

FastWoRX™-S Fast Start Guide

FastWoRX – Forget the Separatory Funnel

- Work-ups in half the time... or less
- Greener - up to 90% less solvent used
- No emulsion formation
- Run parallel samples
- Works at any scale – milligrams to kilograms
- Just a simple solid separation
- Minimize solvent exposure
- Reusable
- Easy automation

FastWoRX-S is a hydrophobic powder which absorbs most organics. Its average particle size is about 100 mesh. FastWoRX-S powder can easily and quickly be separated - along with the absorbed organics - from the aqueous phase by a simple filtration step that can be automated. FastWoRX-S powder eliminates the need for time- and solvent-consuming liquid-liquid extraction (LLE).

FastWoRX-S absorbs most hydrophobic organic compounds with a molecular weight less than 1,000 (we believe it will absorb higher molecular weight compounds but have not done testing). Hydrophilic compounds will tend to remain in the aqueous phase. FastWoRX-S has been successfully tested with many common solvents: EtOH, MeOH, dichloromethane, dichloroethane, chloroform, ethyl acetate, diethyl ether, THF, dioxane, acetone, hexane, benzene, toluene, acetic acid, DMF and DMSO.

Below is a general procedure for using FastWoRX-S powder based on Faster Chemistry's experiences. More details are available in the User Guide. Of course, every reaction is different and every chemist is creative so don't hesitate to try variations to get your reactions done faster than you thought possible!

Please read the SDS before use. FastWoRX-S powder should not be used with strong acids (pH < 1) or bases (pH > 14), hydrofluoric acid or fluorides.

General Procedure for Reaction Work-Up with FastWoRX-S Powder

Step 1: Conduct your reaction and quench with about 5 mL of water or brine per gram of organics.

- If quenching of the reaction is not required, FastWoRX-S powder can be added directly to the sample (go to Step 2).
- If your products have appreciable water solubility, a saturated solution of a suitable salt such as NaCl or NH₄Cl is recommended for quenching.
- If the reaction forms a solid or was done in a water-miscible solvent, an appropriate water-immiscible solvent should be added after quenching to dissolve the solids or form an immiscible organic phase.

Step 2: Add 6 to 10 grams of FastWoRX-S powder per gram of organics to the quenched reaction mixture. Stir vigorously for about 1 minute.

- The absorption of more polar/water-soluble compounds into FastWoRX can be improved by quenching with a saturated salt solution in Step 1.

Step 3: Reduce the solvent volume.

- Use a rotavap or an air or inert gas sparge of the quenched reaction mixture containing the FastWoRX-S powder. Evaporate essentially all of solvent in this step – there should be no organic liquid visible in the mixture.

Step 4: Filter the FastWoRX-S powder. Wash the powder if needed.

- If you will be doing flash chromatography later, it is fastest and most efficient to use a dry loading cartridge as the filter (see additional information on page 3).
- For many reactions, you can go directly to Step 5 after filtration. If residual reactants, salts, catalysts and/or by-products are a concern with your reaction, use water or acid or base solutions to wash them from the filtered powder. If using acid or base washes, you can finish with water washes to remove any residual acid or base (the approximate volume of the wash solutions in mLs is numerically equal to the weight in grams of FastWoRX-S powder added in Step 2).
- If a target compound is highly water-soluble, a minimal amount of a saturated NaCl or NH₄Cl solution should be used for the wash step.

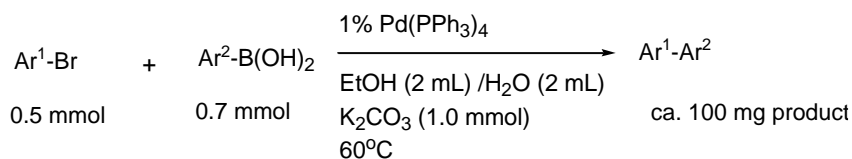
Step 5: Dry the FastWoRX-S powder.

- Use vacuum or an air or inert gas stream to evaporate any solvent remaining in the powder and/or any water remaining on the powder, leaving only the target compound(s) in the dry FastWoRX-S powder.

Step 6: Elute your target compound(s).

- The FastWoRX-S powder can be loaded into any commercial flash chromatography system or you can elute the target(s) manually with your desired solvent.

Using the FastWoRX work-up of this typical Suzuki reaction as an example:



1. Add water or brine (~2 mL) (to quench the reaction and dissolve the inorganic salts) and ethyl acetate (~2 mL) (added ONLY because the solvent used in this reaction is water soluble; otherwise, no additional solvent is needed) and FastWoRX-S (~1 gram) to the reaction mixture. Stir the mixture for ~1 min.

2. Transfer the reaction mixture from the reactor to a round bottom flask (a small amount of water or brine and ethyl acetate can be used to rinse the reactor). Then, remove the organic solvents using a rotavap (no need to separate the aqueous phase). Filter the reaction mixture using a loading cartridge. Purge the loading cartridge using vacuum for ~2 min to remove residual water and organic solvents.

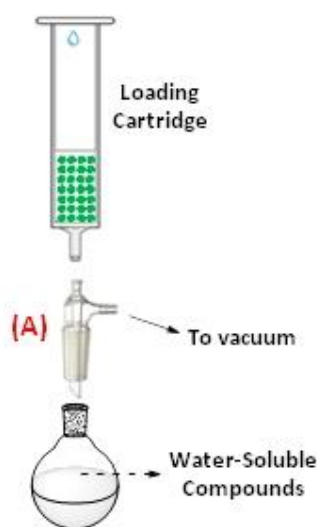
3. Attach the loading cartridge to an automatic flash chromatographic system for separation.

Suggested Filtration Methods for FastWoRX-S Powder

In Faster Chemistry's experience, if you will be doing flash chromatography later, it is usually fastest and most efficient to use a dry loading cartridge designed for your flash chromatography system as the filter. Otherwise, extra transfer steps will be needed, adding time and potentially reducing product recovery. In general, the following three methods can be used:

Suggested FastWoRX-S Filtration Methods

Single Filtration



Parallel Filtrations



DIY Apparatus



(A) Vacuum Filtration Adapter

Vacuum filtration adapters are available from many suppliers such as MilliporeSigma:

<https://www.sigmaaldrich.com/catalog/search?term=vacuum+filtration+adapter&interface=All&N=0&mode=match%20partialmax&lang=en®ion=US&focus=product>

(B) Filtration Manifold

Filtration manifolds are available from many suppliers including MilliporeSigma:

<https://www.sigmaaldrich.com/catalog/product/supelco/57044>

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