

PURPOSE: 2-D: DEMONSTRATION OF FILTRATION

PROCEDURE:

1. WE FOLDED 3 FILTER PAPERS INTO CONES AND INSERTED THEM INTO THREE SEPARATE GLASS FUNNELS. WE WET THE PAPERS TO MAKE THEM STICK TO THE GLASS.
2. WE THEN PREPARED THREE-100 MILLILITERS SOLUTIONS OF CHARCOAL AND WATER. WE MADE ONE THICK, ONE MEDIUM THICKNESS, AND ONE THIN. WE THEN RECORDED THE MASS OF THE CHARCOAL USED IN EACH PREPARATION.
3. WE POURED 50 ML, OF EACH SOLUTION, ONE AT A TIME, INTO A FUNNEL.
4. WE THEN IMMEDIATELY COUNTED THE NUMBER OF DROPS PRODUCED PER MINUTE.
5. WE THEN COUNTED THE NUMBER OF DROPS PER MINUTE WHEN THE FUNNEL WAS HALF-FILLED.
6. WE ALSO REPEATED THE COUNT PER MINUTE WHEN THE FUNNEL WAS EMPTY.
7. THERE WERE QUESTIONS ASSESSED, REVIEWED, AND NOTED:

DID THE CHARCOAL PASS INTO THE FILTRATE? WHICH SOLUTION HAD THE FASTEST RATE OF FILTRATION? WHAT IS THE DRIVING FORCE BEHIND THE FILTRATION? WHAT OTHER FACTORS INFLUENCE THE RATE OF FILTRATION? DO YOUR RESULTS ILLUSTRATE THESE INFLUENCING FACTORS?

8. WE THEN REPEATED THESE PROCEDURES WITH THE REMAINING 50 ML OF SOLUTION.

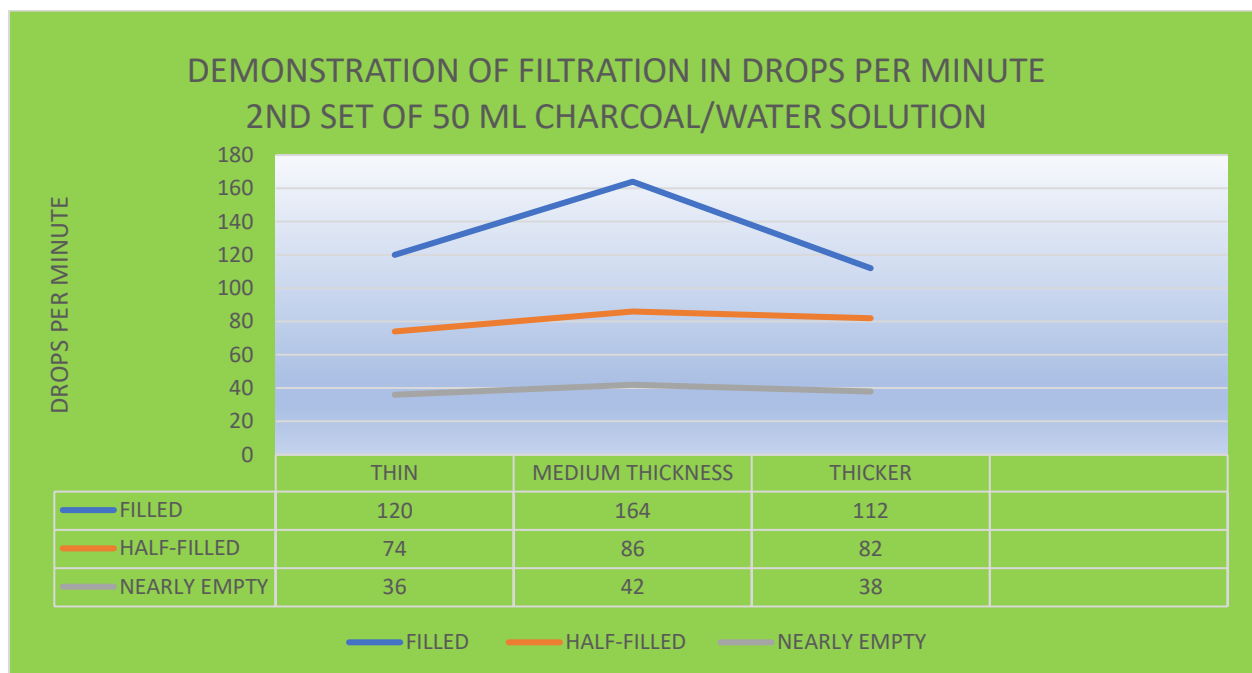
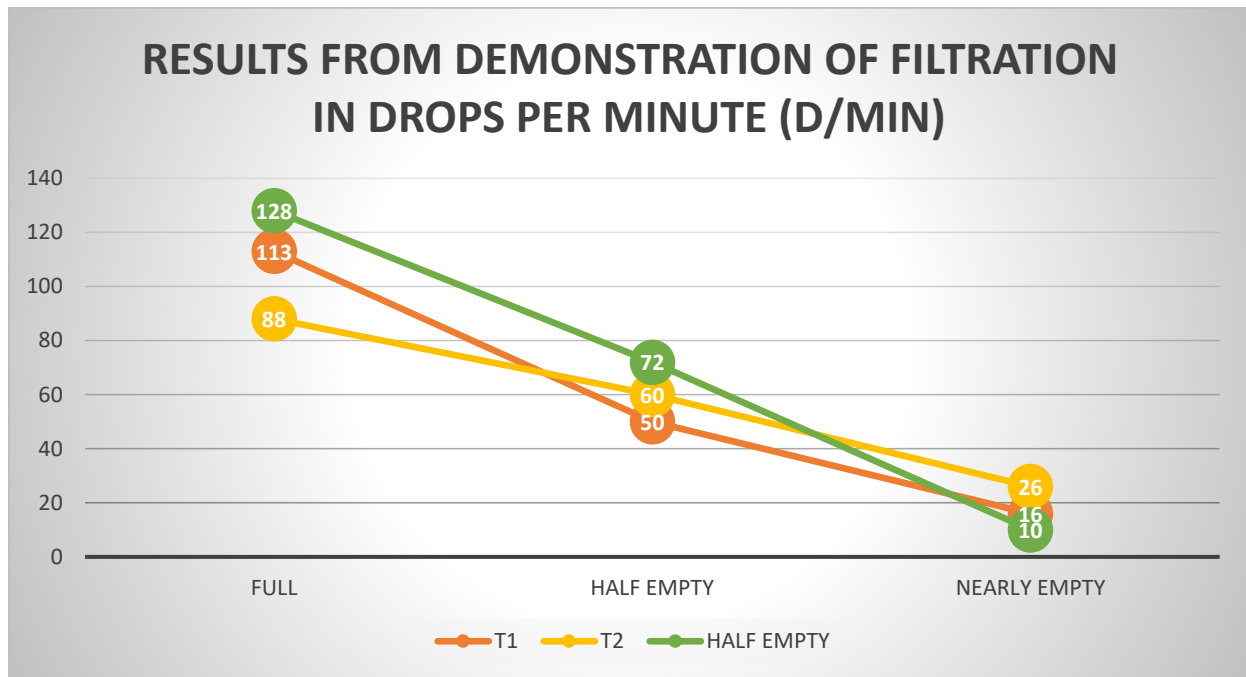
RESULTS:

EARLY IN THE PROCESS - WE NOTED SOME DIFFICULTY IN CREATING THE CORRECT RATIO OF WATER/CHARCOAL CONSISTENCY THAT WOULD ALLOW US TO PREPARE AN ACCURATE READING. WE THEN MADE SOME PORPORTIONAL ADJUSTMENTS TO THE SOLUTION, BY ADDING ADDITION CHARCOAL SOLUTE. THIS TURNED OUT WELL. THE LINE CHART BELOW REFLECT OUR RESULTS.

IN THE THIN SOLUTION THERE WERE 113 D/MIN, 50 D/MIN WHEN HALF FILLED, AND 16 D/MIN WHEN NEARLY EMPTY. IN THE SECOND THICKER SOLUTION, THE

RESULTS REFLECTED 80 D/MIN WHEN FULL, 60 D/MIN- WHILE HALF FILLED, AND 26 D/MIN WHEN EMPTY.

IN THE THIRD AND THICKEST SOLUTION, WE FOUND THE WATER FILTERED AT A RATE OF 128 D/MIN, 72 D/MN WHEN FUNNEL WAS HALF-FILLED AND FINALLY 10 D/MIN WHEN NEARLY EMPTY.



DISCUSSION:

IN REVIEW OF THE PROCEDURE, I NOTED THE RATIO OF THE SOLUTION TO BE AN IMPORTANT PART OF THE FILTRATION PROCESS. IN THE 1ST SOLUTION (THIN)- 6.57 MG OF CHARCOAL WAS ADDED TO WATER. THE 2ND SOLUTION (MEDIUM THICKNESS) CONTAINED, 8.27 MG OF CHARCOAL, AND THE 3RD SOLUTION (THICKEST) CONTAINED 10.22 MG OF CHARCOAL.

IN THE 1ST SOLUTION (THIN), THE WATER WOULD PASS THROUGH QUICKER THAN THE THICKER SOLUTIONS. AS THE WATER LEVEL DECREASED, THE D/MIN WOULD DECREASE AS WELL.

IN THE 2ND SOLUTION, WE NOTED THE FILTRATION PROCESS TO SLOW OR DECREASE WITHIN EACH PHASE OF THE PROCESS. THIS SEEMED TO BE VARYING WITH THE 3RD SOLUTION THAT WAS PREPARED.

IN THE 3RD SOLUTION, WE NOTED THE D/MIN INCREASED. IT IS VERY DIFFICULT TO UNDERSTAND WHAT MAY HAVE CAUSED THIS CHANGE. THE AMOUNT OF CHARCOAL PLACED IN THE THIRD SOLUTION SHOULD HAVE CAUSED A DECREASE IN D/MIN, WITH THE UNDERSTANDING THAT THE SOLUTION IS MUCH DENSER THAN THE 2ND AND 1ST SOLUTION.

WE DID NOTATE THAT ALTHOUGH THE PORTIONS OF CHARCOAL SOLUTES VARIED, THERE STILL SEEMED TO BE SOME RESIDUAL CHARCOAL IN EACH FLASK AT THE COMPLETION OF EACH FILTRATION. THE FASTEST RATE OF FILTRATION CONCLUSIVELY WAS NOTED IN THE 1ST SOLUTION. THE DRIVING FORCE OF THE FILTRATION SEEMED TO BE THE EXTENT OF DIFFUSION WITHIN EACH SOLUTION. BECAUSE THE RESULTS VARIED FROM THE FIRST SOLUTION (THIN) TO THE THIRD

SOLUTION (THICKEST) IT IS HARD TO SAY IF THE AMOUNT OF THE CHARCOAL IS THE ONLY DRIVING FORCE IN THE FILTRATION PROCESS IN THE DROPS PER MINUTE. OTHER FACTORS THAT CAN INFLUENCE THE RATE OF FILTRATION- CAN BE TIME, TEMPERATURE, TYPE OF WATER USED, AND AGE OF CHARCOAL SOLUTE.

CONCLUSION:

THE PURPOSE OF THIS ASSESSMENT IS TO DEMONSTRATE THE FILTRATION PROCESS. CONCLUSIVELY, THE 1ST SOLUTION, PROVIDED THE QUICKEST FILTRATION PROCESS. THE 2ND AND THE 3RD SOLUTION DEEMED TO HAVE VARYING RESULTS WHICH CAN BE TIED TO OTHER VARYING FACTORS SUCH AS DENSITY AND/OR LEVEL OF DIFFUSION. I BELIEVE THE RESULTS ARE INCONCLUSIVE AND REQUIRE MORE TESTING IN ORDER TO DETERMINE THE TRUE NATURE OF THE D/MIN.