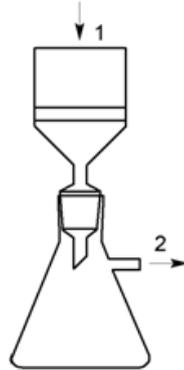




LABORATORY WORK NO. 36 SEPARATION OF MIXTURES

TASK NO. 1 SEPARATING THE MIXTURE OF BaSO_4 , CaCO_3 , KCl

- **CHEMICALS:** mixture (in an unknown ratio) of barium sulfate, calcium carbonate and potassium chloride, distilled water, 10% solution of HCl, 15% solution of Na_2CO_3
- **AIDS:** 3x 200 ml beaker, stirring rod, Buchner funnel, suction flask, evaporating dish, wire gauze, burner, laboratory stand, tongs, filter paper, thermometer, scales, drier
- **PROCEDURE:**
 1. Pour a sample of 10 g mixture (in an unknown ratio) of barium sulfate, calcium carbonate and potassium chloride into a the first beaker (200 ml) and after that add 50 ml of distilled water to the mixture.
 2. Heat the mixture while stirring for 5 minutes at 50 ° C.
 3. Using the Buchner funnel, filter barium sulfate and calcium carbonate (which are not soluble in water) away from the mixture. Pour the clear filtrate into the porcelain evaporating dish and heat it until all water is evaporated from the solution. You obtain potassium chloride - product No.1. After it is cooled and completely dried, weigh the obtained product.
 4. Transfer the insoluble part of barium sulfate and calcium carbonate (see point No.3) into the second beaker (200ml) and add 50ml of 10% HCl.
 5. Heat the mixture until the carbon dioxide is released. After gas evolution is ended, maintain heating the mixture for 5 minutes at slightly elevated temperature. Filter the final solution through the Buchner funnel. The separated barium sulfate remains on filter paper - product No.2. Weigh the product after drying and cooling.
 6. Pour the filtrate from the above mentioned filtration into the third beaker (200 ml) and add an excess of 15% sodium carbonate solution in it so that all calcium carbonate will be precipitated.
 7. Filter again the excluded calcium carbonate precipitate in the Buchner funnel while washing it multiply with distilled water. After cooling and drying the precipitate, weigh the calcium carbonate - product No. 3.



Drawing of the vacuum filtration: 1-Büchner funnel, 2-suction flask. The arrow No.1 indicates the input of the fluid, the arrow No.2 indicates the vacuum streaming direction after connecting to a water aspirator.

■ **CONCLUSION:**

Weigh all the obtained products, write down the results and compare your results with the teacher's data.



STUDENT'S SHEET No. 36

SEPARATION OF MIXTURES

1) VOCABULARY

Match the Czech words with their English equivalents:

A. fluid	roztok	1....
B. moist	činidlo	2....
C. solution	síran barnatý	3....
D. agent	odsávací baňka	4....
E. barium sulfate	šipka	5....
F. suction flask	Büchnerova nálevka	6....
G. arrow	zahřát	7....
H. Buchner funnel	chlorid draselný	8....
I. heat	tekutina	9....
J. potassium chloride	vlhký	10....

2) **Spelling/Word search**

(if needed, read the hints in brackets to find some help):

1. TRELIF RAPER (A paper, which is used to separate fine solids from liquids or air)
2. LACSES (A measuring instrument used in chemistry for determining the weight or mass of an object)
3. ORYBORATLA DANST (A piece of lab. equipment to which clamps can be attached to hold test tubes)
4. NERRUB (A common piece of laboratory equipment that produces a single open gas flame)
5. RETEMOMRETH (A device that measures temperature)

3) **Choose the correct answer:**

1. A piece of laboratory glassware used for the evaporation of solutions and liquids:

- a) Evaporation bowl
- b) Evaporating dish



- c) Evaporating glass
- d) Evaporation bottle

2. A piece of laboratory equipment used in filtration is:

- a) Buchner funnel
- b) Buchner tunnel
- c) Buchner cannell
- d) Buchner burrel

3. A laboratory equipment used for holding hot beakers, flasks, tubes etc.:

- a) bonges
- b) tongs
- c) gongs
- d) kongs

4. A process when you are mixing chemicals and fluids with a stirring rod:

- a) mixing
- b) heating
- c) indicating
- d) stirring

4) VOCABULARY - verbs

Match the Czech verbs with their English equivalents:

K. srovnat	indicate	1....
L. nalít	obtain	2....
M. označovat	compare	3....
N. získat	pour	4....
O. vážit	transfer	5....
P. přenést	weigh	6....