

# HOW TO SELECT A PUMP FOR ROTARY EVAPORATION



Evaporation is one of the most common tasks performed in a chemistry laboratory. But, how do you go about selecting the correct vacuum pump for your rotary evaporator? Or, if you already have a vacuum pump, how do you know whether it is well-suited for this application?

The key to correctly selecting and sizing a vacuum pump for rotary evaporation can be found in your answers to the following four questions:

## What solvents are you working with?

This is important due to the different boiling points of solvents. Solvents with a low boiling point, like acetone,

methylene chloride and pentane, do not require as deep of an end vacuum to evaporate as solvents such as acetonitrile, benzene and chloroform. The removal of solvents with high boiling points, such as water, DMSO, DMF and toluene requires a relatively deep end vacuum. You must ensure that the pump is capable of reaching an end vacuum deep enough to remove the target solvents efficiently. For reference, see our Boiling Point Table ([www.knfusa.com/downloads](http://www.knfusa.com/downloads), then select the 'Technical Library' tab).

Application  
**NOTE**

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This topic then naturally progresses to the subject of chemical compatibility. Based on the solvent vapors going through the pump, one can determine the best materials for a long, trouble-free service life. Dry, oil-free pumps offer significant advantages in this area in comparison to rotary vane and water aspirators. In addition, they can feature premium corrosion resistant wetted parts, are easily maintained on

site, and do not create hazardous waste.

## What is the size of your evaporation flask?

This question allows you to select the best sized pump for your application. Bigger isn't always better. A pump that is too large or has too high of a flow capacity for a given application is difficult to control, terribly inefficient and more expensive to own and operate. On the other hand, a pump that's sized too small or doesn't have enough flow capacity will slow the evaporation and lead to longer processing times. A pump that is used for a 250 mL flask is probably not the best pump for use with a 20 L evaporation flask, and vice versa.