

## Qwik System Flush® Impurity Absorption Capacity and Flushing Capability

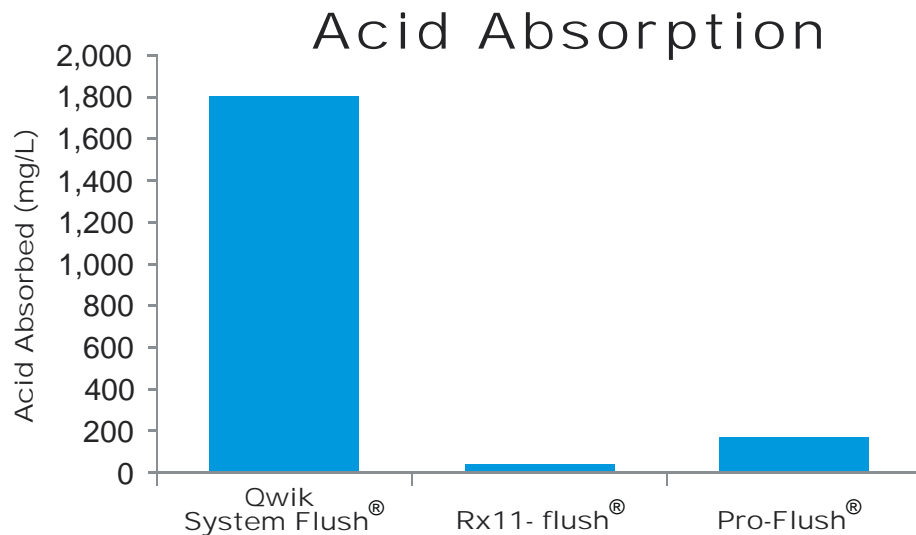
Qwik **System Flush**® was tested against competing products Rx-11 flush® and Pro-Flush®. These tests are described below and include absorption capacity of three critical impurities and the flushing capability of each of the flush products. It should also be noted that Rx-11 flush® is a registered trademark of Nu-Calgon Corporation and Pro-Flush® is a registered trademark of DiversiTech.

Oil must be removed from the system during retrofits and after burn-outs to ensure no residual contamination remains. Oil was added to samples of each product to determine their oil absorption capability. The results of this test showed that all of the flushes were completely miscible with oil which means they should leave no oily residue behind after flushing.

In addition to removing oil, acid absorption by a flush is equally important. Inorganic (strong) acid contamination in an HVAC unit can cause premature compressor burn-out. In this experiment, a small amount of inorganic acid was added to each flush. Each sample was titrated before and after the addition of the acid in order to determine the amount of acid absorbed into the flush.

The results of this analysis showed that **Qwik System Flush® absorbed at least ten times as much inorganic acid than any other flush.** The results for the absorption of inorganic acids are shown below.

**Qwik  
 System Flush®  
 absorbed  
 over  
 10x  
 as much acid  
 compared  
 to the other  
 products  
 tested.**

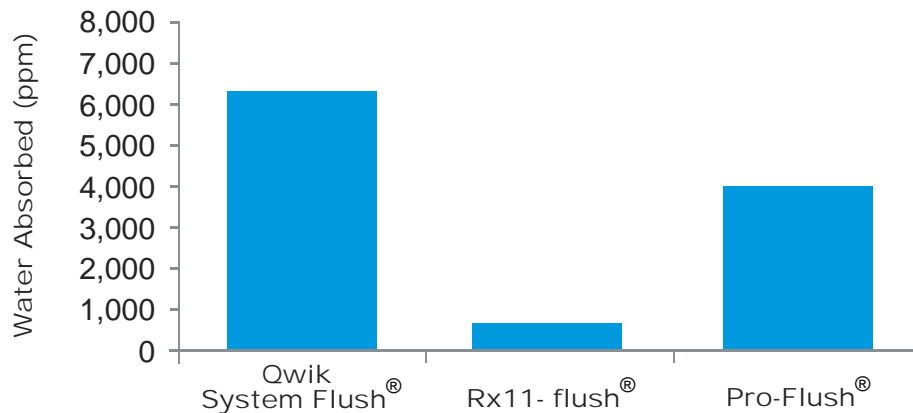


Rx11-flush® is a registered trademark of Nu-Calgon Corporation, St Louis, MO  
 Pro-Flush® is a registered trademark of DiversiTech Corporation, Atlanta, GA  
 Qwik System Flush® and Qwik-SF® are registered trademarks of:  
 Mainstream Engineering Corporation®, Rockledge, FL

The presence of moisture in an HVAC/R unit can also lead to system failure. For this reason, it is important for the flushing product to absorb moisture and transport it out of the system. Water was added to each flush and Karl Fischer titration was performed to determine the amount of water absorbed. Moisture absorption test results are shown below.

**Qwik System Flush® absorbed up to 9X as much water compared to the other products tested.**

## Moisture Absorption



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The flushing capability for each of the products was tested using a small heat exchanger. The lines of the heat exchanger were filled with oil and label instructions for each product were followed. After flushing, and purging with nitrogen, the heat exchanger was cleaned with hexane to determine if any residue was left by the flush. **The results of this test indicated that all flush products tested removed over 99% of contamination.**

It should be noted that Qwik **System Flush®** meets or exceeds the other products in flammability, toxicity, ozone depletion, global warming potential, and compatibility with refrigerants and refrigeration system components.

**In conclusion, Qwik System Flush® performed as well or better than the competition in all tests performed including: Moisture Absorption, Acid Absorption, Oil Absorption, and Flushing Capability.**