

PROCESS FOR MAKING GROUP II METAL CARBONATED, OVERBASED
MANNICH CONDENSATION PRODUCTS OF ALKYLPHENOLS
ABSTRACT OF THE DISCLOSURE

This invention is directed to a novel process for making Group II metal carbonated, overbased Mannich condensation products of alkylphenols, which process uses ethylene carbonate as both a source of carbon dioxide and ethylene glycol. In particular, under the reaction conditions using ethylene carbonate in the present invention, carbonation and overbasing Mannich condensation products of alkylphenols is possible while at the same time the viscosity of the carbonated, overbased Mannich condensation products of alkylphenols remains within acceptable levels, typically under 1000 cSt at 100°C. The present invention is also directed to carbonation of Mannich condensation products of alkylphenols using a C₂-C₆ alkaline glycol and carbon dioxide. The present invention is also directed to a detergent-dispersant antioxidant additive composition comprising Group II metal carbonated, overbased Mannich condensation products of alkylphenols, wherein the Group II metal carbonated, overbased Mannich condensation products of alkylphenols have a CO₂ to Ca ratio of at least 0.01.