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(12) **United States Patent**  
**Miller**(10) **Patent No.:** **US 9,416,294 B2**  
(45) **Date of Patent:** **Aug. 16, 2016**(54) **CURABLE EPOXIDE CONTAINING  
FORMALDEHYDE-FREE COMPOSITIONS,  
ARTICLES INCLUDING THE SAME, AND  
METHODS OF USING THE SAME**(71) Applicant: **H.B. FULLER COMPANY**, St. Paul,  
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patent is extended or adjusted under 35  
U.S.C. 154(b) by 78 days.(21) Appl. No.: **13/826,730**(22) Filed: **Mar. 14, 2013**(65) **Prior Publication Data**

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filed on Apr. 30, 2012, now Pat. No. 8,791,198.(51) **Int. Cl.****C09D 131/04** (2006.01)  
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**D21H 19/56** (2006.01)(52) **U.S. Cl.**CPC ..... **C09D 131/04** (2013.01); **B01D 39/1623**  
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See application file for complete search history.

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Johnson(57) **ABSTRACT**A composition is disclosed that includes a water insoluble  
polymer, a polycarboxy functional polymer, and a water  
insoluble epoxide functional compound, the water insoluble  
polymer including at least one of polyvinyl acetate, vinyl  
acetate copolymer, styrene copolymer, acrylate copolymer,  
and polyurethane.**34 Claims, No Drawings**