

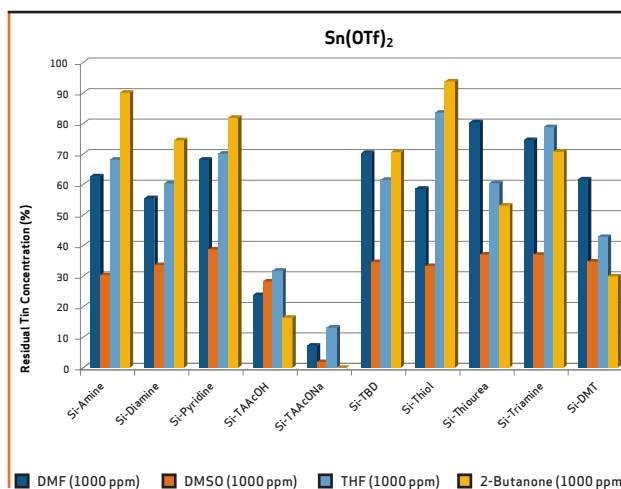
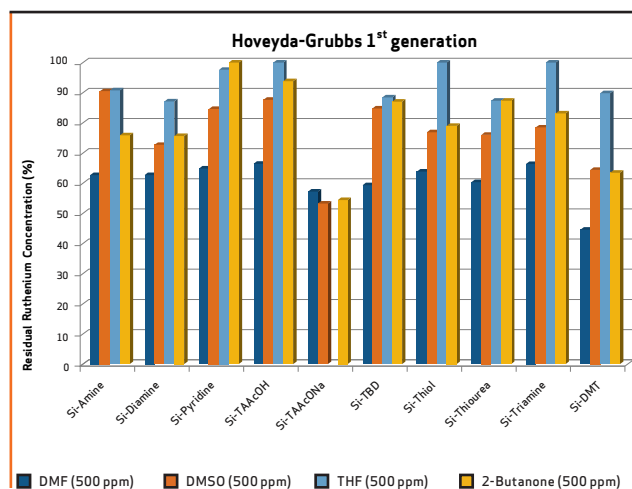
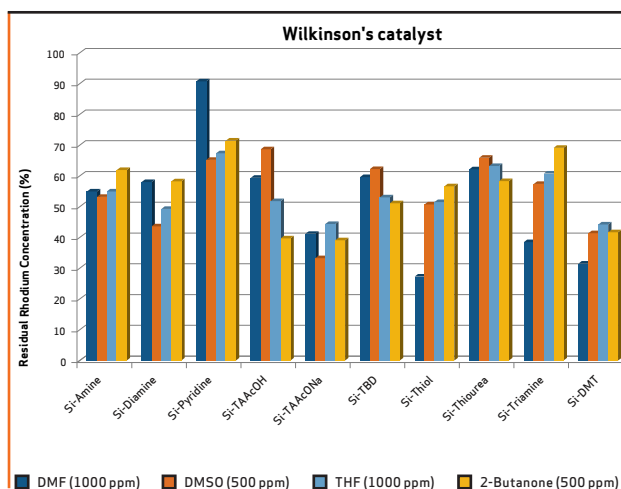
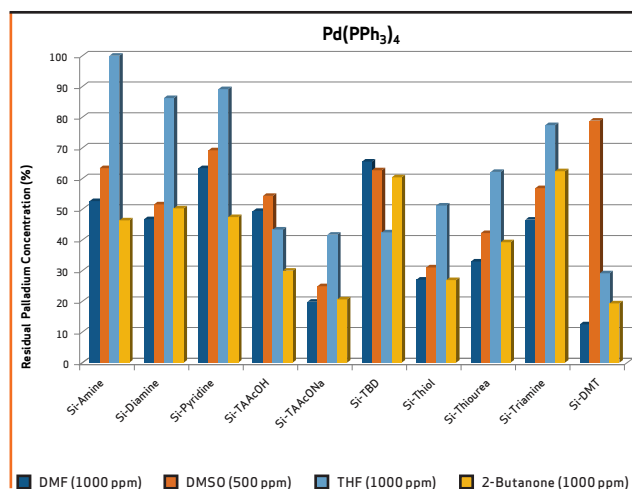
Application Note M2.0

Parameters Effect on Scavenging Efficiency

A metal scavenging study using SiliaBond[®] Metal Scavengers products was conducted on various metal catalysts commonly used in organic synthesis. Various parameters were studied for their influence on the scavengers' robustness as well as to establish the best conditions to bring the level of metal down to an acceptable level for the pharmaceutical industry (i.e.: solvent, number of equivalents, temperature, reaction time, and nature of the catalyst).

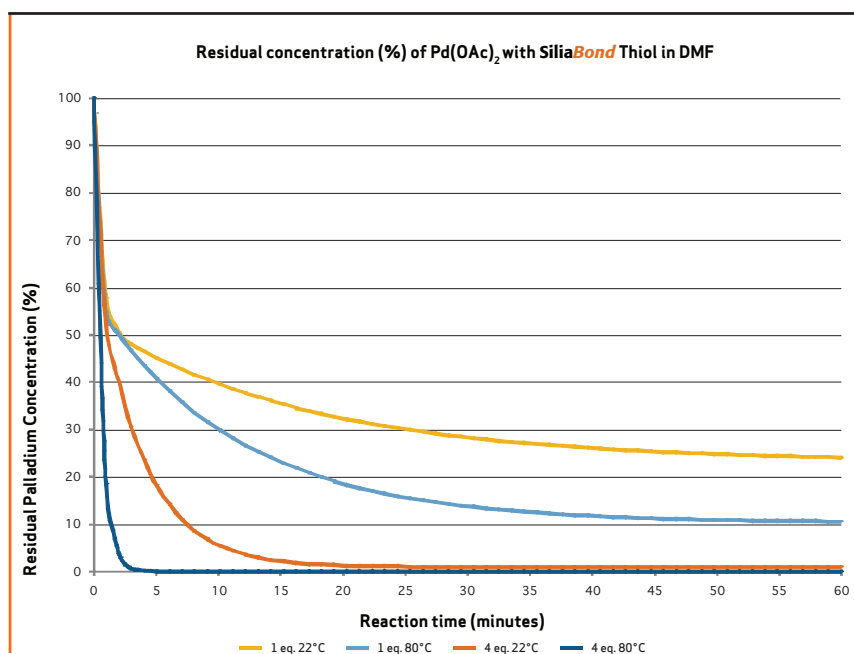
SOLVENT EFFECT ON SCAVENGING EFFICIENCY

SiliaBond Metal Scavengers can safely be used in any organic and aqueous solvents. However, the nature of the solvent does sometimes influence the scavenging efficiency, as demonstrated in the graphs below using one equivalent of the SiliaBond Metal Scavenger for one hour at 50°C (initial concentration in parenthesis).



REACTION TIME AND NUMBER OF EQUIVALENTS EFFECT ON SCAVENGING EFFICIENCY

The fast scavenging kinetic of **SiliaBond Metal Scavengers** allows the reduction of the residual metal concentration to very low ppm in a few minutes. However, various parameters affect the kinetic. The influence of the reaction time, the temperature, and the number of equivalents used are shown in the graphs below (initial concentration 1 000ppm).



Conclusion: number of equivalents and temperature both have an effect on the scavenging efficiency. As the temperature is increased, the residual amount of Pd decreases dramatically.

Please note that it is also possible to get low residual concentration (<1 ppm) with only one equivalent of scavenger, for example by using THF as a solvent (see graph at right).

Conditions: Pd(OAc)₂, THF, **Si-Thiol**, RT.

Influence of reaction time and number of equivalents

