Vinyl Encyclopedia Article

Vinyl

The following sections of this BookRags Literature Study Guide is offprint from Gale's For Students Series: Presenting Analysis, Context, and Criticism on Commonly Studied Works: Introduction, Author Biography, Plot Summary, Characters, Themes, Style, Historical Context, Critical Overview, Criticism and Critical Essays, Media Adaptations, Topics for Further Study, Compare & Contrast, What Do I Read Next?, For Further Study, and Sources.

(c)1998-2002; (c)2002 by Gale. Gale is an imprint of The Gale Group, Inc., a division of Thomson Learning, Inc. Gale and Design and Thomson Learning are trademarks used herein under license.

The following sections, if they exist, are offprint from Beacham's Encyclopedia of Popular Fiction: "Social Concerns", "Thematic Overview", "Techniques", "Literary Precedents", "Key Questions", "Related Titles", "Adaptations", "Related Web Sites". (c)1994-2005, by Walton Beacham.

The following sections, if they exist, are offprint from Beacham's Guide to Literature for Young Adults: "About the Author", "Overview", "Setting", "Literary Qualities", "Social Sensitivity", "Topics for Discussion", "Ideas for Reports and Papers". (c)1994-2005, by Walton Beacham.

All other sections in this Literature Study Guide are owned and copyrighted by BookRags, Inc.



Contents

Vinyl Encyclopedia Article.....1

Contents.....2

Vinyl.....3

Vinyl

"Vinyl" is a term commonly used in organic **chemistry** to describe a monosubstituted alkene, and to describe the polyalkane **plastics** derived from polymerization of monosubstituted ethylene (vinyl) monomers. It is not used in systematic organic **nomenclature**. The etymological origin of vinyl is uncertain, but it quite likely derived from the nineteenth century term for ethylene (ethene), "weingas" (vinegas, a reference to the role of **ethene** as a plant hormone). At one time the term vinyl referred primarily to a substituted ethylene, but vinyl now is used frequently to describe any substituted alkene. The use of vinyl is exemplified by the **molecule** vinyl chloride (its proper systematic name is chloroethylene), CH_2=CHCl. The CH_2=CH- segment is the vinyl **functional group**, covalently substituted by a chloro group (not ionically bonded to a chloride **anion**, as the non-systematic name "vinyl chloride" might be taken to imply). Among the other commonly encountered vinyl compounds are vinyl bromide, vinyl ester, vinyl acetate, and vinylbenzene (also called styrene).

Many of these vinyl compounds are made by the reaction of acetylene with electrophiles. For example, HCl adds to acetylene (under pressure at 475K; and in the presence of $HgCl_2$ as a catalyst) to give vinyl chloride. Vinyl ethers are made by addition of alcohols to acetylene. In contrast, vinyl acetate is made by the metal-catalyzed oxidative acetylation of ethylene by **acetic acid**, in the presence of O_2 as the oxidant. Radical polymerization of vinyl chloride creates the plastic poly(vinyl chloride), where the vinyl chloride monomers are interconnected (with loss of the alkene double bond) forming the chloro-substituted polyalkane polymer (Figure 1). The vinyl polymers include poly(vinyl chloride) or PVC, poly(vinyl acetate), poly(vinylidene chloride), poly(vinyl alcohol), poly(vinyl acetal), poly(vinyl fluoride), poly(vinyl pyrrolidine, poly(vinyl carbazole), and poly(vinyl ether). Many of these are used as thermoplastics that are shaped and processed by means of injection molding and extrusion.