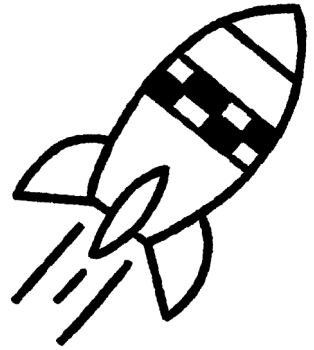


Falgal (reaction) kiimiko: roobab (precipitation)

Sayniska

Unit Fahanka falgal (reaction) kiimiko



Erayada muhiimka ah

roobab (precipitation)

roob (precipitate)

milan (solution) aqueous (aq)

aan milmi karin (insoluble)

falanqaynta kiimikada tayada (chemical qualitative analysis)

Erayada muhiimka ah

Roobab (precipitation) waa habka roob (precipitate) loo sameeyo.

Roob (precipitate) waa adag aan milmi karin (insoluble) oo ka sameysma marka laba milan (solution) ay falgalaan.

Milan (solution) aqueous (aq) waxaa la sameeyaa marka walax ku milan biyo (water).

Aan milmi karin (insoluble) waa qaab lagu qeexo walax aan ku milmi doonin milane gaar ah.

Falanqaynta kiimikada tayada (chemical qualitative analysis) waa tijaabo kiimiko oo xaqiijisa joogitaanka walax, kumana sheego inta walaxda ay tahay.

Natiijo

Waxaan qeexi karaa waxa dhacaya inta lagu jiro falgal (reaction) roobab (precipitation), iyo qorista isla'egta kiimikada ee muujinaysa.

Falgal (reaction) kiimiko: roobab (precipitation)

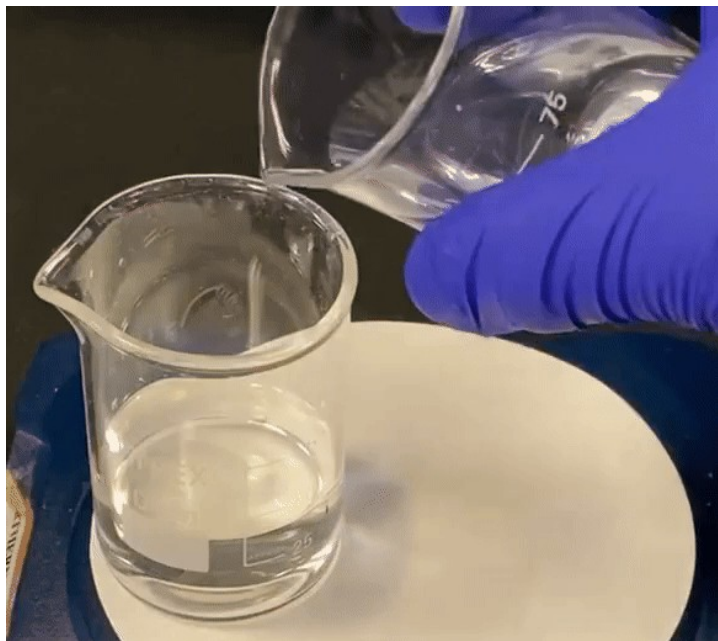


Falgal (reaction) roobab (precipitation)



Isticmaalka falgal (reaction) roobab (precipitation)

Falgal (reaction) roobab (precipitation) waxay dhacaan marka laba milan (solution) ay isku daraan si ay u sameeyaan shey adag oo aan milmi karin (insoluble).

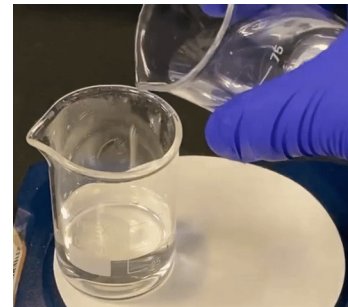


samaynta raareedka rasaasta iodide (lead iodide precipitate forming)

Muujinta roob (precipitate) waa caddayn in falgal (reaction) kiimiko uu dhacay.

Isku darka milanka (solution) nitrate-ka rasaasta (lead nitrate) iyo potassium iodide (potassium iodide) wuxuu keenaa samaynta raareed (precipitate) huruud ah oo ah rasaasta iodide (lead iodide) iyo milan (solution) ah potassium nitrate (potassium nitrate).

Astaamaha xaaladda (state symbols) waxaa loo isticmaali karaa in lagu garto haddii falgal (reaction) uu soo saaray raareed (precipitate).



nitrate-ka rasaasta (aq) (lead nitrate(aq)) + potassium iodide (aq) (potassium iodide(aq)) → rasaasta iodide (s) (lead iodide(s)) + potassium nitrate (aq) (potassium nitrate(aq))

wuxuu muujinayaa in adke (solid) la sameeyay

Falgalyada raareedka (Precipitation reactions)

Waa maxay xaaladda walaxda (state of matter) ee raareedka (precipitate)?

a

adke (s) (solid (s)) ✓

b

dareere (l) (liquid (l))

c

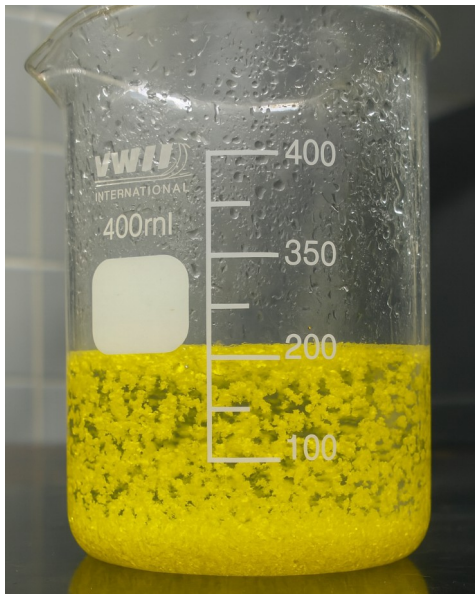
neef (g) (gas (g))

d

milan (aq) (solution (aq))

Falgalyada raareedka (Precipitation reactions)

Maaddaama raareedka (precipitate) uu yahay adke (solid), wuxuu u degi doonaa gunta wheelka (container) waqti ka dib.



Marka raareed (precipitate) uu sameeyo, wuxuu:

- wuxuu ka dhigi doonaa milanka (solution) la sameeyay mid daruuroobay/madhan (cloudy/opaque)
- wuxuu noqon karaa cad ama midab leh

Run mise been?

Astaamaha xaaladda (state symbols) waxaa loo isticmaali karaa in lagu garto falgal raareed (precipitation reaction).



Run



Been

Sabab u sheeg jawaabtaada

a

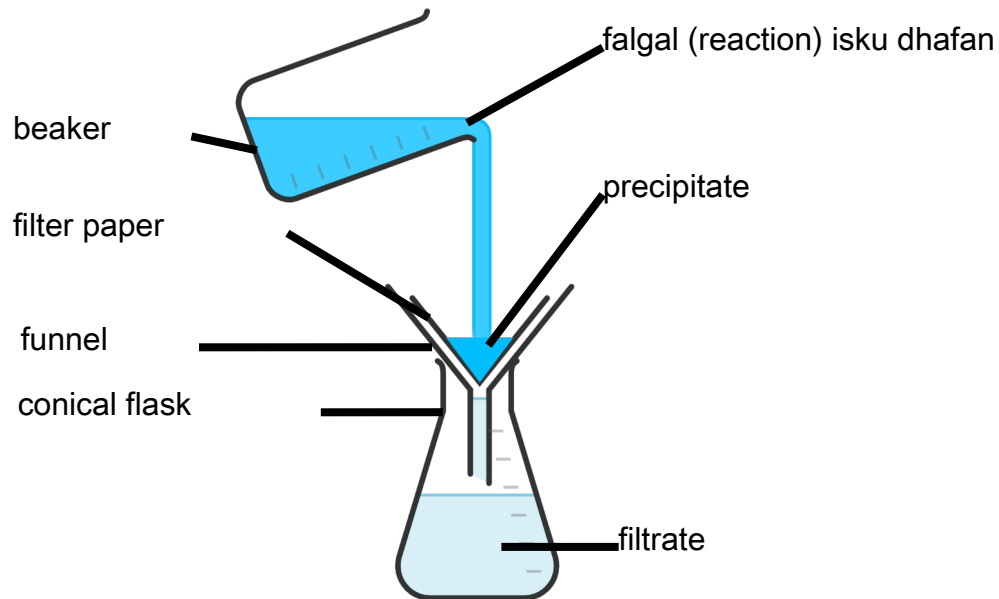
Walax leh astaanta xaaladda (aq) (state symbol (aq)) waa raareed (precipitate).

b

Walax leh astaanta xaaladda (s) (state symbol (s)) waa raareed (precipitate).



Si loo ururiyo precipitate-ka waxaan isticmaali karnaa filtration.



Falgal (reaction) precipitation

Waa maxay habka loo kala saaro precipitate-ka iyo falgal (reaction) isku dhafan?

a militaanka (dissolving)

b precipitation

c distillation

d filtration



1) Aqoonso falgal (reaction) precipitation-ka:

- a) silver nitrate (aq) + sodium chloride (aq) → silver chloride (s) + sodium nitrate (aq)
- b) hydrochloric acid (aq) + sodium hydroxide (aq) → sodium chloride (aq) + biyo (water) (l)
- c) barium chloride (aq) + sodium sulfate (aq) → barium sulfate (s) + sodium chloride (aq)
- d) nitric acid (aq) + potassium hydroxide (aq) → potassium nitrate (aq) + biyo (water) (l)

2) Sharax sida aad u aqoonsatay falgalalka roobabka (precipitation reactions).

Hawsha A Falgalalka roobabka (Precipitation reactions)

1) Aqoonso falgalalka roobabka (precipitation reactions).

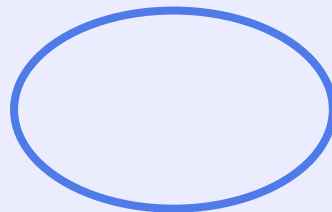
a) silver nitrate (aq) + sodium chloride (aq) →



b) hydrochloric acid (aq) + sodium hydroxide (aq) →



c) barium chloride (aq) + sodium sulfate (aq) →



d) nitric acid (aq) + potassium hydroxide (aq) →



Jawaabaha:

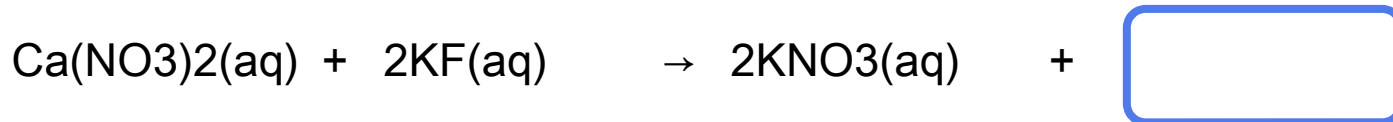
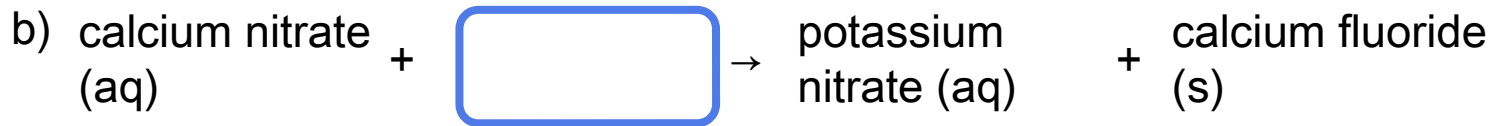
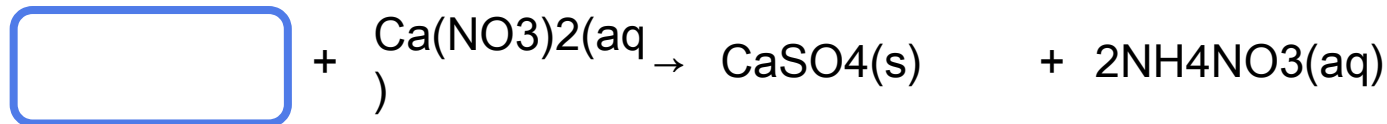
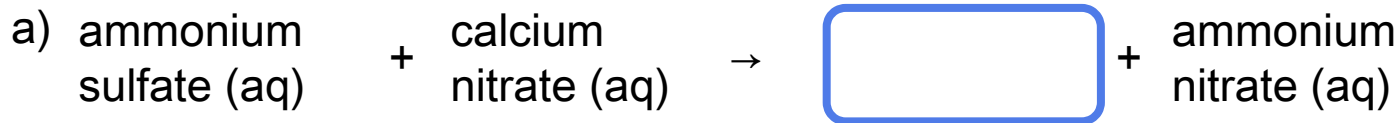
	silver chloride (s)	sodium nitrate (aq)	+	sodium chloride (aq)
+	biyo (water) (l)	sodium chloride (aq)		
		barium sulfate (s)	+	potassium nitrate (aq)

2) Sharax sida aad u aqoonsatay falgal roobab (precipitation reactions).

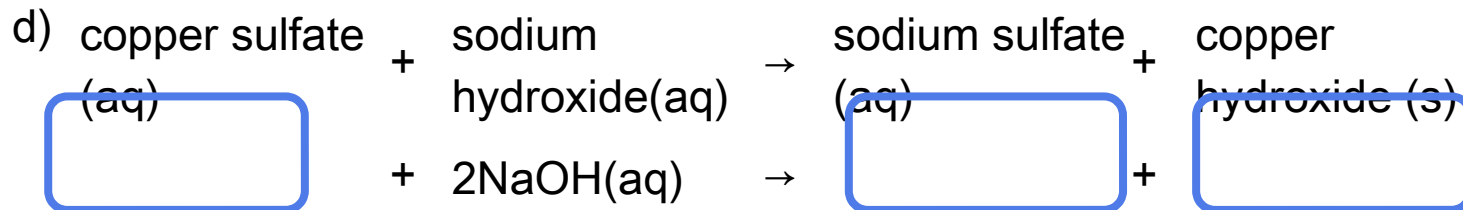
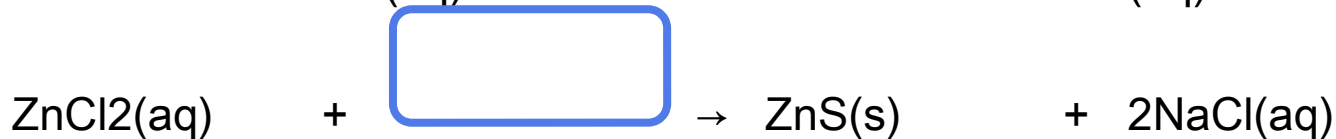
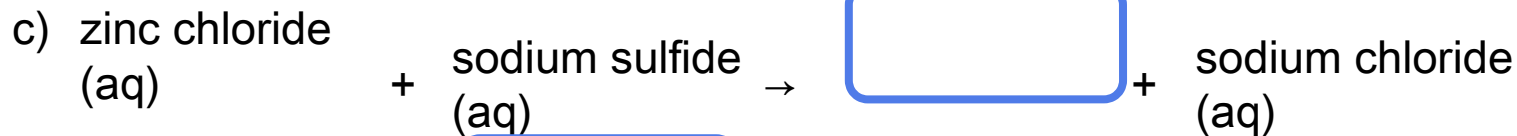
Falgal roobab (precipitation reaction) dhexdiisa:

- adag (solid) had iyo jeer waa la sameeyaa
- isle'egta (equation), badeecada leh calaamadda xaaladda (s) waxay noqon doontaa roobka (precipitate)

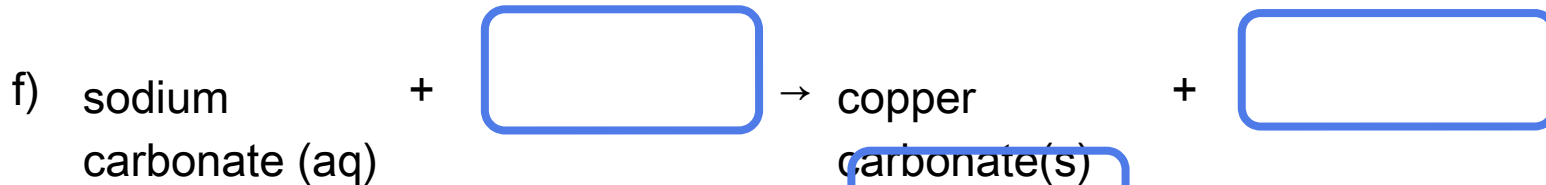
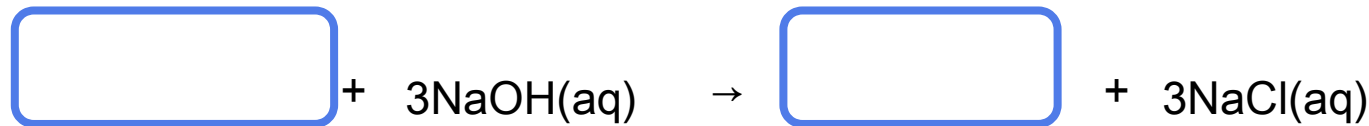
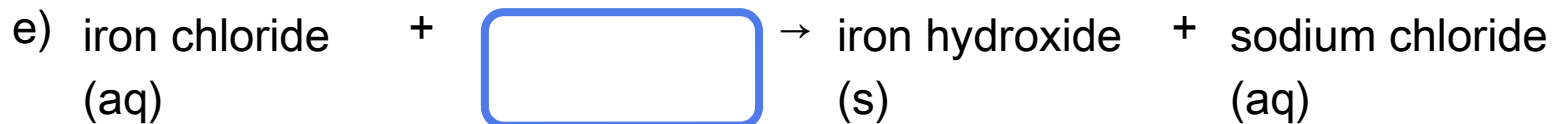
- 3) Dhammeystir qaybaha maqan ee isle'egyada ereyada iyo calaamadaha ee ku muujisan sanduuqa falgal roobab (precipitation reactions) soo socda. Ku dar calaamadaha xaaladda (state symbols). Isticmaal macluumaadka shaxda xeryahooda (compounds table) ee qalabka dheeraadka ah.



- 3) Dhammeystir qaybaha maqan ee isle'egyada ereyada iyo calaamadaha ee ku muujisan sanduuqa falgal roobab (precipitation reactions) soo socda. Ku dar calaamadaha xaaladda (state symbols). Isticmaal macluumaadka shaxda xeryahooda (compounds table) ee qalabka dheeraadka ah.



- 3) Dhammeystir qaybaha maqan ee isla'egyada ereyada iyo calaamadaha ee uu muujinayo sanduuqa falcelinta roobabka (precipitation reactions). Ku dar calaamadaha xaaladda (state symbols). Isticmaal macluumaadka ka jira shaxda xeryahooda (compounds table) ee agabka dheeraadka ah.



- 3) Dhammeysti qaybaha maqan ee isla'egyada ereyada iyo calaamadaha ee falgalalka (reactions) roobabka (precipitation). Ku dar calaamadaha xaaladda (state symbols). Isticmaal macluumaadka shaxda xeryahooda (compounds) ee qalabka dheeraadka ah.

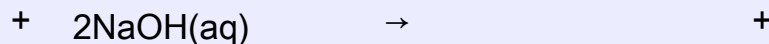


- 3) Dhammeysti qaybaha maqan ee isla'egyada ereyada iyo calaamadaha ee falgalalka (reactions) roobabka (precipitation). Ku dar calaamadaha xaaladda (state symbols). Isticmaal macluumaadka shaxda xeryahooda (compounds) ee qalabka dheeraadka ah.

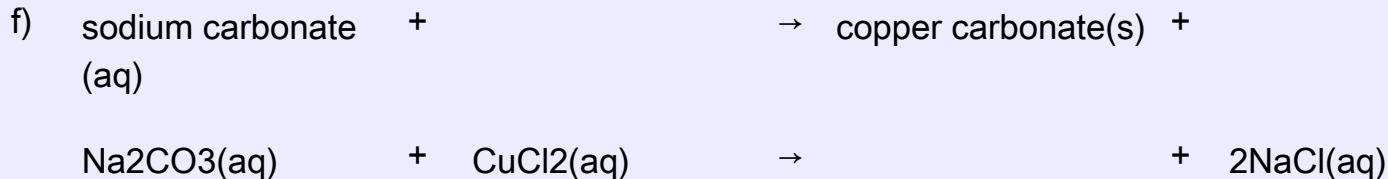
c) zinc chloride (aq) + sodium sulfide (aq) → + sodium chloride (aq)



d) copper sulfate (aq) + sodium hydroxide(aq) → sodium sulfate (aq)+ copper hydroxide (s)



- 3) Buuxi qaybaha maqan ee isla'egyada ereyada iyo calaamadaha ee falgal (reaction) roobabka (precipitation) soo socda. Ku dar calaamadaha xaaladda (state symbols). Isticmaal macluumaadka shaxda xeryahooda (compounds table) ee qalabka dheeraadka ah.



Falgal kiimiko: roobab (Chemical reactions: precipitation)



Falgal roobab (Precipitation reactions)



Isticmaalka falgal roobab (Uses of precipitation reactions)

Falgal roobab (Precipitation reactions) waxaa loo isticmaalaa daawaynta biyaha (water).



biyaha (water) wabiga ah ee aan la daawayn

Biyaha (water) waxaa ku jira walxo milmay oo aan loo baahnayn oo ka dhigi kara biyaha (water) aan ammaan u ahayn cabitaanka, tusaale ahaan xeryaha rasaasta (lead) iyo naxaasta (copper).

Falgal roobab (Precipitation reactions):

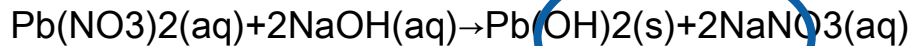
- waxay ka caawiyaan ka saarista walxahan aan loo baahnayn ee biyaha (water) ku jira
- waxay sameeyaan xeryo aan milmi karin (insoluble compounds) oo lagu saari karo shaandhayn (filtration)

Biyaha (water) waxay u baahan yihiin habayn dheeri ah ka hor inta aanay ammaan u ahayn cabitaanka, tusaale ahaan jeermiska iyadoo lagu daro koloriin (chlorine).

Heerarka sare ee xeryaha rasaasta (lead), naxaasta (copper) iyo cadmium ee biyaha (water) la cabbo waxay noqon karaan sun (toxic).

Waa laga saari karaa iyadoo la adeegsanayo roobab (precipitation):

- Xarunta rasaasta (lead compound) waxay la falgashaa sodium hydroxide.
- Tani waxay samaysaa roobab cad oo aan milmi karin (white insoluble precipitate), oo ah hydroxide-ka rasaasta (lead hydroxide).
- Roobabka (precipitate) waa laga saari karaa iyadoo la adeegsanayo shaandhayn (filtration).
- Tani waxay ka tagtaa biyaha (water) kuwa ammaan u ah cabista.





cagaar (limescale) oo ku yaal qasabad

Biyaha adag (Hard water) waa dhibaato meelaha juqraafiga qaarkood, taasoo keenta:

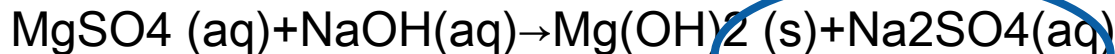
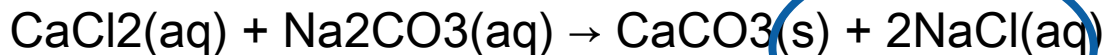
- cagaar (limescale) oo ku jira kettles, tuubooyinka biyaha iyo qasabadaha
- dhadhan biyo oo ka duwan biyaha jilicsan (soft water)
- xumbo saabuun (soap scum)

Waxaa sidoo kale loo baahan yahay saabuun dheeri ah si loo sameeyo xumbo / goobo wanaagsan oo lagu maydho.

Isticmaalka falgalyada roobabka (precipitation reactions)

Biyaha adag (Hard water) waxaa sababa xeryahooda calcium iyo magnesium ee ku jira biyaha (water).

- Roobabka la sameeyay (calcium carbonate iyo magnesium hydroxide) waa laga saari karaa iyadoo la adeegsanayo shaandhayn (filtration).
- Tani waxay yaraynaysaa dhibaatooyinka isticmaalkeeda waxayna ka dhigaysaa biyaha (water) kuwa dhadhankoodu fiican yahay oo la cabbo.



Isticmaalka falgalyada roobabka (precipitation reactions)

Falgalyada roobabka (Precipitation reactions):

- waxay gartaa haddii walaxdu joogto
- waxaa loo isticmaali karaa tijaabo kiimiko oo tayo (qualitative test)
- uma muujinayaan inta walaxda ah ee joogta

Ku darista sodium hydroxide milan (solution) ee biro kala duwan ayaa sababi doonta in roobab (precipitates) sameeyaan.

Tusaale: midab buluug ah wuxuu muujinayaa in xarun naxaas ah ay joogto.



falgal roobab (precipitation reactions)

Soo koobida midabada roobka (precipitate):

midabka roobka (precipitate)	xarun bir ah oo ku jirta milanka (solution)
cadaan	aluminium / calcium / magnesium / lead
buluug	naxaas (copper)
cagaar / bunni	bir (iron)

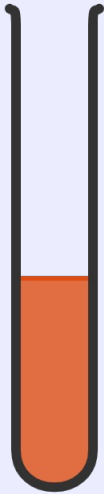


falgal roobab (precipitation reactions)

Tijaabooyin dheeri ah ayaa loo baahan doonaa si loo kala saaro farqiga u dhexeeya roobabka cad (white precipitates).

Isticmaalka falgal roobab (precipitation reactions)

Tubal (test tube) kee ayaa ku jira xarun naxaas ah?



a



b



c



1) Waa kuwee xarunno bir ah oo laga heli karo muunadaha biyaha (water) ee Axmed?



Axmed

Waxaan ku daray sodium hydroxide (sodium hydroxide) shay kasta oo aan arkay kuwan soo socda:

- shayga A wuxuu sameeyay huruud cagaaran (green precipitate)
- shayga B wuxuu sameeyay huruud cad (white precipitate)
- shayga C wuxuu sameeyay huruud buluug (blue precipitate)
- shayga D wuxuu sameeyay huruud bunni (brown precipitate)
- shayga E ma samaysan huruud (precipitate)

1) Waa maxay xarumaha birta (metal compounds) ee laga heli karo shayga biyaha (water samples) ee Axmed?



Axmed

shay (sample)	midabka huruudda (colour of precipitate)	birta xarunteeda (metal compound present)
A	cagaar (green)	iron (iron)
B	cad (white)	aluminium / calcium / magnesium (aluminium / calcium / magnesium)
C	buluug (blue)	copper (copper)
D	bunni (brown)	iron (iron)
E	huruud (precipitate) lama samayn	aluminium / calcium / magnesium / lead / copper / iron ma joogaan

- 2) Sharax sababta Axmed uusan u cabbin biyihisa ka dib marka uu ka saaro xeryaha birta (metal compounds) sida precipitates.
- 3) Axmed wuxuu booqdaa saaxiibkiis ee London halkaas oo ay leeyihiin biyo adag (hard water). Sharax sababta biyuhu u dhadhamiyaan si ka duwan oo tax dhibaatooyinka ay biyuhu keeni karaan.



Axmed

- 2) Sharax sababta Axmed uusan u cabbin biyihisa ka dib marka uu ka saaro xeryaha birta (metal compounds) sida precipitates.
- Ma ogaan lahaa haddii uu ka saaray dhammaan xeryaha birta (metal compounds) maxaa yeelay tijaabooyinku waa kuwo tayo (qualitative) ah.
 - Biyuhu waxay u baahan yihiin habayn dheeri ah si loo hubiyo inay ammaan u yihiin cabitaanka, tusaale ahaan ku darista chlorine si loo nadiifiyo.

- 3) Axmed wuxuu booqdaa saaxiibkiis ee London halkaas oo ay leeyihiin biyo adag (hard water). Sharax sababta biyuhu u dhadhamiyaan si ka duwan oo tax dhibaatooyinka ay biyuhu keeni karaan.

Biyuhu waa kuwo adag (hard), waxaa keena xeryaha calcium iyo magnesium ee ku jira biyaha. Tani waxay siisaa biyaha dhadhan ka duwan biyaha jilicsan (soft water).

Dhibaatooyinka:

- limescale (dhagaxa lime) ee gudaha kettles, qasabadaha, tuubooyinka kulul iwm.
- xumbo saabuun (soap scum) marka la dhaqayo
- loo baahan yahay in la isticmaalo saabuun badan si loo helo xumbo / goobo

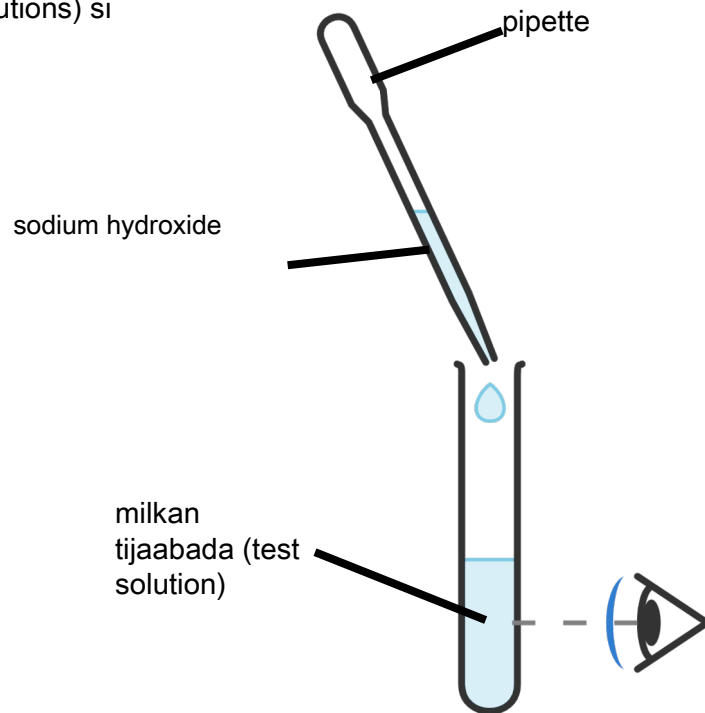
- 4) Samee aqoonsigaaga shayga (identification of substances) shaqo gacmeed. Macallinkaagu wuxuu ku siin doonaa xalal aan la aqoon (unknown solutions) si aad u tijaabiso.

muunad	midabka precipitate	xarunta birta (metal compound) ee joogta
F		
G		
H		
I		
J		

- 4) Samee aqoonsigaaga shayga (identification of substances) shaqo gacmeed. Macallinkaagu wuxuu ku siin doonaa xalal aan la aqoon (unknown solutions) si aad u tijaabiso.

Habka (Method)

- Ku dar milan (solution) sodium hydroxide milanka tijaabada.
- Fiiri in roobab (precipitate) uu sameeyo.
- Ku qor natiijooyinkaaga miiska natiijooyinka.



4) Natiijooyinkaaga waxay u ekaan karaan kuwa Axmed.

muunad (sample)	midabka roobabka (precipitate)	xarun bir ah oo joogta (metal compound present)
F	blue	copper
G	ma jiro roobab (precipitate)	ma jiro aluminium / calcium / magnesium / lead / copper / iron
H	brown	iron
I	white	aluminium / calcium / magnesium / lead
J	cagaar	iron

Falgal (reaction) roob-abuurku wuxuu dhacaa marka laba milan (solution) isku daraan si ay u sameeyaan adke aan milmi karin.

Muuujinta roob-abuurka ayaa caddayn ah in falgal (reaction) kiimiko dhacay.

Falgal (reaction) roob-abuurku waxay muhiim u yihiin daawaynta biyaha (water), si looga saaro walxaha aan loo baahnayn biyaha (water).

Falgal (reaction) roob-abuurku waxaa loo isticmaalaa falanqaynta tayada, si loo ogaado joogitaanka walxaha qaarkood ee milan (solution) dhexdiisa.