

List of Pyrophoric and Water Reactive Chemicals

This table is not an exclusive list and UCLA was used as a reference.

Liquids

Alkylaluminum reagents (Neat or in hydrocarbon solvents) (Neat reagents are VERY pyrophoric)
Alkyl lithium reagents (Typically in hydrocarbon solvents)
Alkenyllithium
Aryllithium reagents (Typically in hydrocarbon solvents)
Alkynyllithium reagents (Typically in hydrocarbon solvents)
Alkylzinc reagents (Neat reagents are pyrophoric)
Boranes (Neat reagents are pyrophoric)
Grignard Reagents (RMgX) (Typically in hydrocarbon solvents)
Partially or fully alkylated derivatives of metal and nonmetal hydrides (diethylaluminum hydride, diisobutylaluminum hydride, dichloro(methyl)silane) (Usually in liquid form or in solution.)
Alkylated metals (butyllithium, triethylboron, trimethylaluminum) (Usually in liquid form or in solution.)
Non-metal alkyls: R₃B, R₃P, R₃As; Tetramethylsilane, Tributylphosphine”
Metal alkyls and aryls, such as RLi, RNa, R₃Al, R₂Zn

Solids

Alkali metals (lithium, sodium, potassium, sodium potassium alloy – NaK,
Alkylated metal alkoxides or halides (dimethylaluminum chloride, diethylethoxyaluminum)
Finely divided metals: bismuth, calcium, hafnium, iron, magnesium, titanium, uranium, zirconium, Al, Co, Fe, Mg, Mn, Pd, Pt, Ti, Sn, Zn, Zr
Low valent metals (titanium dichloride)
Metal hydrides (potassium hydride, sodium hydride, lithium aluminum hydride, uranium trihydride NaH, LiAlH₄)
Nonmetals (white phosphorous)
Metal carbonyls (dicobalt octacarbonyl, nickel carbonyl) Ni(CO)₄, Fe(CO)₅, Co₂(CO)₈
Used hydrogenation catalysts, e.g. Raney Ni, are especially hazardous due to adsorbed hydrogen gas
Copper fuel cell catalysts, e.g. Cu/ZnO/Al₂O₃
Methanetellurol (CH₃TeH)
Finely divided Iron sulfides (FeS, FeS₂, Fe₃S₄),
Potassium sulfide (K₂S),
Aluminum phosphide (AlP)

Gases

Nonmetal hydrides (arsine, boranes, germane, phosphine, silane) (Most of these are actually gases.) B₂H₆ and other boranes, PH₃, AsH₃