



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<b>(21) International Application Number:</b> PCT/US98/12871 <b>(22) International Filing Date:</b> 18 June 1998 (18.06.98) <b>(30) Priority Data:</b> 60/049,900                      18 June 1997 (18.06.97)                      US <b>(71) Applicant:</b> GREAT LAKES CHEMICAL CORPORATION [US/US]; Highway 52 Northwest, P.O. Box 2200, West Lafayette, IN 47906 (US). <b>(72) Inventors:</b> STULTS, Jeffrey, S.; 3064 Benton Street, West Lafayette, IN 47906 (US). SCHREIER, Jeffrey, A.; 1826 Arrowhead Drive, Lafayette, IN 47905 (US). MARTIN, Jim, L.; 1181 N. Diamond Point Court, Monticello, IN 47960 (US). MACK, Arthur, G.; 5501 Blackberry Lane, Lafayette, IN 47905 (US). DROST, Kevin, J.; 4850 Eastbrook Drive, Lafayette, IN 47905 (US). ZINGDE, Gurudas; 832 La Grange Street, West Lafayette, IN 47906 (US). <b>(74) Agents:</b> HENRY, Thomas, Q et al.; Woodard, Emhardt, Naughton, Moriarty & McNett, Bank One Center/Tower, Suite 3700, 111 Monument Circle, Indianapolis, IN 46204 (US).	<b>(81) Designated States:</b> CA, CN, KR, MX, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).  <b>Published</b> <i>With international search report.</i>  <b>(88) Date of publication of the international search report:</b> 18 March 1999 (18.03.99)	
<b>(54) Title:</b> NOVEL FLAME RETARDANT PLASTICIZERS		
<b>(57) Abstract</b> <p>The present invention provides novel esters synthesized from organic alcohols and tetrahalophthalic anhydride or tetrahalophthalic acid, processes to make such esters, and novel uses of these esters. The invention provides three Groups of dialkyltetrahalophthalate compositions which exhibit surprisingly advantageous features, including excellent plasticizing functionality and low smoke generation. The esters may be symmetrical, in that both alcohols of the ester are the same, or they may be unsymmetrical with both alcohols of the derived phthalate ester different, or they may be mixtures of symmetrical and unsymmetrical esters. Inventive esters are useful as flame-retardant plasticizers in PVC or other polymeric systems.</p>		

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## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US98/12871

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : C07C 69/76; C08K 5/09

US CL : 524/288; 560/83

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 524/288; 560/83

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
NONEElectronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
APS, CAS ONLINE

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4,298,517 A (SANDLER) 03 November 1981, columns 3-4.	1-33
X	US 5,049,697 A (BOHEN et al.) 17 September 1991, columns 10-14.	1-33
X	US 5,393,820 A (ASHWORTH et al.) 28 February 1995, columns 2-4.	1-33
X,P	US 5,728,323 A (DAY et al.) 17 March 1998, columns 2-5.	1-33

 Further documents are listed in the continuation of Box C.
  See patent family annex.

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Name and mailing address of the ISA/US  
Commissioner of Patents and Trademarks  
Box PCT  
Washington, D.C. 20231  
Facsimile No. (703) 305-3230

Authorized officer  
*Peter D. Mulcahy*  
PETER D. MULCAHY  
Telephone No. (703) 305-2351