



**O`ZBEKISTON RESPUBLIKASI
SOG`LIQNI SAQLASH VAZIRLIGI
TOSHKENT FARMATSEVTIKA INSTITUTI**

MARUZA №2

**MAVZU: GALOGEN SAQLAGAN ANORGANIK DORI MODDALAR.
ULARNI SANOAT MIQYOSIDA OLINISHI TOZALIGI, CHINLIGINI
ANIQLOVCHI SIFAT REAKTSILARI, MIQDORINI ANIQLASH USULLARI,
ISHLATILISHI. NOORGANIK TUZILISHDAGI DORI MODDALAR
TAHLILI (BARIY, KALTSIY, MAGNIY, VISMUT, RUX). NOORGANIK
TUZILISHIDAGI DORI MODDALAR TAHLILI (SIMOB, MIS, KUMUSH,
TEMIR) RADIOFARMATSEVTIK PREPARATLAR TAHLILI**

ASOSIY SAVOLLAR:

1. Azot brikmalari, kuldiruvchi gaz, natriy nitrat ularni olinishi tahlil usullari ishlatilishi.
2. Arsen brikmalari, arsen uning oksidi, natriy arsenat, ularni olinishi tahlil usullari, ishlatilishi va saqlanishi.
3. Natriy gidrokarbonat, litiy karbonat ularni olinishi, tasvirlanishi, tozaligi, chinligi, miqdorini aniqlash usullari, ishlatilishi va saqlanishi.
4. Bor brikmalari, bor kislotasi, natriy tetroborat, ularning olinishi, chinligini, miqdorini aniqlash usullari ishlatilishi va saqlanishi
5. Bariy birikmalarini olinishi, tavsifi, tahlili va ishlatilishi.
6. Kaltsiy birikmalarini olinishi, tavsifi, tahlili va ishlatilishi.
7. Magniy birikmalarini olinishi, tavsifi, tahlili va ishlatilishi.
8. Vismut birikmalarini olinishi, tavsifi, tahlili va ishlatilishi.
9. Rux birikmalarini olinishi, tavsifi, tahlili va ishlatilishi.
10. Simob birikmalari: Simob ikki xloridi, simob ikki oksidi, simob amid xloridi, ularni olinishi, sifat reaksiyalari, miqdorini aniqlash usullari, ishlatilishi, saqlanishiga qo`yilgan talablar.
11. Mis va kumush birikmalari; mis sulfati, kumush nitrati, ularni olinishi, sifat reaksiyalari, miqdorini aniqlash usullari, ishlatilishi.
Kumush nitratni saqlashga qo`yilgan talablar.
12. Kumush oqsillarining birikmasi protorgol uning olinishi, sifat reaksiyalari, miqdori, ishlatilishi.
13. Temir birikmalari ularni olinishi, sifat reaksiyalari, miqdorini aniqlash usullari, ishlatilishi, saqlanishiga qo`yilgan talablar.
14. Radiofarmatsevtik preparatlar olinishi, sifat reaksiyalari, ishlatilishi, saqlanishiga qo`yilgan talablar.

Acidum hydrochlorisum - HCl

Natrii chloridum NaCl

Kalii chloridum KCl

Natrii bromidum NaBr

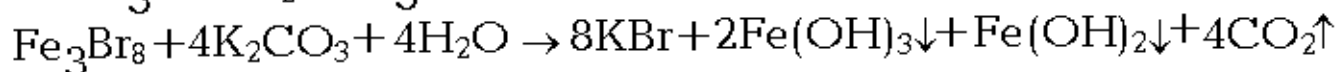
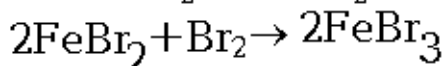
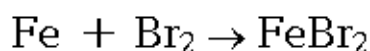
Kalii bromidum KBr

Natrii jodidum NaJ

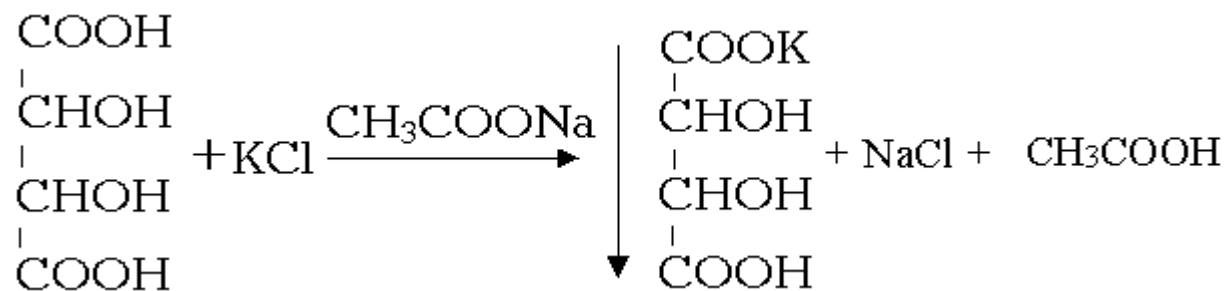
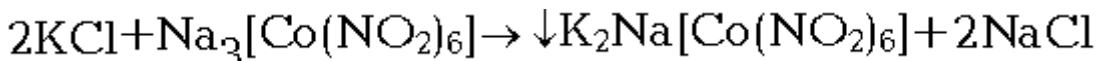
Kalii jodidum KJ

Olinishi. NaCl – osh tuzidan, KCl silvinit ($\text{KCl} \cdot \text{NaCl}$) dan olinadi.

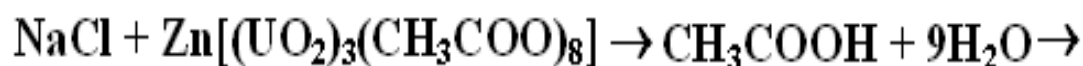
Kaliy bromning olinishi.



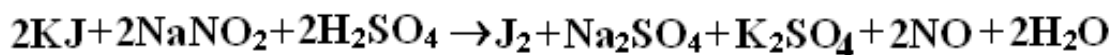
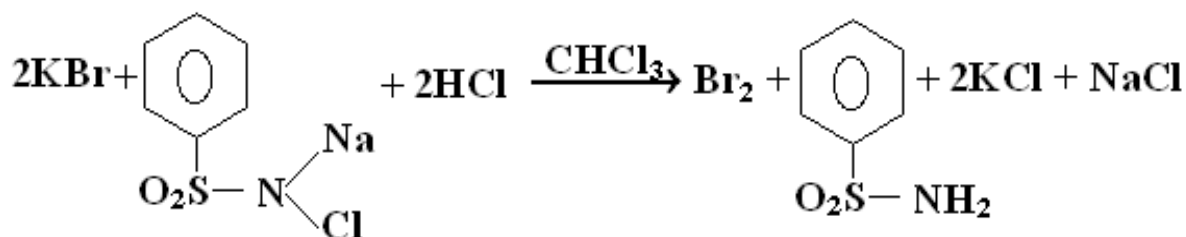
CHinligi. K^+ , Na^+ va Cl^- , Br^- , J^- ionlariga farmakopeyaviy sifat reaksiyalari bajariladi.



CHykma mineral kislotalarda va ishqor eritmalarida eriydi.



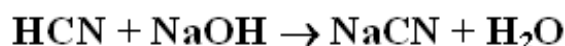
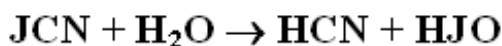
сарик чўкма



Tozaligini aniqlash. Kaliy xlor va natriy xlorning tarkibida Ca^{+2} , Mg^{+2} , Ba^{+2} , Fe^{+2} , Me^{+2} , SO_4^{-2} , NH_4^+ , natriy xlorid tarkibida K^+ бўлмасligi lozim.

KVr, NaVr tarkibida SO_4^{-2} , Me^{+2} , Ba^{+2} , Ca^{+2} , BrO_3^- lar tekshirib kўriladi.

KJ, NaJ tarkibida esa SN^+ , SO_3^- , JSI lar aniqlanadi.

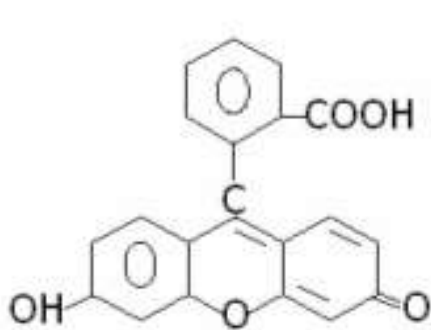


Fayans usuli. Asosan yodidlar, qisman bromidlarning miqdori aniqlanadi.

SHaroit – kuchsiz kislotali.

Titrlash turi – tўg'ri titrlash.

Indikatorlar flyuorestsein, natriy eozinati yoki bromfenol kўki eritmalaridan foydalaniladi.



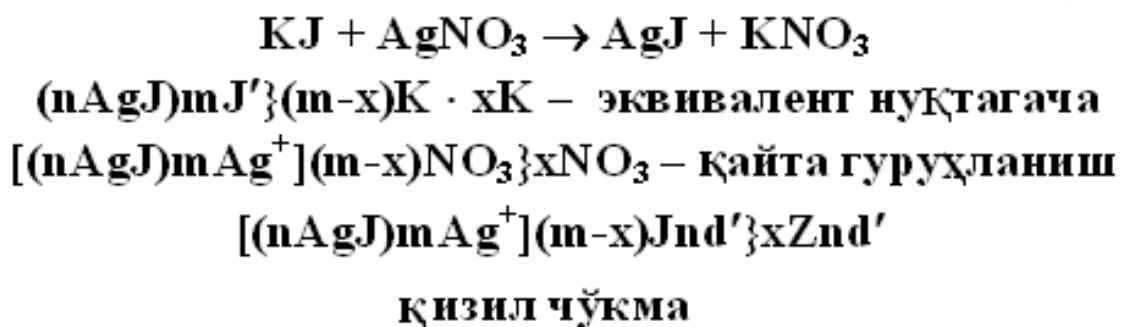
Флуоресциин



Натрий эозинат



Бромфенол кўки



Ishlatilishi. NaCl 0,9% li izotonik eritma. 3, 5, 10% - gipertonik eritma. KSl – yurak mushaklari ishini bir maromga soladi, yurak glikozidlari bilan davolashdagi intoksikatsiyada ham ishlatiladi.

NaVr, KVr – asab kasalliklarida tinchlantiruvchi vosita sifatida ishlatiladi..

NaJ, KJ – endemik bŷqoq, gipertireoz kasalliklarida, nafas yŷllari va kŷz kasalliklarini davolashda ishlatiladi.

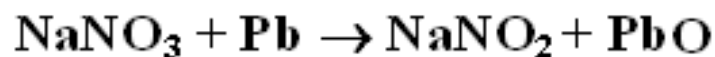
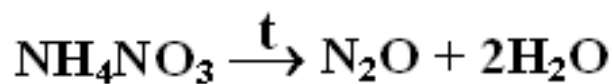
Saqlanishi. Og`zi maxkam berkitilgan idishlarda saqlanadi.

Azot birikmalari

Nitrogenium oxydulatum – kuldiruvchi gaz – N₂O

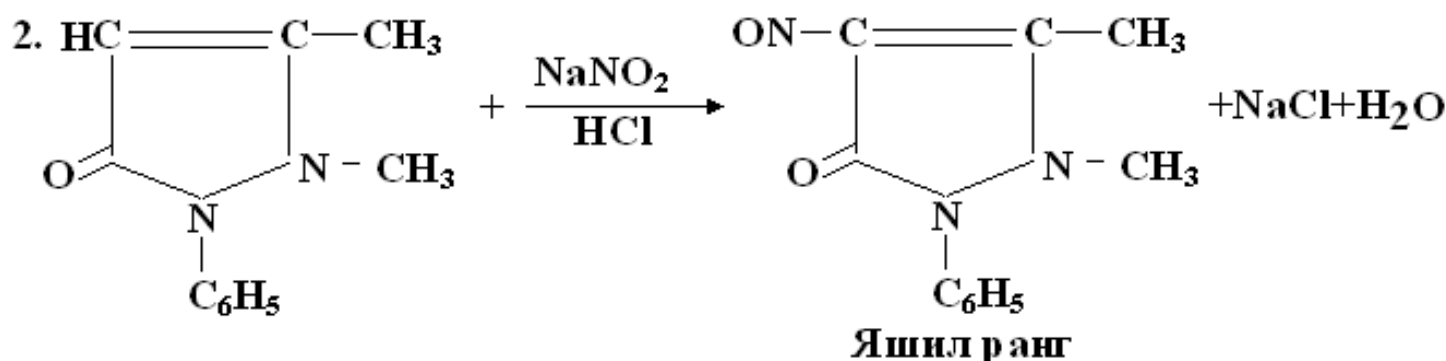
Natrium nitrosum – NaNO₂

Olinishi.

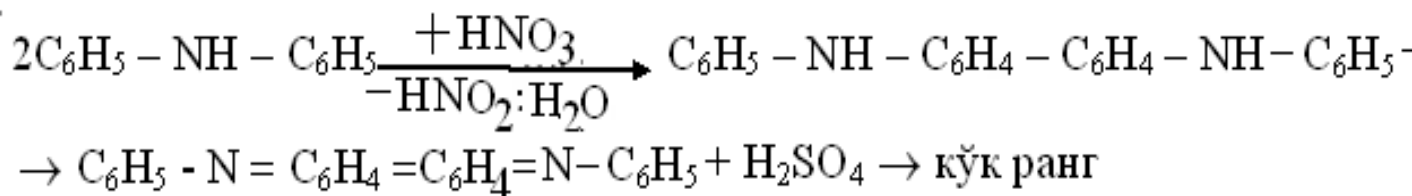


Tasvirlanishi. Oq yoki oq sarg`imtirroq, kristall kukun, gigroskopik, suvda oson, spirtida qiyin eriydi.

Chinligi.



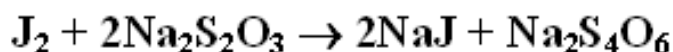
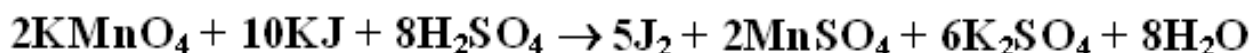
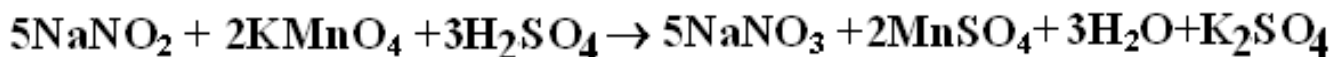
3.



4. Na^+ ioniga xos sifat reaksiyasi

Tozalagi SO_4^{2-} , Me^{+2} , Cl^- , As^{+3} tekshiriladi.

Miqdorini aniqlash. Permanganometrik usul.



Ishlatilishi. Stenokardiyada, qon tomirlarini kengaytiruvchi vosita va tsianidlar bilan zaxarlanganda antidot sifatida ishlatiladi.

Saqlanishi. Qorongʻi joyda, B – rʻyxati bʻyicha saqlanadi.

As birikmalari.

Acidum arsenicosum anhydricum As_2O_3

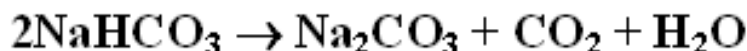
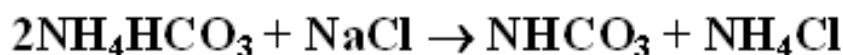
Natrium arsenicum crystallisatum $\text{Na}_2\text{HAsO}_4 \cdot 7\text{H}_2\text{O}$

Uglerodning preparatlari – Carba activatus – C

Lithii carbonas – Li₂CO₃

Natrii hydrocarbonas – NaHCO₃

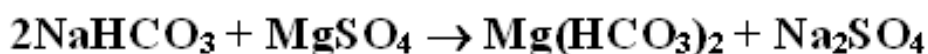
Olinishi.



Tasvirlanishi. Xadsiz, shʻrtang, oq kristal kukun, suvda eriydi, spirtla kam eriydi. Suvli eritmalari kuchsiz ishqoriy muhitga ega

rN ≈ 8,4.

CHinligi.



Na⁺ - alangani sariq rangga bʻyyaydi

Tozaligi. Cl⁻, SO₄, Fe⁺³, Me⁺², Ca⁺², As⁺³ ga tekshirib kʻyiriladi. NH₄⁺ xususiy yot aralashma.

Miqdorini aniqlash.

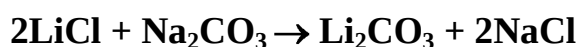
1 g preparatni 280 – 300 °S da doimiy ogʻirlikgacha qizdirilganda, massasi 36,6% dan kam yʻqotmasligi kerak. Bunda preparatning miqdori – 99,15% ga mos keladi.

Ishlatilishi. Ingalyatsiyada, kʻyz va yuqori nafas yʻllari shamollashida, meʻda shirasining kislotaliligi ortib ketganda ishlatiladi (eritma yoki tabletka xolida chiqaziladi).

Saqlanishi. Ogʻzi maxkam berkitilgan idishlarda saqlanadi.

Lithii carbonas – Li₂CO₃

Olinishi. Lipidolit mineraldan olinadi - Li₂O · Al₂(OH)₆ · SiO₂



Tasvirlanishi. Oq kukun, suvda qiyin eriydi, spirtla erimaydi. Suvli eritmasi ishqoriy xossaga ega. Suvli eritmasi qizdirilganda loyqalanadi.

Tozaligi. Umumiy yod aralashmalar tekshirib kʻiriladi.

Miqdori.



Ishlatilishi. MNS ning qʻzgʻaluvchanligini pasaytirish maqsadida ishlatiladi.

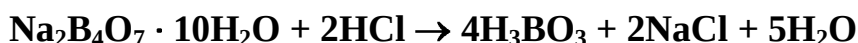
Saʼbʼlanishi. Ogʻzi maxkam berkitilgan idishlarda saqlanadi.

Bor birikmalari

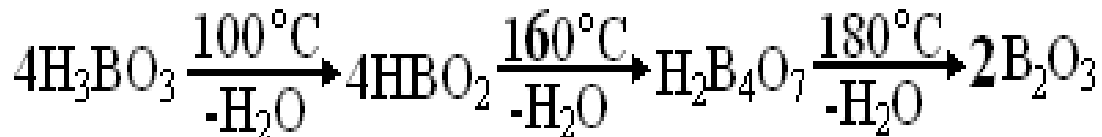
Acidum boricum – H_3BO_3

Natrii tetraboras – $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$

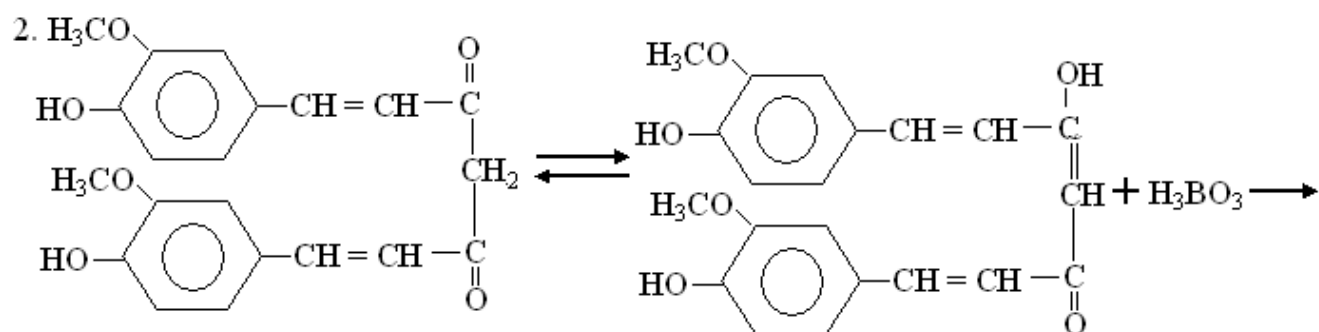
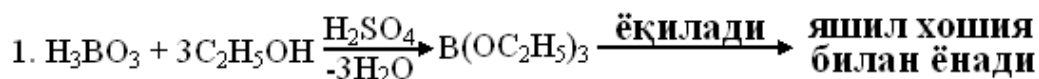
H_3BO_3 olinishi.



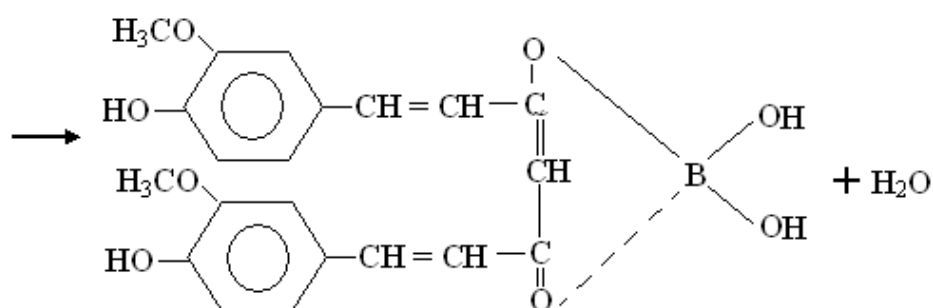
Tasvirlanishi. Rangsiz, yaltiroq, suvda qiyin, spirta esa eriydi. Barmoq orasiga olib ezgʻilansa, yogʻ kabi seziladi. $K = 6,4 \cdot 10^{-10}$ juda kuchsiz kislota. qizdirilganda angidromaxsulotlar hosil bʻyladi.



Chinligi



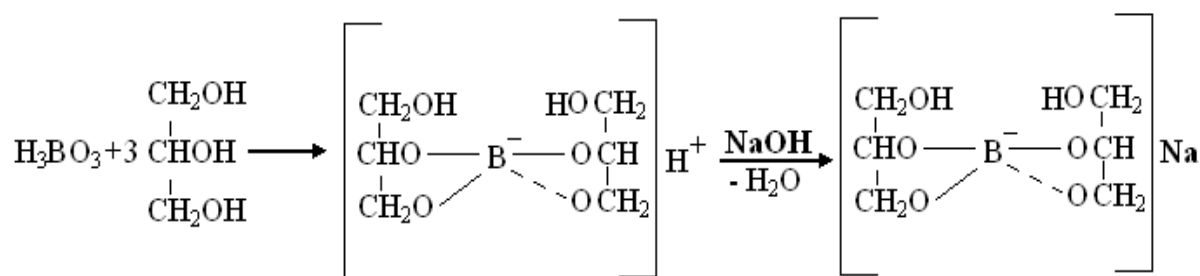
Куркумин билан реакция



розацианин

Tozaligi: As birikmalari va mineral kislotalarga tekshirib kʻyiriladi.

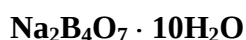
Miqdori. Alkalimetrik usul, glitserin ishtirokida.



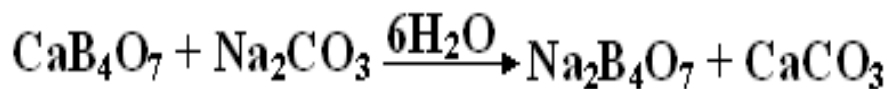
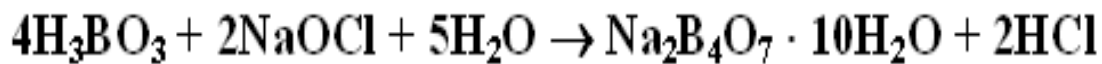
Ishlatilishi. Antiseptik, koʻz tomchisi, quloq tomchilari tarkibiga kiradi.

Saqlanishi. Ogʻzi mahkam berkitilgan idishlarda saqlanadi.

Natrii tetraboras



Olinishi.

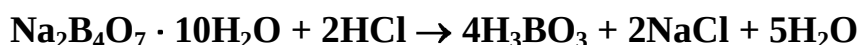


Tasvirlanishi. Rangsiz, tiniq, kristal kukun. Suvda va glitserinda eriydi. Spirtida erimaydi.

CHinligi. Na^+ ioniga sifat reaksiyasi.

Bor kislotasiga sifat reaksiyasi.

Miqdori.

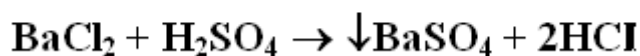
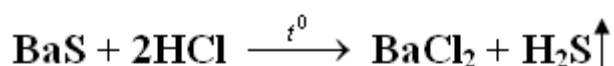
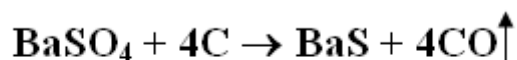


Ishlatilishi. Antiseptik modda sifatida sirtdan ishlatiladi.

Bariy birikmalari

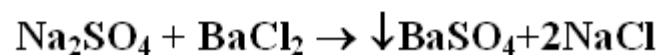
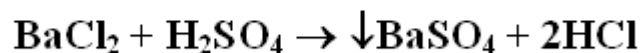
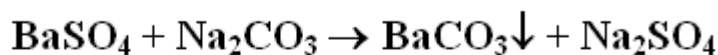
Bariy sulfat Bari sulfas pro roentgeno BaSO_4

Olinishi.



Tasvirlanishi. Hidsiz, mazasiz, oq mayda kukun bo'lib, suv, mineral kislotalar, ishqorlar va organik erituvchilarda amaliy jihatdan erimaydi.

CHinligi.



Tozaligi. Bariyning eruvchan tuzlari va BaS tekshirib ko'riladi. **Dispersligi.** 50 ml hajmli silindrga 5 g BaSO₄ va belgisigacha suv solib, 1 minut chayqatiladi. 15 minutdan so'ng bariy sulfatning cho'kish chegarasi 12 ml dan past tushmasligi kerak.

Ishlatilishi. Rentgenokonstrast vosita.

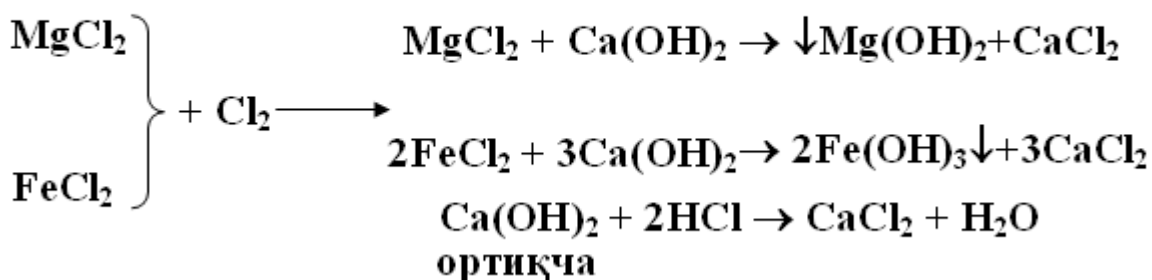
Kaltsiy birikmalari

Kaltsiy xlorid CaCl₂ · 6H₂O Calcii chloridum

Kuydirilgan kaltsiy sulfat – CaSO₄ · 1/2H₂O Calcii sulfas ustum.



Тоъаъаи.

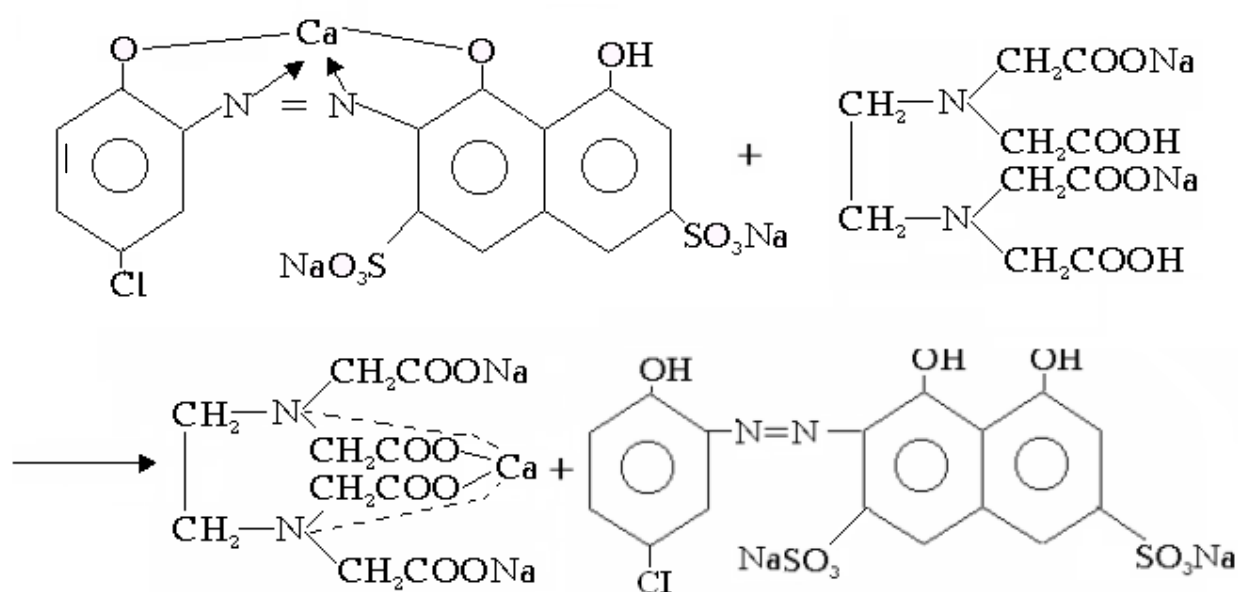
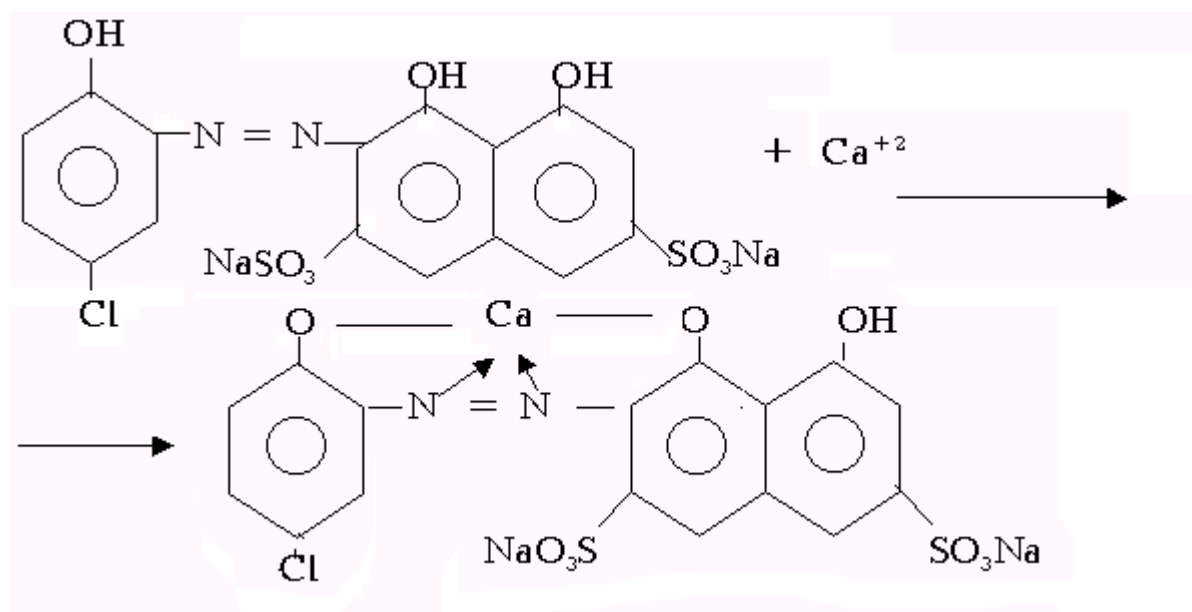


Tasvirlanishi. SHo'rtang – taxir mazali, rangsiz, kristall modda, suvda oson, spirtda oson eriydi. Gigroskopik, 34°S haroratda o'z kristallik suvida erib ketadi.

CHinligi. Ca⁺² va Cl' ionlarigi sifat reaksiyasi.

Tozaligi. Mg, Ba, Zn, Al, PO₄⁻³ lar bo'lmasligi kerak.

Mikdorini aniqlash. 1. Kompleksonometrik usul.



2. Argentometrik (Mor)usul.

Ishlatilishi. Organizmning Ca^{+2} ga bo'lgan ehtiyojini qondirish maqsadida hamda allergik kasalliklarni davolashda 5-10 % li eritmasi ishlatiladi. 10% li in'eksion eritmasi venaga 5-10 ml hajmda yuboriladi.

Saqlanishi. Og'zi mahkam berkitilgan, parafinlangan idishlarda saqlanadi.

Gips – mustakil o'kishga.

Magniy birikmalari.

MgO - Magniy oqsid - Magnesii oxydum

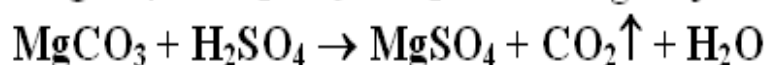
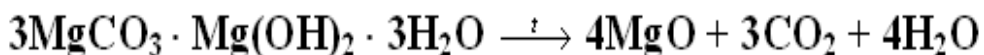
Mg(OH) · 3MgCO₃ · 3H₂O – Magniy asosli karbonat –

Magnesii sulfas carbonas

MgSO₄ · 7H₂O - Magnesii sulfas

Olinishi.

МАГНЕЗИТ

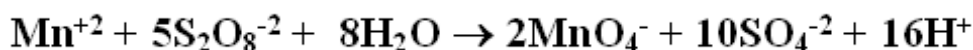


Tasvirlanishi. MgSO₄ rangsiz, tiniq, sho'rtang – taxir mazali, kristall kukun, suvda juda oson erib, spirtida amaliy jihatdan erimaydi. MgO – oq kukun, suvda juda kam eriydi, magniyning asosli karbonati ham suvda kam eriydi.

CHinligi. Mg⁺² va SO₄⁻² ionlariga sifat reaksiyasi bajariladi.

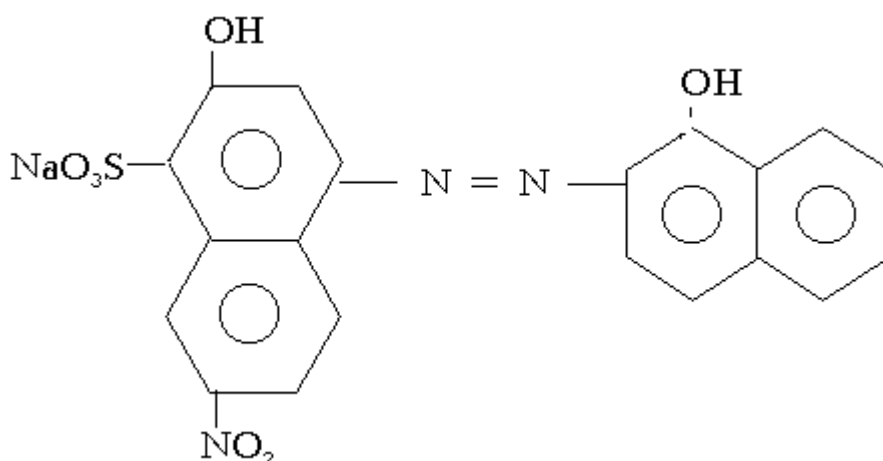


Tozaligi. MgSO₄ da Mn⁺² xususiy st aralashma



Miqdorini aniqlash. Kompleksonometrik usul.

Indikator kislotali xrom kora.



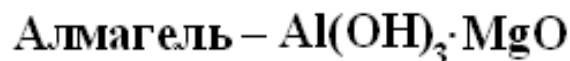
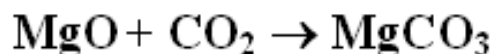
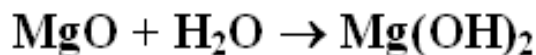
Magniyning asosli karbonatida MgO miqdori 40-42% bo'lishi kerak.

Ishlatilishi. MgO me'da shirasining kislotaliligi oshib ketganda, kislotalar bilan zaxarlanilganda va surgu dori sifatida ishlatiladi.

$3\text{MgCO}_3 \cdot \text{Mg}(\text{OH}) \cdot 3\text{H}_2\text{O} - \text{MgO}$ singari qo'llaniladi.

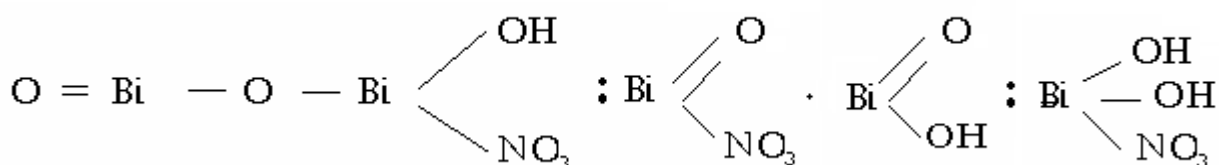
MgSO_4 20-25% li In'eksion eritmasi spazmatik va tutkonoqqa qarshi vosita sifatida mushak orasiga yuboriladi. Uni 15-30 ml dan surgidori sifatida ichish ham mumkin.

Saqlanishi. Og'zi mahkam berkitilgan idishlarda saqlanadi.

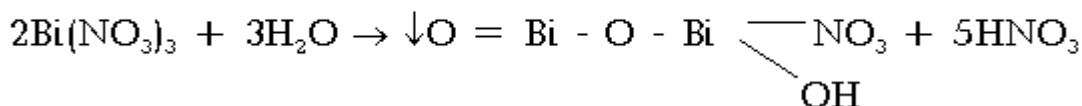
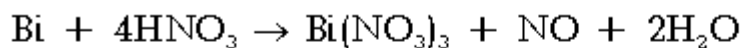


Vismut birikmalari

Vismutning asosli nitrati – Bismuthi subnitras



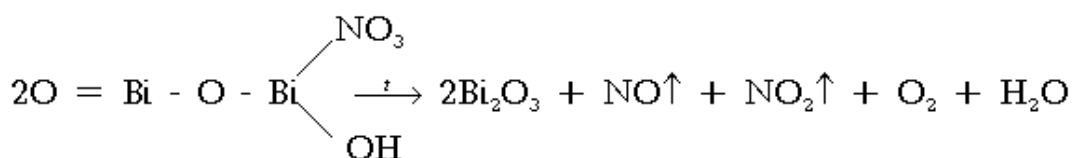
Olinishi.



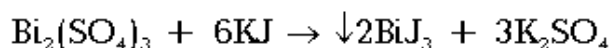
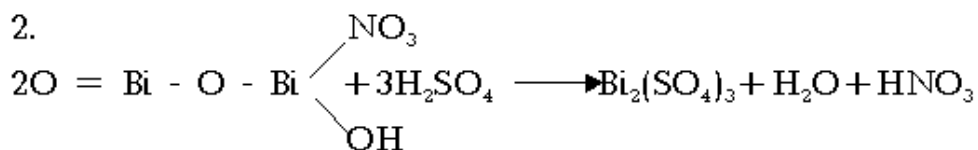
Tasvirlanishi. Og'ir, oq rangli amorf yoki mayda kristall kukun modda bo'lib, suv va spirtida erimaydi, mineral kislotalarda esa eriydi.

CHinligi.

1.



2.



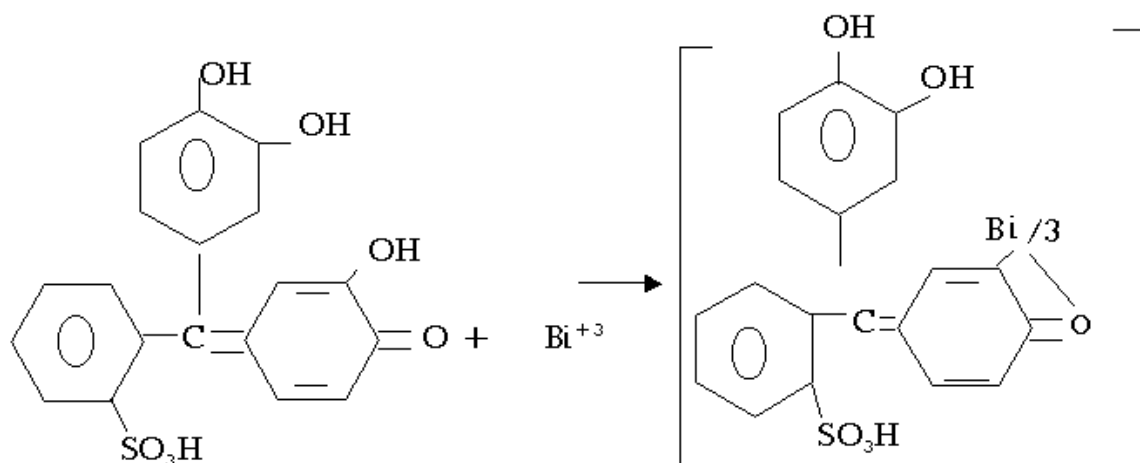
qo'ng'ir – qora cho'kma

Tozaligini aniqlash. Fe^{+3} , Cu^{+2} , Pb^{+2} tekshirib ko'riladi.

Miqdorini aniqlash. Kompleksonometrik usul.

Indikator – piroqotexin binafsha rang.

SHaroit kislotali mukit. $\vartheta = \frac{M \cdot M}{2}$



sariq rang $rN < 7$

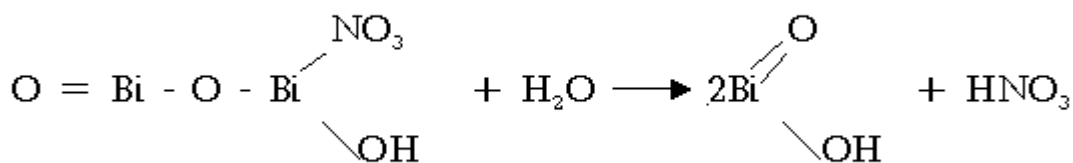
ko'k rang $rN < 7$

Davomi o'xshash.

Preparatdagi Bi_2O_3 79-82% bo'lishi lozim.

Ishlatilishi. Burishtiruvchi va antiseptik modda. Me'da va ichak kasalliklarida va surtma dori sifatida teri kasalliklarini davolashda ishlatiladi.

Saqlanishi. Og'zi mahkam berkitilgan idishlarda, qorongi joyda saqlanadi.

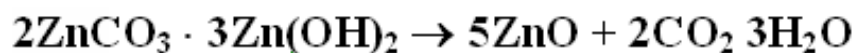


Rux birikmalari

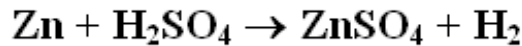
ZnO – Zinsi oxydum

$\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$ – Zinsi sulfas

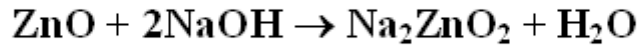
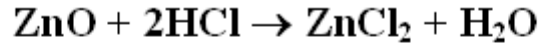
Olinishi.



Rux gidroqsikarbonat

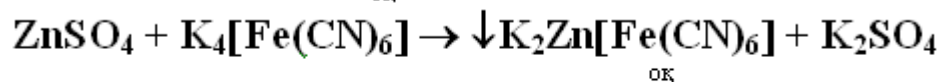
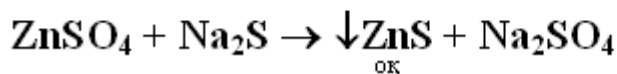
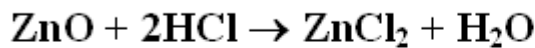


Tasvirlanishi. Rux oksidi oq yoki biroz sarg'imtir kukun bo'lib, suv va spirtde deyarli erimaydi. Mineral kislotalarda, ishqorlarda va ammiak eritmasida eriydi.



Rux sulfat rangsiz, hidsiz, tiniq kristall yoki mayda kristall kukun bo'lib, suvda engil eriydi, spirtde erimaydi. Uning suvdagi eritmasi kislotali muhitga ega.

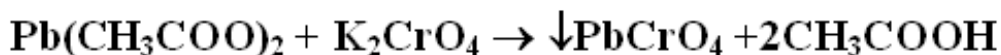
CHinligini aniqlash.



Richman yashili

SO_4^{2-} ga sifat reaksiyasi.

Tozaligini aniqlash. Al^{+3} , Fe^{+3} , Pb^{+2} (xususiy yot aralashma), Cu^{+2} larga tekshirib ko'riladi.



sariq cho'kma

Miqdorini aniqlash. Kompleksonometrik usul.

Indikator – kislotali maxsus xrom qora.

SHaroit – ammiakli bufer ishtirokida.

Ishlatilishi. ZnO burishtiruvchi, kurituvchi va antiseptik modda sifatida sirtidan sepma va surtma dori sifatida ishlatiladi. ZnSO_4 0,1; 0,2; 0,25; 0,5% li eritmalari urologiya amaliyotida, kuydiruvchi vosita sifatida va 0,25% li eritmaga ko'z tomchisi sifatida ishlatiladi.

ZnSO_4 B ro'yxati bo'yicha, ZnO esa umumiy ro'yxat bo'yicha, og'zi mahkam berkitilgan idishlarda saqlanadi.

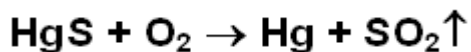
Simob birikmalari

HgCl₂ – Hydrargyri dichloridum, sulema

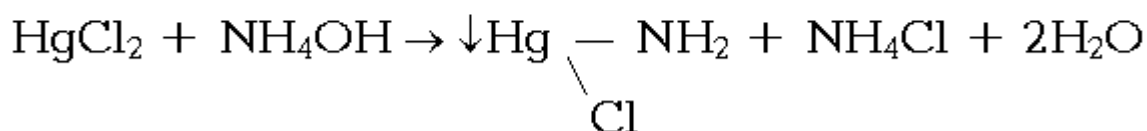
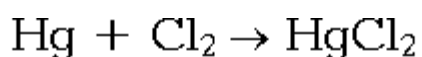
HgO – Hydrargyri oxydatum flavum

HgNH₂Cl - Hydrargyri amidochloridum

Olinishi.



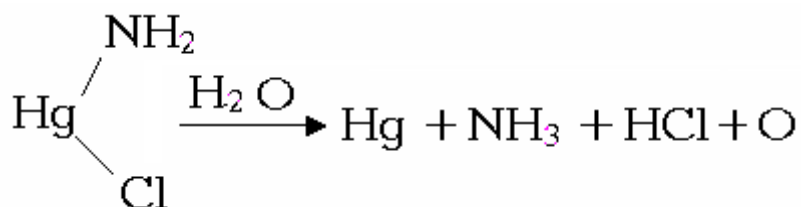
kinovar

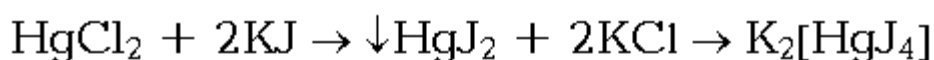


Tasvirlanishi. HgCl₂ – oq rangli kukun yoki kristall kukun, suvda eriydi, qaynoq suv va spirtda oson eriydi. Suvdagi eritmasi kislotali muhitga ega.

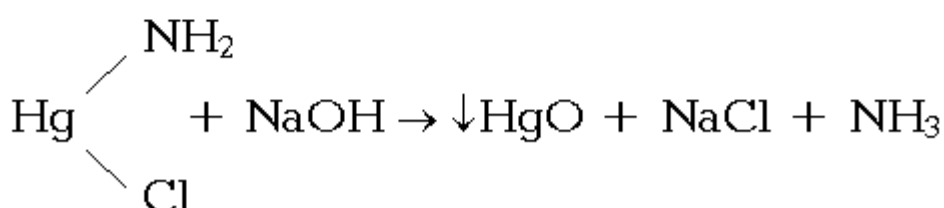
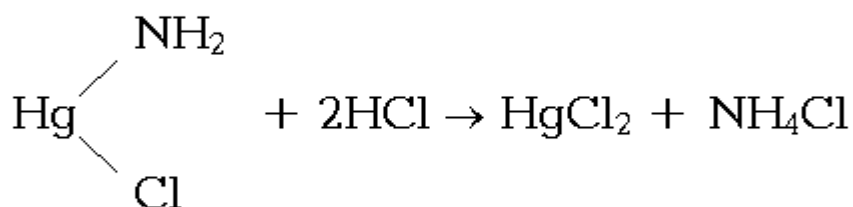
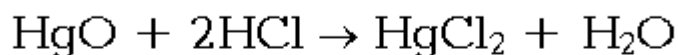
HgO – xidsiz, og'ir sariq yoki to'q sariq mayda dispers kukun, suv va spirtda erimaydi. Kislota eritmalarida eriydi.

HgNH₂Cl – xidsiz, oq mayda amorf kukun, suv, spirt va efirda erimaydi. Xavoda barqaror. YOrug'lik ta'sirida qorayib qoladi.

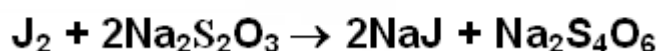
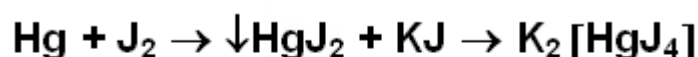
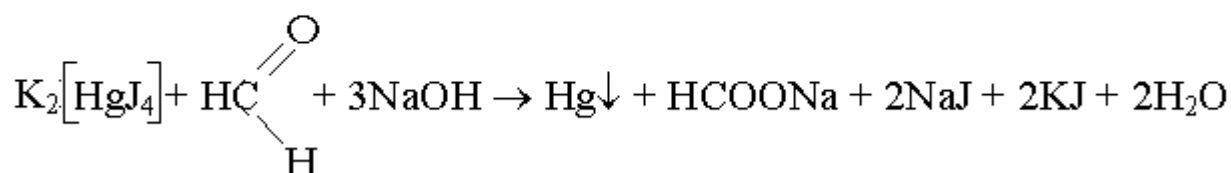




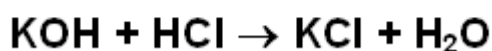
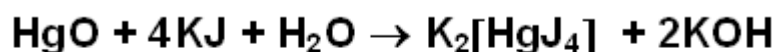
Сарик чўкма



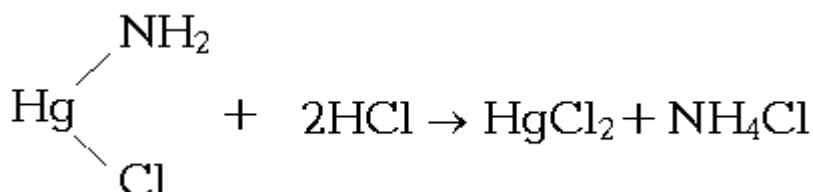
Miqdorini aniqlash. HgCl_2 - yodometrik usul.

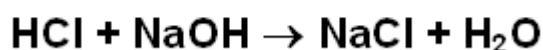


HgO – kislotali asosli titrlash usuli.



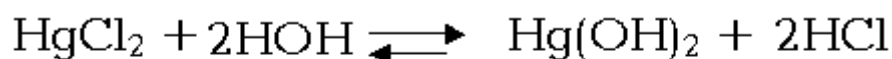
HgNH_2Cl – kislotali – asosli titrlash usuli.





ortiqchasi

Ishlatilishi. HgCl_2 kuchli antiseptik. 1:1000, 2:1000 nisbatdagi eritmaları dezinfektsiyalash maqsadida ishlatiladi. Preparat 0,5 – 1 g kukun va tabletka xolida chiqariladi. Uning eritmalarida kislotali muhit kelib chiqmasligi uchun tabletkalar tarkibiga ma'lum miqdorda NaCl qo'shiladi.



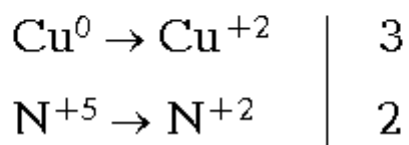
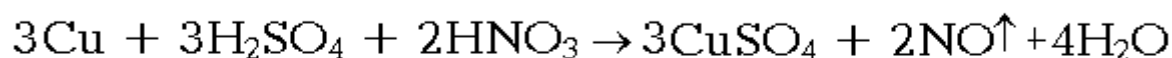
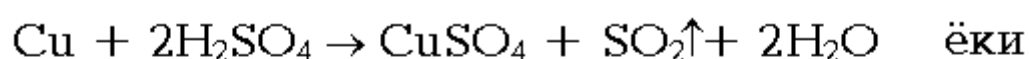
Zaxarli bo'lganligi uchun tabletkalari 1 % li natriy eozinat yoki fuksin bilan qizil rangga bo'yalgan xolda chiqariladi. A ro'yxati bo'yicha saqlanadi. HgO – 2% li surtma xolida ko'z kasalliklarini davolash maqsadida ishlatiladi.

HgNH_2Cl – 10 % li surtma xolida teri kasalliklarini davolashda ishlatiladi. B ro'yxati bo'yicha saqlanadi.

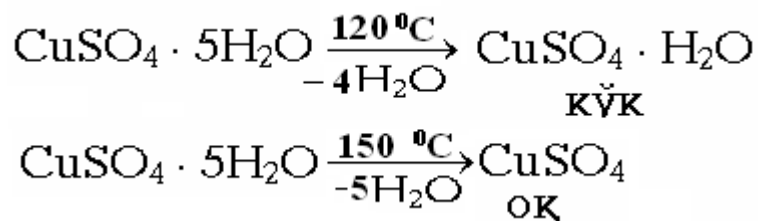
Mis va kumush birikmalari

$\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ – Cupri sulfas

Olinishi.



Tasvirlanishi. Hidsiz, ko'k rangli kristall kukun. Suvda engil eriydi. Qaynoq suvda juda oson eriydi, spirtida erimaydi.

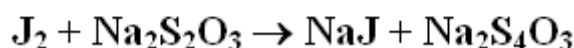
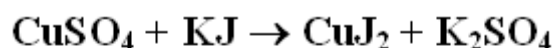


Chinligi.

1. $\text{CuSO}_4 + \text{Fe} \rightarrow \text{Cu} + \text{FeSO}_4$
2. $2\text{CuSO}_4 + 2\text{NH}_4\text{OH} \rightarrow \text{CuSO}_4 \cdot \text{Cu}(\text{OH})_2 + (\text{NH}_4)_2\text{SO}_4$
 $\text{CuSO}_4 \cdot \text{Cu}(\text{OH})_2 + (\text{NH}_4)_2\text{SO}_4 + 6\text{NH}_4\text{OH} \rightarrow 2[\text{Cu}(\text{NH}_3)_4]\text{SO}_4 + 8\text{H}_2\text{O}$

Tozaligini aniqlash. Cl, Fe⁺³, Me lar tekshirib ko'riladi.

Miqdorini aniqlash. Yodometrik usul.

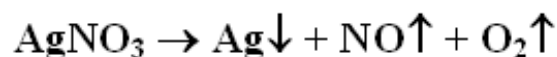


Ishlatilishi. 0,25% li eritmasi ko'z kasalliklarida, siydik yo'llari kasalliklarida, 1% li eritmasi esa qusdiruvchi vosita sifatida ishlatiladi.

Saqlanishi. Og'zi maxkam berkitilgan idishlarda saqlanadi.

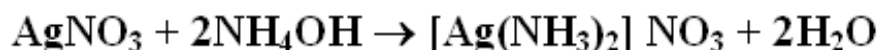
AgNO₃ – Argenti nitras

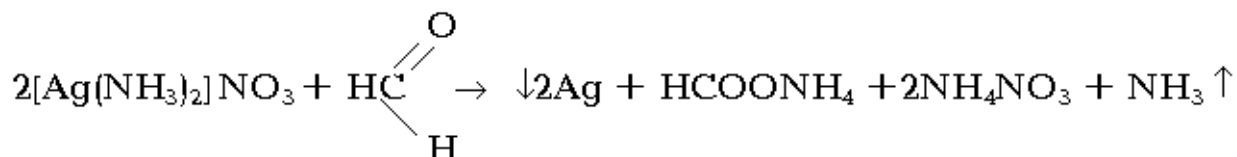
Olinishi. Rangsiz, xidsiz, kristall kukun, suvda oson eriydi. YOrug'lik ta'sirida qoramtir tusga kiradi.



Chinligi.

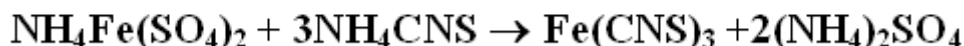
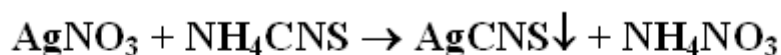
AgNO₃ - defenilamin bilan reaksiya





Tozaligini aniqlash. Cu^{+2} , Pb^{+2} , Bi^{+3} birikmalariga tekshirib ko'riladi.

Miqdorini aniqlash. Rodanometrik usul.



Ishlatilish. Bakteritsid ta'sirga ega. Ko'z kasalliklarida 1 – 2 – 5 – 10 % li eritmasi, siydik yo'llari kasalliklarida va boshqalarda ishlatiladi.

A ro'yxati bo'yicha saqlanadi.

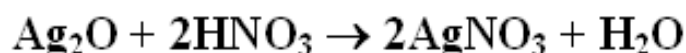
Kumushning oqsil bilan bergan kollid preparatlari tibbiyotda qadim zamonlardan beri qo'llanib kelingan.

Collargolum – kollargol

Protorgolum – protorgol Ag_2O – oqsil

Ularni olish uchun tuxum oqsili kislotasi bilan gidrolizlanib lizalbin va protalbin kislotalari hosil qilinadi. So'ng unga yangi hosil qilingan kumush oksidi qo'shiladi. Kollargol 70%, protorgol 8% kumush saqlaydi. Kollargol qora, protorgol esa qo'ng'ir rangda bo'lib, ular suvda eriydi.

Chinligi. Preparatning ma'lum miqdori yoqiladi, bunda kuygan jun xidi keladi – oqsil. Kul qoldig'i nitrat kislotasi eriydi.



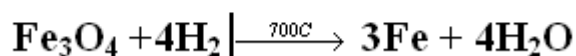
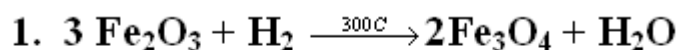
Ishlatilishi. 1 – 5 % li eritmaları burishtiruvchi, antiseptik va shamollashga qarshi vosita sifatida ishlatiladi (otorinolaringologiyada).

Temir birikmalari

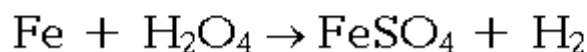
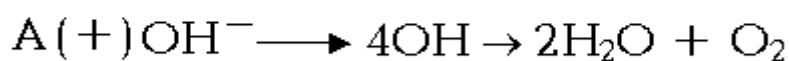
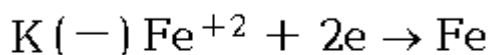
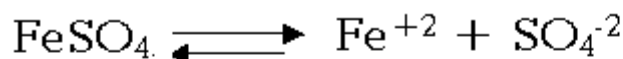
Fe – qaytarilgan temir - Ferrum reductum

$\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ – Ferri (II) sulfas, Ferrosi sulfas

Olinishi.



2. FeSO_4 – elektroliz qilib

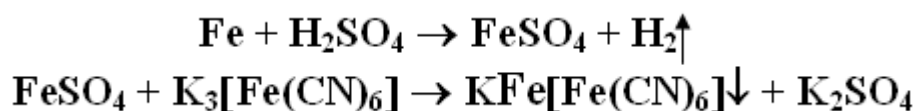


($\text{Fe}_2(\text{SO}_4)_3$ hosil bo'lmashligi uchun spirt qo'shiladi)

Tasvirlanishi. Fe – Kulrang, yaltiroq kukun, mineral kislotalarda eriydi.

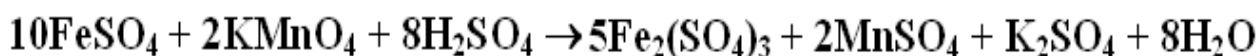
$\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ och yashil kristall kukun. Suvda engil eriydi. Suvli eritmasi kislotali muhitga ega. havoda qisman kristallik suvini yo'qotadi.

Chinligi.



berlin lazuri

Miqdori. Permanganatometriya.



Ishlatilishi. Kamqonlikda ishlatiladi.

Radiofarmatsevtik prepatlar

Reja:

1. Radioaktiv preparatlar tahlilining o'ziga xos tomonlari.
2. Radioaktiv izotopli dori moddalar tahlili.

Rak kasalligini davolash va diagnoz qilish maqsadida keyingi vaqtda radioaktiv dori moddalardan keng foydalanilmoqda. Radiofarmatsevtik preparatlar shuningdek yurak – qon tomir tizimi, buyrak, o't yo'llari, qalqonsimon bez va boshqa a'zolar kasalliklarni diagnoz qilish uchun ham ishlatiladi. Bu preparatlar sifatini nazorat qilishning o'ziga xos tomoni shundaki bunda kimyoviy va fizikaviy – kimyoviy usullar bilan birga radiometrik usul ham qo'llaniladi.

Chinligini aniqlash. Dori moddasidagi radionuklidni aniqlash uchun undan taralayotgan nurlar spektri olinib, namunaviy eritmadagi ayni shu radionukliddan taralayotgan nurlanish spektri bilan solishtiriladi. Agar namunaviy manba bo'lmasa, spektrdagi ayrim chiziqlar energiyasi va nurlanish intensivligi aniqlanadi.

Radinuklidlar faolligini aniqlash. β - va j - nurlanishlar va rentgen nurlanish bo'yicha Geyger o'lchamida yoki ionlanish kamerasi yordamida aniqlanadi.

Radioaktiv nuklidning tozaligi. Yadro spektroskopiyasi va radiometrik usullar yordamida aniqlanadi. Radiokimyoviy tozaligi xromatografiya va elektroforez usullari bilan aniqlanadi.

Radionuklid taxlil uch bosqichdan iborat:

1. Radionuklid yot aralashmalarni aniqlash;
2. Yot aralashmalarni identifikatsiyalash;
3. Faolligini aniqlash.

Fosfor – ^{32}P izotopi kiritilgan natriy fosfatning in'eksion eritmasi

$\text{Na}_2\text{HPO}_4 (^{32}\text{P})$ – Solutio Natrii hydrophosphatis

Phosphozo – ^{32}P notati pro injectionifus

Tasvirlanishi. Rangsiz, tiniq eritma. Solishtirma faolligi 2 – 10 mkyuri/ml. ^{32}P ning solishtirma faolligi 98%.

Chinligi. 1. $\text{Zr}(\text{NO}_3)_4$ va konts. HNO_3 bilan oq cho'kma hosil qiladi.

2. β - nurlanishning yutilish chiziqlari namunaviy eritma ^{32}P ning β - nurlanish chiziqlari bilan solishtiriladi.

3. Yarim emirilish davri 14,2 kun.

4. Radiokimyoviy tarkibi qog'oz xromatografiyasi usuli bilan aniqlanadi.

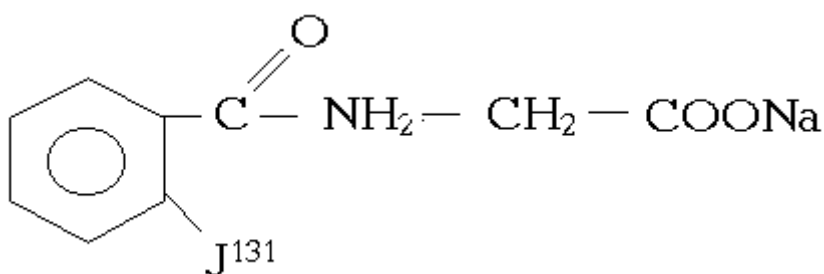
Solishtirma faollik o'lchagich yordamida aniqlanadi.

Fosforning miqdori SF – usul bilan aniqlanadi ($(\text{NH}_4)_6\text{MoO}_4$ yoki $(\text{NH}_4)_2\text{VO}_4$) reaktivlari yordamida $\lambda = 410 \text{ nm}$.

Saqlanish muddati 2 oy, maxsus konteynerlarda saqlanadi. A ro'yxati bo'yicha.

Leykoz kasalligini davolash va rak kasalini tashxis qilish maqsadida ishlatiladi.

Natriy – O – yod gipuratning, yod – ^{131}I izotopi kiritilgan in'eksion eritma



Yarim emirilish davri 8 kun. Saqlanish muddati – 20 kun.

Tasvirlanishi. Tiniq, rangsiz eritma. Solishtirma faolligi 0,1 mkyuri/ml. O – yodgipuratning nisbiy faolligi 98%.

Chinligi. SF – spektr va j – nurlanish spektri bo'yicha aniqlanadi. Radiokimyoviy tarkib qog'oz xromatografiyasi o – yodgipurat miqdori – SF usul.

Saqlanishi. A – ro'yxati bo'yicha.

NAZORAT SAVOLLARI:

1. Azot brikmalari, kuldiruvchi gaz, natriy nitrat, arsen brikmalari, arsen uning oksidi, natriy arsenat, natriy gidrokarbonat, litiy karbonat ularni olinishi, bor brikmalari, bor kislotasi, natriy tetroborat, tasvirlanishi, tozaligi, chinligi, miqdorini aniqlash usullari, ishlatilishi va saqlanishi.
2. Bariy, Kaltsiy, Magniy, Vismut, Rux, birikmalarini olinishi, tavsifi, tahlili va ishlatilishi.
3. Simob birikmalari: Simob ikki xloridi, simob ikki oksidi, simob amid xloridi, ularni olinishi, sifat reaksiyalari, miqdorini aniqlash usullari, ishlatilishi, saqlanishiga qo`yilgan talablar.
4. Mis va kumush birikmalari; mis sulfati, kumush nitrati, ularni olinishi, sifat reaksiyalari, miqdorini aniqlash usullari, ishlatilishi.
 - a. Kumush nitratni saqlashga qo`yilgan talablar.
5. Kumush oqsillarining birikmasi protorgol uning olinishi, sifat reaksiyalari, miqdori, ishlatilishi.
6. Temir birikmalari ularni olinishi, sifat reaksiyalari, miqdorini aniqlash usullari, ishlatilishi, saqlanishiga qo`yilgan talablar.
7. Radiofarmatsevtik preparatlar olinishi, sifat reaksiyalari, ishlatilishi, saqlanishiga qo`yilgan talablar.

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