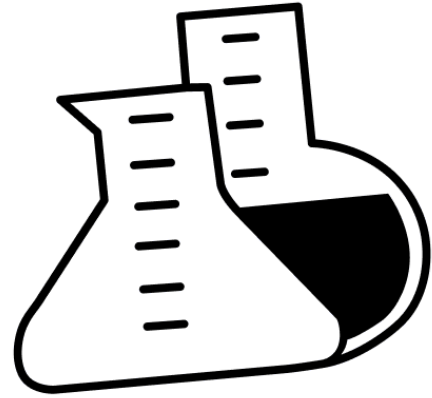


Kooxda 7 (halogens)



Chemistry

Cutub: Qaababka (Patterns) ee shaxda xilliyeedka (periodic table)

Natiijo

Waxaan qeexi karaa qaabka falcelinta (reactivity) ee birta aan ahayn (non-metals) ee Kooxda 7, waxaana magacaabi karaa waxsoosaarka falcelinta u dhaxaysa biraha (metals) iyo halogens.

halogen

koox (group)

halide

cusbo (salt)

Erayada muhiimka ah

Halogen waa curiye (element) laga helo Kooxda 7 ee shaxda xilliyeedka (periodic table).

Koox (group) waa saf (column) ku yaal shaxda xilliyeedka (periodic table) oo u dhigma tirada elektaroonada (electrons) ee qolofka sare ee atom-ka.

Halide waa magaca cusbo (salt) ka samaysan halogen iyo curiye kale, tusaale: sodium chloride (NaCl).

Cusbo (salt) waa walax ka samaysma marka bir (metal) ay falceliso bir aan ahayn (non-metal). Falcelintani waxay badanaa soo saartaa walxo adag oo ku mili kara biyo (water), sida cusbada cuntada.

Kooxda 7 (halogens)



Kooxda 7: halogens



Falcelinta (Reactions) ee halogens

Key relative atomic mass atomic symbol name atomic (proton) number																			
1 H hydrogen 1																			
7 Li lithium 3	9 Be beryllium 4													11 B boron 5	12 C carbon 6	14 N nitrogen 7	16 O oxygen 8	19 F fluorine 9	20 Ne neon 10
23 Na sodium 11	24 Mg magnesium 12													27 Al aluminium 13	28 Si silicon 14	31 P phosphorus 15	32 S sulfur 16	35.5 Cl chlorine 17	40 Ar argon 18
39 K potassium 19	40 Ca calcium 20	45 Sc scandium 21	48 Ti titanium 22	51 V vanadium 23	52 Cr chromium 24	55 Mn manganese 25	56 Fe iron 26	59 Co cobalt 27	59 Ni nickel 28	63.5 Cu copper 29	65 Zn zinc 30	70 Ga gallium 31	73 Ge germanium 32	75 As arsenic 33	79 Se selenium 34	80 Br bromine 35	84 Kr krypton 36		
85 Rb rubidium 37	88 Sr strontium 38	89 Y yttrium 39	91 Zr zirconium 40	93 Nb niobium 41	96 Mo molybdenum 42	[98] Tc technetium 43	101 Ru ruthenium 44	103 Rh rhodium 45	106 Pd palladium 46	108 Ag silver 47	112 Cd cadmium 48	115 In indium 49	119 Sn tin 50	122 Sb antimony 51	128 Te tellurium 52	127 I iodine 53	131 Xe xenon 54		
133 Cs caesium 55	137 Ba barium 56	139 * La lanthanum 57	178 Hf hafnium 72	181 Ta tantalum 73	184 W tungsten 74	186 Re rhenium 75	190 Os osmium 76	192 Ir iridium 77	195 Pt platinum 78	197 Au gold 79	201 Hg mercury 80	204 Tl thallium 81	207 Pb lead 82	209 Bi bismuth 83	[209] Po polonium 84	[210] At astatine 85	[222] Rn radon 86		
[223] Fr francium 87	[226] Ra radium 88	[227] * Ac actinium 89	[261] Rf rutherfordium 104	[262] Db dubnium 105	[266] Sg seaborgium 106	[264] Bh bohrium 107	[277] Hs hassium 108	[268] Mt meitnerium 109	[271] Ds darmstadtium 110	[272] Rg roentgenium 111	[285] Cn copernicium 112	[286] Nh nihonium 113	[289] Fl flerovium 114	[289] Mc moscovium 115	[293] Lv livermorium 116	[294] Ts tennessine 117	[294] Og oganeson 118		

cashar.so

Kooxda 7: halogens



Sharaxaad

Kooxda 7 waxay tilmaamaysaa curiyeyaasha (elements) ku yaal safka labaad ee midigta shaxda xilliyeedka (periodic table).

1	2											3	4	5	6	7	0	
		H hydrogen																He helium
Li lithium	Be beryllium											B boron	C carbon	N nitrogen	O oxygen	F fluorine	Ne neon	
Na sodium	Mg magnesium											Al aluminium	Si silicon	P phosphorus	S sulfur	Cl chlorine	Ar argon	
K potassium	Ca calcium	Sc scandium	Ti titanium	V vanadium	Cr chromium	Mn manganese	Fe iron	Co cobalt	Ni nickel	Cu copper	Zn zinc	Ga gallium	Ge germanium	As arsenic	Se selenium	Br bromine	Kr krypton	
Rb rubidium	Sr strontium	Y yttrium	Zr zirconium	Nb niobium	Mo molybdenum	Tc technetium	Ru ruthenium	Rh rhodium	Pd palladium	Ag silver	Cd cadmium	In indium	Sn tin	Sb antimony	Te tellurium	I iodine	Xe xenon	
Cs caesium	Ba barium	La* lanthanum	Hf hafnium	Ta tantalum	W tungsten	Re rhenium	Os osmium	Ir iridium	Pt platinum	Au gold	Hg mercury	Tl thallium	Pb lead	Bi bismuth	Po polonium	At astatine	Rn radon	

*Elements with atomic numbers 58-71 have been omitted from this part of the periodic table.

Curiyeyaasha (Elements) ee Kooxda 7 waa kuwa aan bir ahayn (non-metals) waxayna kala yihiin: fluorine, chlorine, bromine, iodine, astatine iyo tennessine.

Run mise been?

Curiyeyasha (Elements) ee Kooxda 7 waa biro (metals).

T Run

F Been



Sabab u sheeg jawaabtaada

a

Dhammaantood waxay ku yaalliin dhinaca midig ee shaxda xilliyeedka (periodic table).



b

Inta badan curiyeyasha (elements) ku jira miiska xilliyeed (periodic table) waa biraha (metals).

Curiyeyaasha (elements) ku jira Kooxda 7 waxaa loo yaqaan halogens.



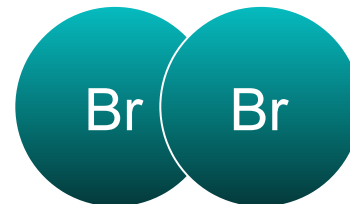
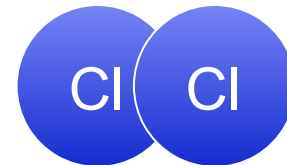
Curiyeyaasha (elements) waxaa loo bixiyay magacan sababtoo ah dhammaantood waxay soo saaraan cusbo (salt) leh astaamo (properties) isku mid ah.

Tusaale ahaan, sodium chloride ('cusbada miiska') waa mid ka mid ah cusbada (salts) ugu caansan.

Kooxda 7 waa koox curiyeyaasha (elements) aan bir ahayn (non-metallic) oo leh astaamo (properties) kiimiko (chemical) iyo jireed (physical) oo aad isugu dhow.

Waxay:

- waxay ka samaysan yihiin molecules laba-atom ah (diatomic molecules),
- mid kastaa wuxuu leeyahay midab curiyeed (elemental colour) gaar ah
- waa kuwo falcelin badan (highly reactive)
- waa kuwo sun ah (toxic)



F

Cl

Br

I

At

Waxaa jira dhawr isbeddel (trends) oo ku saabsan astaamaha jireed (physical properties) marka hoos loo dhaco kooxda. Waxay:

- cufnaanta (density) way kordhaa
- heerkulka dhalaalidda iyo karkarinta ayaa kordha

Xusuusnow: cufnaantu (density) waa cabbirka cufka (mass) halkii mug (volume); sida ay ugu dhow yihiin walxaha (particles) ee walaxda meel gaar ah.

Curiyeyaasha (elements) Kooxda 7 waxay kala duwan yihiin xaaladaha heerkulka qolka:

- fluorine waa gaas (gas) huruud khafiif ah
- chlorine waa gaas (gas) cagaar khafiif ah
- bromine waa dareere (liquid) guduudan-brown oo si dhakhso ah uumi baxa
- iodine waa adke (solid) madow-buluug ah (isagoo uumi baxa gaas (gas) buluug ah)



chlorine
(Cl₂)

bromine
(Br₂)

Iodine (I₂)

Astatine iyo tennessine waa curiyeyaal (elements) aad u shucaac badan.

Xaqiiqooyinka ku saabsan tennessine waxaa ka mid ah:

- mid ka mid ah curiyeyaasha (elements) ugu naadirka ah dhulka
- dhibcaha dhalaalidda iyo karkarinta ayaa ka sarreeya I2



- dhibcaha dhalaalidda iyo karkarinta ayaa la saadaaliyay



Kooxda 7: halogens

Isticmaal isbeddelka (trend) ee sifooyinka Kooxda 7 si aad u saadaalisid midabka iyo xaaladda astatine heerkulka qolka.

a

dareere cawlan

b

gaas buluug-casaan

c

adke buluug-casaan

d

adke madow ✓

Run mise been?

Curiyeyasha Kooxda 7 ma muujiyaan isbeddel (trend) sifooyinka kooxda dhexdeeda.



Run



Been



Sabab u sheeg jawaabtaada



Curuurtu waxay noqdaan kuwa cufan yar marka hoos loo socdo kooxda.



Dhibcaha dhalaalidda curiyeyasha ayaa kordha marka hoos loo socdo kooxda.



1. Sharax sababta halogens loogu yeedho 'halogens'. Magacani maxay ka tarjumayaa sifooyinkooda kiimikada?
2. Sharax sida midabka iyo xaaladda jireed ee halogens uga beddelmaan xagga sare ilaa xagga hoose ee kooxda. Bixi tusaalooyin halogen kasta oo la sheegay.

1. Sharax sababta halogens loogu yeedho 'halogens'. Magacani maxay ka tarjumayaa sifooyinkooda kiimikada?

"Halogen" waxaa loola jeedaa "cusbo-sameeye" - waxay si fudud u sameeyaan cusbo (salts) birta (metals) la, tusaale ahaan sodium chloride, potassium iodide.

2. Sharax sida midabka iyo xaaladda jireed ee halogens uga beddelmaan xagga sare ilaa xagga hoose ee kooxda.

Fluorine: huruud khafiif ah oo gaas ah Chlorine: cagaar khafiif ah oo gaas ah

Bromine: casaan-madow oo dareere ah Iodine: guduud-madow oo adag

Heerkulka dhalaalid iyo karkarintoodu wuu kordhaa marka hoos loo dhaco kooxda.

Kooxda 7 (halogens)



Kooxda 7: halogens



Falcelinta halogens

Kimistariga, cusbo (salt) waa walax ka samaysma marka bir la falceliso non-metal. Falcelintani waxay badanaa soo saartaa walxo adag oo ku milmi kara biyo (water), sida cusbada cuntada.

Cusbada (salts) waxaa badanaa lagu sameeyaa iyada oo acids ay la falceliyaan bases (neutralisation), halkaas oo ay ka sameeyaan cusbo (salt) iyo biyo (water).

Halogens waxay sidoo kale samayn karaan cusbo (salts) markay la falceliyaan curiyeyaasha birta.



Sodium chloride, NaCl
(‘cusbada cuntada’)

Run mise been?

'Cusbada cuntada' (sodium chloride) waa cusbada (salt) kaliya.



Run



Been



Sabab u sheeg jawaabtaada

a

Kaliya xeryahooda ay ku jiraan atamka halogen ayaa loo tixgeliyaa cusbo (salts).

b

Sodium chloride waa tusaale cusbo (salt) ah.



Curiyeyaasha Kooxda 7 guud ahaan aad bay u falcelin badan yihiin (iyo sun badan) sababtaas awgeed waxaa badanaa loo isticmaalaa qadar yar si loo sameeyo xeryaho badan oo faa'iido leh.

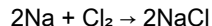
Tusaalooyinka isticmaalka waxaa ka mid ah:



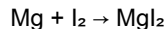
Marka halogens (halogens) ay la falceliyaan biraha si ay u sameeyaan xeryahooda, waxay noqdaan cusbo halide (halide salts).

bir + halogen (halogen) → halide (halide) bir

sodium (sodium) + chlorine (chlorine) → sodium chloride (sodium chloride)



magnesium (magnesium) + iodine (iodine) → magnesium iodide (magnesium iodide)



Falcelinta halogens (halogens)

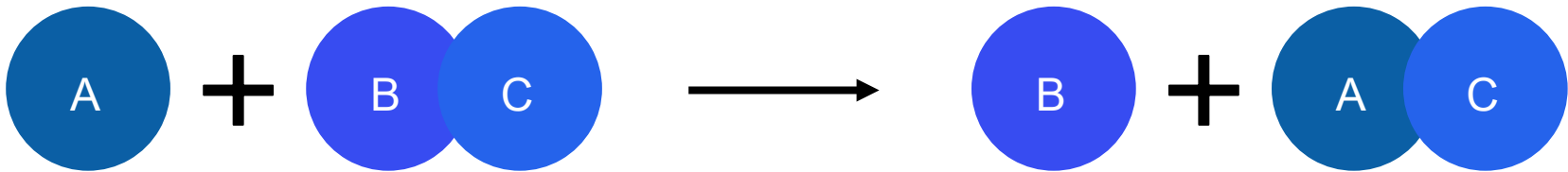
Kuwani midkee waxaa loo tixgelinayaa cusbo halide (halide salts)?

- a** sodium iodide (sodium iodide) ✓
- b** chlorine (chlorine)
- c** calcium bromide (calcium bromide) ✓
- d** iron nitride (iron nitride)

Falcelinta halogens (halogens)

Halides (halides) birta ah waxay ku milaan biyo (water).

Si loo baaro isbeddelka falcelinta kooxda 7 (Group 7), milan (solution) cusbo halide (halide salt) ayaa loo isticmaalaa in lagu muujiyo awoodda halogens (halogens) ay uga kaxaystaan atamka halogen (halogen) kale xeryahooda.



Falcelinta kaxaynta (displacement reactions) waxay ku lug leedahay curiye (element) falcelin badan oo bedelaya curiye (element) kale xarun.

Run mise been?

Falcelinta kaxaynta (displacement reactions) waxay ku lug leedahay curiye (element) falcelin yar oo bedelaya curiye (element) kale xarun.

T Run

F Been



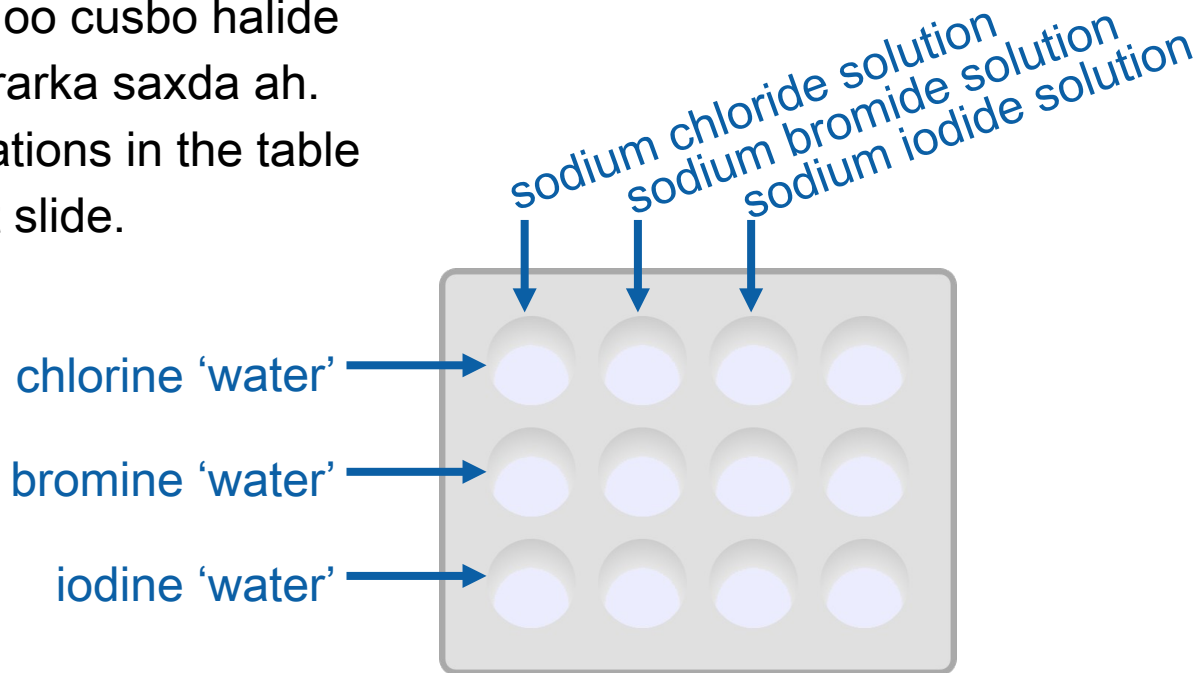
Sabab u sheeg jawaabtaada

a Falcelinta kaxaynta (displacement reactions) waxay ku lug leedahay isweydaarsiga curiyeyaasha (elements).

b Falcelinta kaxaynta (displacement reactions) waxay ku lug leedahay curiye (element) falcelin badan oo bedelaya curiye (element) kale xarun.



1. Samee tijaabada (experiment) sida lagu muujiyey.
2. Ku dar dhawr dhibic oo halojin (halogen) kasta oo aqueous ah safafka saxda ah.
3. Ku dar dhawr dhibic oo cusbo halide (halide salt) kasta tiirarka saxda ah.
3. Record your observations in the table provided on the next slide.



		Indho-indhaynta marka lagu daro xalalka cusbada halide		
		sodium chloride	sodium bromide	sodium iodide
aqueous halogens	chlorine			
	bromine			
	iodine			

1. U kala saar halojenada (halogens) kan ugu falcelinta badan ilaa kan ugu yar, adigoo isticmaalaya natiijooyinkaaga si aad u sharaxdo go'aankaaga.
2. Sharax sida falcelinta ugu beddelanto dhexdeeda curiyeyaasha Group 7.
3. Qor isla'egyo ereyo ah (word equations) dhammaan falcelinta barokaca (displacement) ee dhacday.

		Indho-indhaynta marka lagu daro milan cusbo halide ah		
		sodium chloride	sodium bromide	sodium iodide
biyo (water) ah halogens	chlorine	isbeddel la'aan	wuxuu u beddelmaa orange-brown	wuxuu u beddelmaa grey-brown
	bromine	isbeddel la'aan	isbeddel la'aan	wuxuu u beddelmaa red- brown
	iodine	isbeddel la'aan	isbeddel la'aan	isbeddel la'aan

1.

- Chlorine waa kan ugu falcelinta badan, maxaa yeelay wuxuu la falceliyay sodium bromide iyo sodium iodide labadaba (isbeddelka midabku wuxuu muujinayaa tan).
- Bromine waa kan labaad ee ugu falcelinta badan, maxaa yeelay wuxuu la falceliyay kaliya sodium iodide (isbeddelka midabku wuxuu muujinayaa tan).
- Iodine waa midka ugu yar falcelinta (reactive) maxaa yeelay kuma falcelin cusbo (salt) kasta.

2. Sharax sida falcelinta (reactivity) ugu beddelanto kooxda 7 curiyeyaasha (elements).

Hoos u dhaca kooxda, curiyeyaasha Group 7 waxay noqdaan kuwa ugu yar falcelinta (reactive). Tan waxaa muujinaya curiyeyaasha hoose oo aan awoodin inay barokacaan (displace) kuwa sare.

3. Qor isla'egta erayada (word equations) dhammaan falcelinta barokaca (displacement reactions) ee dhacday.

sodium bromide + chlorine → sodium chloride + bromine

sodium iodide + chlorine → sodium chloride + iodine

sodium iodide + bromine → sodium bromide + iodine

Soo koobid Group 7 (halogens)

Curiyeyaasha Group 7 dhammaantood waa kuwa aan bir ahayn (non-metals) oo leh uumis midab leh, badankoodna waa sun (toxic).

Xaaladda curiyeyaasha heerkulka qolka waxay ka beddelaysaa gaas (gas) ilaa adag (solid) hoos u dhaca Group 7.

Falcelinta (reactivity) waxay hoos u dhacdaa Group 7.

Halogens waxay la falceliyaan biraha Group 1 iyo 2 si ay u sameeyaan metal halides.

Metal halides waxay ku milaan (soluble) biyo (water).