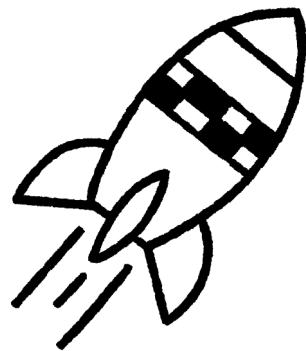


Falgal (reaction) kiimiko: asiidh iyo bir

Sayniska

Cutub: Asiidhyada iyo salalka



Natiijo

Waxaan qeexi karaa waxa dhaca marka asiidh la falgalo (reaction) bir, waxaana qori karaa isla'egyo ereyo iyo calaamad ah oo ku saabsan falalka (reactions)as

Erayada muhiimka ah

xumbo-bixin (effervescence)

**tijaabo kiimiko (chemical
test)**

daxal (corrosion)

asiidh (acid)

cusbo (salt) bir

Xumbo-bixin (effervescence), ama xumbo, waa marka goobo gaas laga soo saaro dareere.

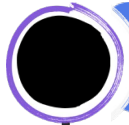
Tijaabo kiimiko (chemical test) waa marka falgal (reaction) kiimiko la sameeyo si loo ogaado joogitaanka walax.

Daxal (corrosion) waa marka bir la xirxiro sababtoo ah falgal (reaction) kiimiko.

Asiidh (acid) waa milan (solution) leh pH ka yar 7.

Cusbo (salt) bir waa iskudhis ka kooban bir iyo aan-bir ahayn.

Falgal (reaction) kiimiko: asiidh iyo bir



Falalka (reactions) asiidh iyo bir



Tijaabinta hydrogen

Biraha kala duwan waxay leeyihiin falgal (reaction) kala duwan oo asiidhyada ah.

Waxaad isbarbardhigi kartaa falgalnimada (reactivity) adiga oo eegaya:

- heerka sameynta goobo ama xumbo-bixin (effervescence)
- Heer-kulka isku-dhafka falgal (reaction mixture) (wuu kordhi karaa maadaama fal-galku (reaction) yahay kul bixiye (exothermic))
- U fiirso daxalka birta (marka birta la xiro oo ay weyneyn (size) ka yaraato).



falgal (reaction) u dhaxeeya
magnesium iyo asiidh

Sidee ku arki lahayd in gaas (gas) laga soo saarayo falgal (reaction)? Dooro dhammaan kuwa khuseeya.

a

waxaad arki lahayd xumboyin (bubbles) oo ka samaysmaya dareeraha (liquid)



b

dareeruhu (liquid) wuu beddeli lahaa midabka

c

dareeruhu (liquid) wuu hurdin lahaa (effervescing)



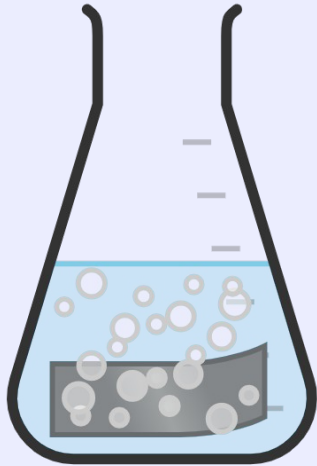
d

dareeruhu (liquid) wuu bilaabi lahaa inuu xumbo (fizz)

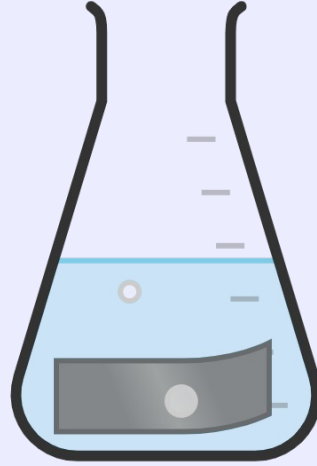


Falgalada (reactions) aashitada (acid) iyo birta

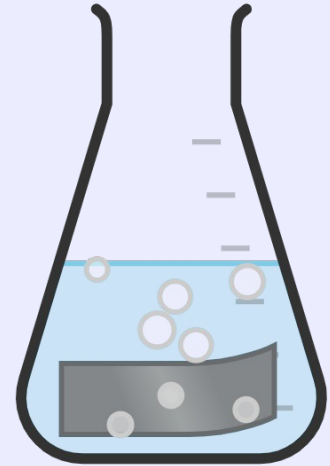
Birtee baa ugu fal-celin (reactive) badan?



a ✓



b



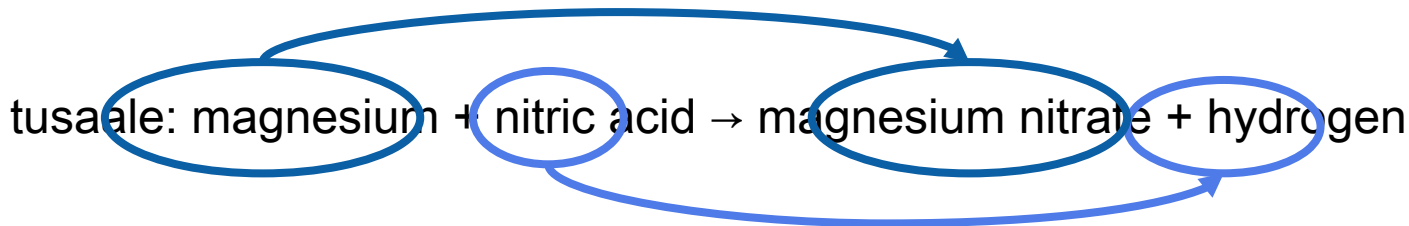
c

Marka bir ku falceliso (reacts) aashitada (acid) waxa soo baxa (products) waa:

- cusbo (salt) bir ah oo ku milanta (soluble) isku-dhafka falgal (reaction mixture)
- gaaska (gas) haydrojiin (hydrogen) kaas oo loo arki karo xumbo (bubbles) gudaha isku-dhafka falgal (reaction mixture).

Isle'egta (equation) guud:

bir + aashito (acid) $\rightarrow$ cusbo (salt) bir ah + haydrojiin (hydrogen)



Waa maxay isle'egta (equation) guud ee falcelinta (reaction) u dhaxaysa bir iyo aashito (acid)?

a bir $\rightarrow$ aashito (acid) + cusbo (salt) bir ah + haydrojiin (hydrogen)

b bir + aashito (acid) $\rightarrow$ cusbo (salt) bir ah + haydrojiin (hydrogen)



c bir + aashito (acid) $\rightarrow$ cusbo (salt) bir ah + kaarboon-labo-oksisaydh (carbon dioxide)

d bir + asiid + hydrogen $\rightarrow$ cusbo bir (metal salt)

Asiidyo kala duwan waxay soo saareen noocyo kala duwan oo cusbo bir (metal salt) ah:

magaca asiid	dhammaadka magaca cusbada birta	qaacidada kiimikada ee asiid
hydrochloric	chloride	HCl
sulfuric	sulfate	H ₂ SO ₄
nitric	nitrate	HNO ₃

tusaale: magnesium + hydrochloric acid → magnesium chloride + hydrogen

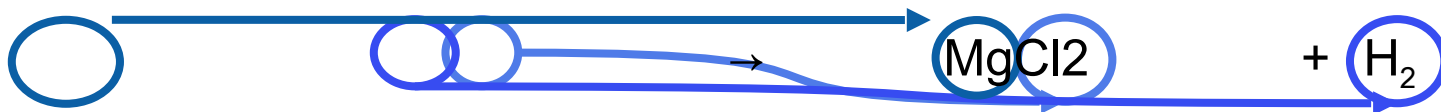
tusaale: iron + sulfuric acid → iron sulfate + hydrogen

Falgal (reaction) asiid iyo bir

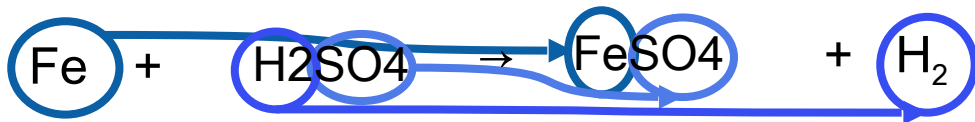
Isla'egta kiimikada ee falgalka (reaction) birta iyo asiidka waa la qori karaa.

magaca aashitada (name of acid)	magaca dhamaadka cusbada birta (name of metal salt ending)	qaacidada kiimikada ee aashitada (chemical formula of acid)
hydrochloric	chloride	HCl
sulfuric	sulfate	H ₂ SO ₄
nitric	nitrate	HNO ₃

tusaale: magnesium + hydrochloric acid → magnesium chloride + hydrogen



tusaale: iron + sulfuric acid → iron sulfate + hydrogen



Run mise been?

zinc + nitric acid → zinc chloride + oxygen



Run



Been



Sabab u sheeg jawaabtaada



Aashitada nitric (nitric acid) iyo biraha (metals) way falgalaan (react) si ay u sameeyaan nitrates birta (metal nitrates) iyo hydrogen.

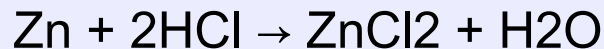


Aashitada nitric (nitric acid) iyo zinc waxay falgalaan (react) si ay u sameeyaan chlorides birta (metal chlorides) iyo carbon dioxide.

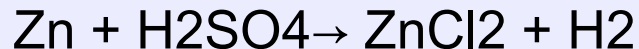
Falgalada (reaction) asiidhka iyo birta

Isle'egta calaamadda (symbol equation) ee falgalka (reaction) u dhexeeya zinc (Zn) iyo aashitada hydrochloric (hydrochloric acid) (HCl) si loo soo saaro zinc chloride (ZnCl₂) iyo gaaska hydrogen (H₂) waa ...

a



b

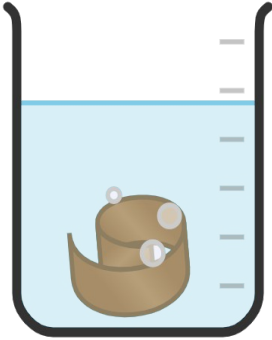


c

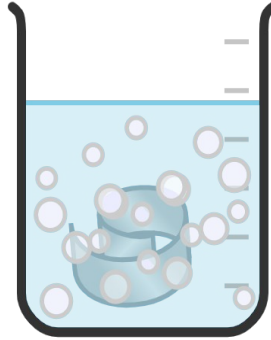


Ardaydu waa inay isticmaalaan jaantusyada macluumaadka ee agabyada dheeraadka ah si ay u dhammaystiraan hawsha A.

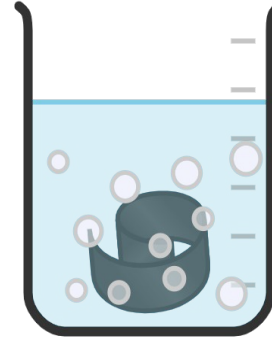
- 1) U kala horree birta kala duwan ee la falgasha asiidhka, laga bilaabo tan ugu falgalka badan ilaa tan ugu yar.



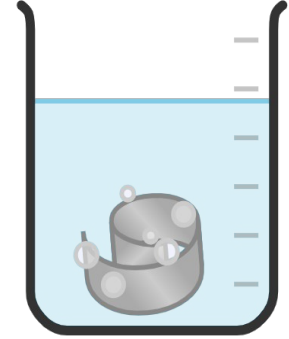
birta A



birta B



birta C

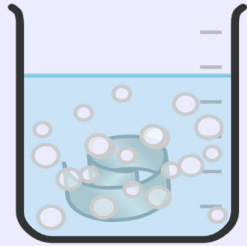


birta D

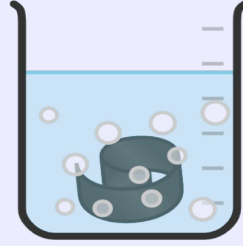
- 2) Sharax sida aad u go'aamisay nidaamka falgalka (reactivity).
- 4) Maxaa kale oo aad samayn kartid si aad u qiimeyso falgalka (reactivity) biraha?

Hawsha A Falgalada (reaction) asiidhka iyo birta

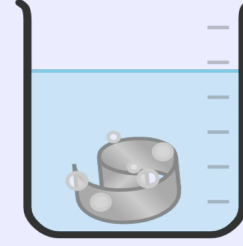
- 1) U kala saar birta kala duwan ee la falgasha acid (acid), laga bilaabo tan ugu falgalka badan ilaa tan ugu yar.



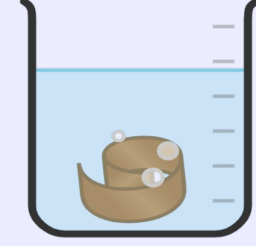
birta B



birta C



birta D



birta A

- 2) Sharax sida aad u go'aamisay nidaamka falgalka (reactivity).

Marka uu badan yahay xumbaynta / fizzing, markaas birta ayaa ah tan ugu falgalka badan (reactive).

- 4) Wax kale oo aad samayn karto si aad u qiimeyso falgalka (reactivity) birta?

Waxaad cabbiri kartaa heerkulka isku dhafka falgalka (reaction mixture). Marka heerkulku sare u kaco, birta ayaa ah mid aad u falgalka badan.

5) Buuxi ereyada maqan ee isla'egyada ereyada (word equations) ee soo socda. Isticmaal jaantuska macluumaadka si ay kuu caawiso.

magaca acid (acid)	magaca dhammaadka cusbada (metal salt)
hydrochloric	chloride
sulfuric	sulfate
nitric	nitrate

- a) zinc + sulfuric acid → _____ sulfate + hydrogen
- b) magnesium + nitric acid → _____ + hydrogen
- c) _____ + _____ acid → lead sulfate + _____
- d) zinc + hydrochloric acid → zinc chloride + _____
- e) iron + _____ acid → _____ chloride + _____

5) Buuxi ereyada maqan ee isla'egyada ereyada (word equations) ee soo socda. Isticmaal jaantuska macluumaadka si ay kuu caawiso.

name of acid	name of metal salt ending
hydrochloric	chloride
sulfuric	sulfate
nitric	nitrate

- a) zinc + sulfuric acid → _____ sulfate + hydrogen
- b) magnesium + nitric acid → _____ magnesium _____ nitrate + hydrogen
- c) _____ + _____ acid → lead sulfate + _____
- d) zinc + hydrochloric acid → zinc chloride + _____
- e) iron + _____ acid → _____ chloride + _____

6) Dhammaystir isleegyada calaamadaha (symbol equations)
jawaabahaaga qaybta 5 (hoos ku qoran).

a) zinc + sulfuric acid $\rightarrow$ zinc sulfate + hydrogen

b) magnesium + nitric acid $\rightarrow$ magnesium nitrate + hydrogen
 + 2HNO₃ $\rightarrow$ Mg(NO₃)₂ +

c) lead + sulfuric acid $\rightarrow$ lead sulfate + hydrogen

6) Dhammaystir isleegyada calaamadaha (symbol equations)
jawaabahaaga qaybta 5 (hoos ku qoran).

d) zinc + hydrochloric acid $\rightarrow$ zinc chloride + hydrogen

e) iron + hydrochloric acid $\rightarrow$ iron chloride + hydrogen

6) Dhammaystir isleegyada calaamadaha (symbol equations)
jawaabahaaga qaybta 5 (hoos ku qoran).

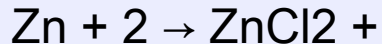
a) zinc + sulfuric acid $\rightarrow$ zinc sulfate + hydrogen

b) magnesium + nitric acid $\rightarrow$ magnesium nitrate + hydrogen

c) lead + sulfuric acid $\rightarrow$ lead sulfate + hydrogen

6) Dhammeysti isla'egyada calaamadda ee jawaabahaaga qaybta 5 (hoos ku qoran).

d) zinc + hydrochloric acid $\rightarrow$ zinc chloride + hydrogen



e) iron + hydrochloric acid $\rightarrow$ iron chloride + hydrogen



Jawaabaha:

H_2

HCl

Fe

HCl

Falgalada (reactions) kiimikada: asiidh iyo bir



Falgalada (reactions) asiidhka iyo birta

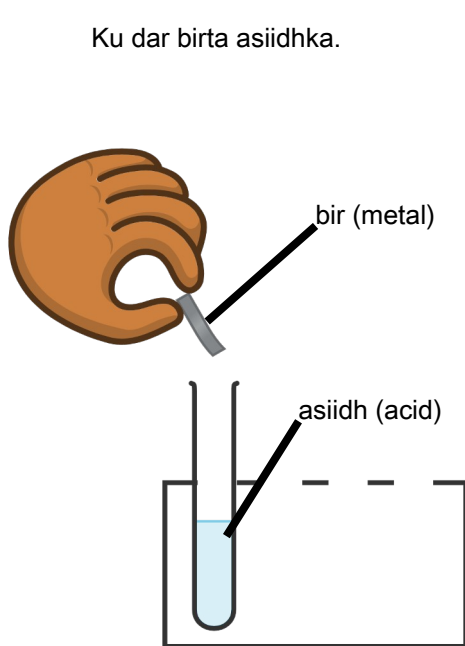


Tijaabinta hydrogen

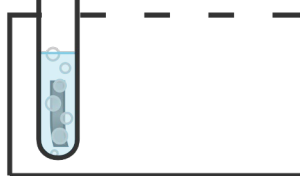
Tijaabinta kiimikada ee gaaska hydrogen waa in la soo bandhigo qori shidan (lit splint), kaas oo sameyn doona dhawaaq 'squeaky pop'.

Watch ▶

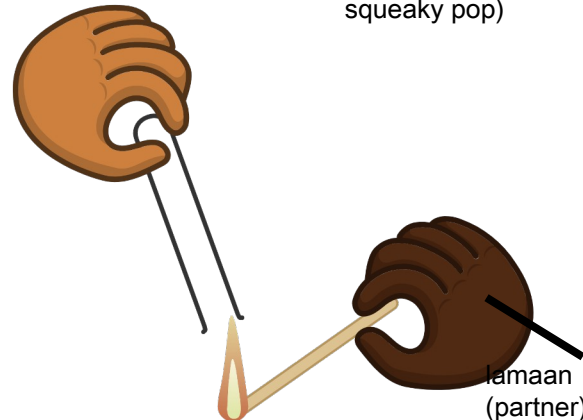
Ku dar birta asiidhka.



Haayo tuubo tijaabo oo madhan oo kor ku hay isku darka falgalka (reaction mixture).



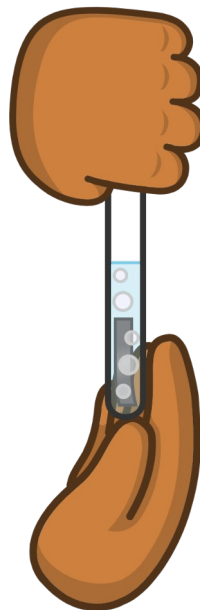
Dhagayso dhawaaqa 'pop' oo dhuug ah (Listen for a squeaky pop)



Weydii saaxiibkaaga inuu qori shidan (lit splint) ku hayo meel u dhow furitaanka tuubada.

Qaar ka mid ah falgalyada (reactions) u dhexeeya aashitada (acids) iyo biraha (metals), waa kul bixiye (exothermic). Waxay soo daayaan kul (heat) ku filan si:

- waxaad dareemi kartaa kororka heerkulka (temperature increase) dhexda tuubbada tijaabada (test tube)
- ama waxaad ku qiyaasi kartaa iyadoo la isticmaalayo heer-kulbeeg (thermometer).



Waa maxay tijaabada kiimikada (chemical test) ee gaasta hydrogen (hydrogen gas)?

a

Geli qoryo dhalaalaysa oo dab la' (glowing splint) gudaha tuubbada tijaabada (test tube) oo fiiri haddii ay soo hurdo (relights).

b

Hawo-maree (Bubble) gaaska (gas) biyo nuurad (lime water) oo fiiri haddii biyaha nuurad (lime water) ay iska caddeeyaan (goes cloudy).

c

U hay qoryo ololaysa (lit splint) meel u dhow furitaanka tuubbada tijaabada (test tube opening), dhagayso dhawaaqa 'pop' oo dhuug ah (squeaky pop).



d

Geli xabbo qoyan oo warqad litmus buluug ah (damp piece of blue litmus paper) gudaha tuubbada tijaabada (test tube) oo fiiri haddii ay caddeyso (bleaches).

Falgalyada (reactions) qaarkood ee u dhexeeya aashitada (acids) iyo biraha (metals) ayaa ah kuwo kul bixiye (exothermic) oo aad u badan oo waxaad ...

a

maqli kartaa kororka heerkulka (temperature increase) tuubbada tijaabada (test tube) iyadoo la dhawaaqayo 'pop' oo dhuug ah (squeaky pop).

b

dareemi kartaa hoos u dhaca heerkulka (temperature decrease) dhexda tuubbada tijaabada (test tube).

c

dareemi kartaa kororka heerkulka (temperature increase) dhexda tuubbada tijaabada (test tube).



- 1) Ka falceli (React) aashitada hydrochloric (hydrochloric acid) bir kala duwan (different metals) oo duub indho-indheyntaada (observations). Buuxi miiska natiijooyinka (results table).

magaca birta (name of metal)	indho-indheyn (observations)	tijaabada hydrogen ee togan (positive hydrogen gas test)	nidaamka falcelinta 1 = ugu falcelinta badan
naxaas (copper)			
magnesium			
bir (iron)			
zinc			

2. Haay tuubo tijaabo oo madhan korka isku darka falgal (reaction).

3. Taabo dibadda tuubada tijaabada si aad u ogaatid kororka heerkulka.

4. Tijaabi gaaska la soo ururiyay iyadoo la isticmaalayo qori shidan.

magaca birta	ilaalinta (observations)	tijaabinta togan ee gaaska hydrogen	nidaamka falcelinta 1 = ugu falcelinta badan
naxaas (copper)			
magnesium			
bir (iron)			
zinc			

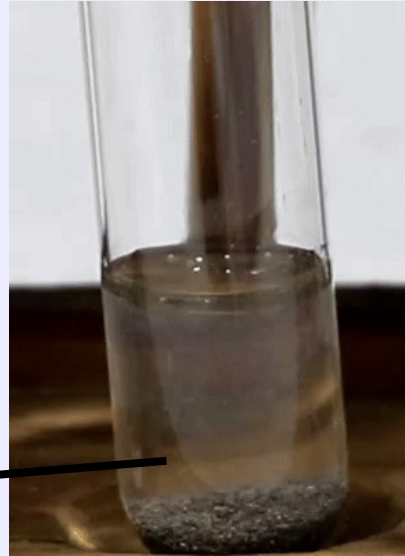
- 2) Nidaami falcelinta iyadoo lagu salaynayo ilaalinta. 1 = ugu falcelinta badan, 4 = ugu yar.
- 3) Qor isla'egyada erayada iyo calaamadaha ee falgal kasta oo dhaca.

1) Natiijooyinkaagu waxay u ekaan karaan kuwan:

magaca birta (metal)	indho-indhayn (observations)	tijaabinta haydarojiin (hydrogen) ee togan	heerka falcelinta (reactivity) 1 = ugu falcelin badan
naxaas (copper)	xumbo (bubbles) ma samaysmin, falgal (reaction) ma jiro		
magnesium (magnesium)	xumbo (bubbles) badan ayaa samaysmay, tuubada tijaabada (test tube) way kululaataa	haa - dhawaaq 'squeaky pop' ayaa la maqlay	
bir (iron)	xumbo (bubbles) yaryar oo badan ayaa la soo saaray		
zinc (zinc)	xumbo (bubbles) ayaa ka samaysmay dusha sare ee zinc (zinc)		

Hawsha B Tijaabinta haydarojiin (hydrogen)

- 2) Marka la eego heerka falcelinta (reactivity), way adag tahay in la arko midka ugu falcelin badan ee zinc (zinc) iyo birta (iron) dhexdooda. Qodobka kale sida cabbirka jajabyada birta (metal) ayaa saameyn ku yeelan doona xawaaraha falcelinta (reactivity).



bir (iron)



zinc
(zinc)

- 3) Isla'egyada falgalada (reactions) ayaa hoos ku qoran. In kasta oo laga yaabo inaad awoodin inaad sameyso tijaabo kiimiko oo togan oo hydrogen (hydrogen) ah, xumbadu waxay xaqiijinaysaa in gaas la soo saaray - laakiin kuma filna si uu u siiyo 'squeaky pop'.

magnesium + hydrochloric acid $\rightarrow$ magnesium chloride + hydrogen

iron + hydrochloric acid $\rightarrow$ iron chloride + hydrogen

zinc + hydrochloric acid $\rightarrow$ zinc chloride + hydrogen

copper + hydrochloric acid $\rightarrow$ ma jiro falgal (reaction)

Marka bir (metal) ay la falgasho asiidh (acid), xumbo ayaa laga yaabaa inay soo baxaan, waa kul bixiye (exothermic) oo birta (metal) way yaraataa (wey baaba'daa).

Biraha (metals) kala duwan waxay leeyihiin falgal (reaction) kala duwan oo ay la yeeshaan asiidhyada (acids).

Marka bir (metal) ay la falgasho asiidh (acid), waxa soo baxa cusbo bir ah (metal salt) iyo gaas hydrogen (hydrogen).

Isla'egta erayada ee bir (metal) iyo asiidh (acid) falgal (reaction) waa: bir (metal) + asiidh (acid) → cusbo bir ah (metal salt) + hydrogen (hydrogen).

Tijaabinta hydrogen (hydrogen) waa in la soo bandhigo laan shidan, taasoo samayn doonta 'squeaky pop' gudaha hydrogen (hydrogen).