SILOXANES WITH FUNCTIONAL GROUPS – ACTIVE ADDITIVES OF POLYMER MATERIALS

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The results of investigation of hydril addition reaction of organohydrosilanes (1, 1, 3, 3-tetraalkyldisiloxanes) to unsaturated (allyl and propargyl) compounds containing functional groups (epoxides, acetates, nitriles) and halogen atoms (chlorine, bromine) in the presence of various catalysts, such as platinium hydrochloric acid or rhodium acetylacetonatedicarbonyl have been described. A possibility of synthesis of some siloxanes with general formula (I) and (II) containing with various functional groups was shown:

\[
[XO(CH_2CH_2O)_n(CH_2)_3Si]_2O \xrightarrow{\text{R}} [XO(CH_2CH_2O)_nCH_2CH=CHSi]_2O \xrightarrow{\text{R'}}
\]

\[
n = 0,1; \quad R = R' = CH_3, \quad R = R' = C_2H_5, \quad R = CH_3, \quad R' = C_2H_5.
\]

\[
X = \text{CH}_2\text{CHCH}_2\text{Cl}, \quad \text{CH}_2\text{CHCH}_2\text{Br}, \quad \text{CH}_2\text{CHCH}_2\text{Cl}, \quad \text{CH}_2\text{CHCH}_2\text{Br},
\]

\[
\text{OCOCH}_3, \quad \text{O} \text{OCH}_3, \quad \text{OCH}_2\text{CH}_2\text{CN}, \quad \text{OCH}_3\text{CH}_2\text{CN}
\]

\[
\text{CH}_2\text{CH} \rightarrow \text{CH}_2, \quad \text{CH}_2\text{CHCH}_2\text{Cl}, \quad \text{CH}_2\text{CHCH}_2\text{Br}, \quad \text{CH}_2\text{CHCH}_2\text{Br}.
\]

\[
\text{O}, \quad \text{OCH}_2\text{CH} \rightarrow \text{CH}_2, \quad \text{OCH}_2\text{CH} \rightarrow \text{CH}_2
\]

It has been established that independently of the nature of unsaturated compounds an addition proceeds on Farmers rule.

The obtained siloxanes containing epoxide groups and halogen atoms in molecule may be used as modifying additives to epoxide resins and also to phenol and polyester resins for increasing of thermo stability, adhesion and decrease of combustibility of polymers.