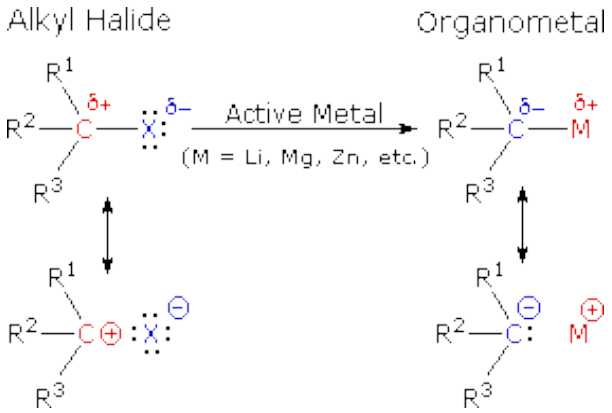
Answer on Question#60080 - Chemistry - Organic Chemistry

Alkyl, aryl, and alkenyl halides, when treated with metallic alloys form _____.

Answer:

1. Alkyl halides reactions with active metals lead to production of organometal compounds. The alkyl magnesium products are called Grignard reagents after the French chemist Victor Grignard.



where X=Cl, Br or I

2. Aryl halides react with metals to give more reactive derivatives that behave as sources of aryl anions. Magnesium aryl halides are Grignard, which are useful in organic synthesis of other aryl compounds.

$$\mathrm{Ar-X} \quad + \quad \mathrm{Mg} \xrightarrow[\mathrm{X=I,Br,\ Cl}]{\mathrm{Et_2O}} \mathrm{ArMgX}$$

3. Alkenyl halides are less reactive then aryl and alkyl halides so the need some spesial conditions to react with metals. The reactivity of the alkenyl halides is shown on the example of vinyl chloride, which forms organometal compounds under some special conditions.

$$\mathrm{CH_2{=}CH{-}Cl + Mg \xrightarrow[\mathrm{THF}]{40-50\ ^\circ C} CH_2{=}CH{-}MgCl}$$

$$\mathrm{CH_2{=}CH{-}Cl + 2K \xrightarrow[\mathrm{THF}]{Na,\ 0\ ^\circ C} CH_2{=}CH{-}K + KCl}$$

$$\mathrm{CH_2{=}CH{-}Cl + 2Li \xrightarrow[\mathrm{THF}]{Na,\ 0-10\ ^\circ C} CH_2{=}CH{-}Li + LiCl}$$