



APPLICATION NOTE

Catalyst quench & removal with MetalShark Tiger

Developed in the laboratories of Prof. Steven Diver at the University at Buffalo, MetalShark Tiger irreversibly binds a variety of homogeneous catalysts to aid in product purification.

In Pd-catalyzed cross couplings and aminations using 2-5 mol % Pd(PPh₃)₄, Pd(OAc)₂, or Pd₂(dba)₃ precatalysts, Prof. Diver's team reports reduction in product metals content to 0.02 - 11 wt ppm Pd after a single treatment and silica gel chromatography. In Ru-catalyzed olefin metathesis reactions using a variety of Grubbs-type catalysts at 5 mol % loading, Prof. Diver reports that products contain only 0.8 - 11 wt ppm Ru after one treatment.

The product is weakly hygroscopic; storage in a desiccator is recommended.

Representative procedure:

On completion of the catalytic reaction, prepare a solution of MetalShark Tiger in MeOH (4 - 8 equiv relative to the catalyst) with a concentration of approx. 40 mg / mL. Note: turbidity may indicate minor hydrolytic degradation of the scavenger, requiring the use of additional MetalShark Tiger.

Introduce the solution to the reaction mixture. For colored complexes, decolorization typically occurs within minutes to indicate isonitrile coordination. Spent catalysts with bulky ligands may require heating to 60 °C to affect complete binding. The quenched catalyst is then removable by aqueous wash during workup, or by concentration of the crude reaction mixture and filtration through silica gel.

Before quench:

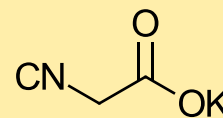
1st. gen. Grubbs catalyst
#02-01-1001 at 0.05 mM in a
reaction mixture



After quench:

the same mixture 5 min after
addition of 4 equiv
MetalShark Tiger (relative to
catalyst) in MeOH shows a
large chromatic shift, indicating
a successful quench.

MetalShark Tiger



Catalog: 01-09-1001

Name: Potassium
2-isocyanoacetate

CAS: 58948-98-4

Formula: C₃H₂KNO₂

MW: 123.15 g/mol

Further reading:

Org. Lett. **2007**, *9*, 1203-1206. DOI: 10.1021/ol0631399

Adv. Synth. Catal. **2015**, *357*, 361-365. DOI: 10.1002/adsc.201400754