

# Use of Calcium Carbonate as Filler with ASA A-Successful Story at Bilt-Ashti

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## ABSTRACT

**Ballarpur Industries Ltd. Unit-Ashti** is located in dense forest covered area in Gadchiroli district of Maharashtra. In search of an opportunity to explore further Quality Improvement Strategy on branded products & comparing with that of leading competitors, The Unit-Ashti of Ballarpur Industries Ltd. has dared to dream about first ever Paper manufacturing entity to go with ASA sizing along with PCC (Precipitated Calcium Carbonate) in copier segment in India.

In line with conventional paper making in India, Mill was operating with Soap Stone till second quarter of 2007-08 with ASA sizing. Due to degradation in the quality of the soap stone powder received on site vis-à-vis cutting problems in final product, decision was taken to replace it with GCC (Ground Calcium carbonate) for sustenance of Quality, specially on smooth cutting of paper. To add up the beauty to the new knowledge gained with GCC on Quality front, Unit has beget new questions in search of improved answers further on Quality front with the help of PCC in line with international bench marking in paper making, First ever in Paper making Industry, in India. This Paper deals with introductory value additions on GCC & benefits derived by replacing GCC with PCC at the end. Hunger to conserve energy has recently won the **"Certificate of Merit"** in **"National Energy Conservation Awards" for the Year 2007.**

Calcium Carbonate is an exceptional mineral. The chemical formula  $\text{CaCO}_3$  covers a raw material, which is widespread throughout nature, whether dissolved in rivers and oceans, in molten form as "cold" carbonated-lava, or solid as a mineral in the form of stalactites, stalagmites or as the major constituent of whole mountain ranges. Plants and animals need calcium carbonate to form their skeletons and shells. The Earth's crust contains more than 4% calcium carbonate. As a result, the three calcium carbonate minerals - calcite, aragonite and vaterite - are among the most important rock-forming minerals. Rocks are not the only calcium carbonate deposits in nature, most stretches of water and countless plants and animals contain huge amounts of calcium carbonate. The link between these natural resources is the calcium carbonate cycle. Plants and animals absorb calcium carbonate from water - where it exists, in most cases, in the dissolved form of calcium hydrogen carbonate  $\text{Ca}(\text{HCO}_3)_2$  - and use it to build up their skeletons and shells. After their death, crustacean, coccoliths, algae and corals form sedimentary deposits on sea-beds, thus the rock forming process is put in motion. The first stage is the sedimentation process from which chalk and limestone originate. Chalk is a poorly compacted sedimentary calcium carbonate rock, whose diagenesis is incomplete. When the sedimentation process is completed this results in the formation of limestone.

If the sedimentation process takes place in magnesium containing water a dolomitisation may occur. Part of the calcium ions in the crystal lattice are replaced by magnesium ions, a fact that leads to the formation of dolomite  $\text{CaMg}[\text{CO}_3]_2$ . The carbonate rocks, chalk, limestone, dolomite and marble rocks are subject to erosion, under the influence of wind, temperature and water they dissolve, and the cycle may start again.