

[[Abstract](#)] [[Summary](#)] [[Drawing Description](#)] [[Detailed Description](#)] [[Claims](#)]

# 5631406 64978

## Chemical compounds

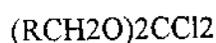
**Inventor:** Gilligan;  
William H.  
Ft.  
Washington  
MD

**Issue** May 20,  
**Date:** 1997

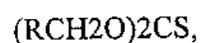
**Assignee** The United  
(s): States of  
America as  
represented  
by the  
Secretary  
of the Navy  
Washington  
DC

### Abstract

Dichloroformals of the formula



wherein R is  $-C(NO_2)_3$ ,  $-CF(NO_2)_2$ ,  $-CF_2(NO_2)$ ,  $-CCl(NO_2)_2$ ,  $-C(NO_2)_2CH_3$ ,  $-CCl_3$ ,  $-CF_3$ , or  $-CF_2CF_3$ . These dichloroformals are prepared by reacting the corresponding thionocarbonate of the formula



wherein R is as defined above, with sulfuryl chloride in the presence of a Friedel-Craft catalyst (e.g.,  $AlCl_3$  or  $TiCl_4$ ). Another method is to react the thionocarbonate with chlorine gas in the presence of a polar additive such as 2,2,2-trifluoroethanol or acetonitrile. These energetic dichloroformals are useful as explosive and propellant ingredients and as intermediates in the synthesis of other energetic explosive and propellant ingredients.

US 03306939 19640200 Hill

**References:**

03922311 19751100 Peters  
et al.