accordance with such procedure enhances certain pigmentary properties, it has been found that the development of other properties, such as ease of dispersion in paint vehicale, is not fully accom