

## **PROCESSABILITY AND DETERMINATION OF SOME MECHANICAL AND THERMAL PROPERTIES OF FILLED AND UNFILLED POLYPROPYLENE / POLYAMIDE 6 BLEND**

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**ABSTRACT:** - A new type of Bentonite filled PP/PA6 and red Kaolin filled PP/PA6 blends has been developed. It is Polypropylene and Polyamide 6 at constant ratio (80/20) and different weight fraction (0, 5, 10, and 15) % of both local Bentonite and Red Kaolin fillers were added respectively. Filled polymer blends were developed on a single screw extruder. Hardness, compression impact strength, and thermal stability of BN/PP/PA6 and RK /PP/PA6 blend system were determined at different temperatures, and different weight fraction of filler. The results shown hardness and compression increase while impact strength decrease with increase in weight fraction content. Also the results shown that thermal stability increases with increased weight fraction of filler. Bentonite filler produces better mechanical properties, than Red Kaolin fillers. Empirical equations are proposed and show a best fit with experimental data. Relevant contour diagrams, based on the proposed equations, for optimization of properties were also presented.

**Keywords:** - PP, PA6, Blend, Bentonite, Red Kaolin, Mechanical, Thermal properties.

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### **INTRODUCTION**

Polymer blends are generally considered by mixing two or more polymers that are not bonded to each other. Two or more polymers are mixed to produce blends is a well-established route to achieve a certain amount of physical properties, without need to synthesize specialized polymer systems<sup>(1)</sup>.