

## НУЖНЫЕ РЕАКЦИИ (НЕОРГАНИКА)

### Термическое разложение гидроксидов

1 $\text{NaOH} \xrightarrow{t^\circ\text{C}} \boxed{\times}$	6 $\text{CsOH} \xrightarrow{t^\circ\text{C}} \boxed{\times}$
2 $\text{KOH} \xrightarrow{t^\circ\text{C}} \boxed{\times}$	7 $\text{Fe}(\text{OH})_2 \xrightarrow{t^\circ\text{C}} \text{FeO} + \text{H}_2\text{O}$
3 $\text{Ca}(\text{OH})_2 \xrightarrow{t^\circ\text{C}} \text{CaO} + \text{H}_2\text{O}$	8 $\text{Fe}(\text{OH})_3 \xrightarrow{t^\circ\text{C}} \text{Fe}_2\text{O}_3 + \text{H}_2\text{O}$
4 $\text{Mg}(\text{OH})_2 \xrightarrow{t^\circ\text{C}} \text{MgO} + \text{H}_2\text{O}$	9 $\text{Cu}(\text{OH})_2 \xrightarrow{t^\circ\text{C}} \text{CuO} + \text{H}_2\text{O}$
5 $\text{LiOH} \xrightarrow{t^\circ\text{C}} \text{Li}_2\text{O} + \text{H}_2\text{O}$	10 $\text{RbOH} \xrightarrow{t^\circ\text{C}} \boxed{\times}$

### Термическое разложение карбонатов и гидрокарбонатов

1 $\text{NaHCO}_3 \xrightarrow{t^\circ\text{C}} \text{Na}_2\text{CO}_3 + \text{CO}_2 + \text{H}_2\text{O}$	5 $\text{K}_2\text{CO}_3 \xrightarrow{t^\circ\text{C}} \boxed{\times}$
2 $\text{Na}_2\text{CO}_3 \xrightarrow{t^\circ\text{C}} \boxed{\times}$	6 $\text{KHCO}_3 \xrightarrow{t^\circ\text{C}} \text{K}_2\text{CO}_3 + \text{CO}_2 + \text{H}_2\text{O}$
3 $\text{Ca}(\text{HCO}_3)_2 \xrightarrow{t^\circ\text{C}} \text{CaCO}_3 \downarrow + \text{CO}_2 + \text{H}_2\text{O}$	7 $(\text{CuOH})_2\text{CO}_3 \xrightarrow{t^\circ\text{C}} \text{CuO} + \text{CO}_2 + \text{H}_2\text{O}$
4 $\text{CaCO}_3 \xrightarrow{t^\circ\text{C}} \text{CaO} + \text{CO}_2$	8 $\text{ZnCO}_3 \xrightarrow{t^\circ\text{C}} \text{ZnO} + \text{CO}_2$

### Термическое разложение солей аммония

1 $\text{NH}_4\text{NO}_3 \xrightarrow{t^\circ\text{C}} \text{N}_2\text{O} + 2\text{H}_2\text{O}$	4 $(\text{NH}_4)_2\text{Cr}_2\text{O}_7 \xrightarrow{t^\circ\text{C}} \text{N}_2 + 4\text{H}_2\text{O} + \text{Cr}_2\text{O}_3$
2 $\text{NH}_4\text{NO}_2 \xrightarrow{t^\circ\text{C}} \text{N}_2 + 2\text{H}_2\text{O}$	5 $\text{NH}_4\text{Cl} \xrightarrow{t^\circ\text{C}} \text{NH}_3 + \text{HCl}$
3 $(\text{NH}_4)_2\text{CO}_3 \xrightarrow{t^\circ\text{C}} 2\text{NH}_3 + \text{CO}_2 + \text{H}_2\text{O}$	

### Термическое разложение нитратов

1 $\text{NaNO}_3 \xrightarrow{t^\circ\text{C}} \text{NaNO}_2 + \text{O}_2$	9 $\text{LiNO}_3 \xrightarrow{t^\circ\text{C}} \text{Li}_2\text{O} + \text{NO}_2 + \text{O}_2$
2 $\text{KNO}_3 \xrightarrow{t^\circ\text{C}} \text{KNO}_2 + \text{O}_2$	10 $\text{Hg}(\text{NO}_3)_2 \xrightarrow{t^\circ\text{C}} \text{Hg} + \text{NO}_2 + \text{O}_2$
3 $\text{Ca}(\text{NO}_3)_2 \xrightarrow{t^\circ\text{C}} \text{Ca}(\text{NO}_2)_2 + \text{O}_2$	11 $\text{AgNO}_3 \xrightarrow{t^\circ\text{C}} \text{Ag} + \text{NO}_2 + \text{O}_2$
4 $\text{Zn}(\text{NO}_3)_2 \xrightarrow{t^\circ\text{C}} \text{ZnO} + \text{NO}_2 + \text{O}_2$	12 $\text{CsNO}_3 \xrightarrow{t^\circ\text{C}} \text{CsNO}_2 + \text{O}_2$
5 $\text{Cu}(\text{NO}_3)_2 \xrightarrow{t^\circ\text{C}} \text{CuO} + \text{NO}_2 + \text{O}_2$	13 $\text{Ba}(\text{NO}_3)_2 \xrightarrow{t^\circ\text{C}} \text{Ba}(\text{NO}_2)_2 + \text{O}_2$
6 $\text{Fe}(\text{NO}_3)_3 \xrightarrow{t^\circ\text{C}} \text{Fe}_2\text{O}_3 + \text{NO}_2 + \text{O}_2$	14 $\text{NH}_4\text{NO}_3 \xrightarrow{t^\circ\text{C}} \text{N}_2\text{O} + 2\text{H}_2\text{O}$
7 $\text{Fe}(\text{NO}_3)_2 \xrightarrow{t^\circ\text{C}} \text{Fe}_2\text{O}_3 + \text{NO}_2 + \text{O}_2$	15 $\text{Mn}(\text{NO}_3)_2 \xrightarrow{t^\circ\text{C}} \text{MnO}_2 + 2\text{NO}_2$
8 $\text{Mg}(\text{NO}_3)_2 \xrightarrow{t^\circ\text{C}} \text{MgO} + \text{NO}_2 + \text{O}_2$	16

### Кислоты-окислители и др. окислители

1 $\text{Fe} + \text{HCl} \rightarrow \text{FeCl}_2 + \text{H}_2$	10 $\text{Fe} + \text{HNO}_3(\text{конц. хол}) \rightarrow \boxed{\times}$
2 $\text{Fe} + \text{Cl}_2 \rightarrow \text{FeCl}_3$	11 $\text{Fe} + \text{HNO}_3(\text{конц. гор}) \rightarrow \text{Fe}(\text{NO}_3)_3 + \text{NO}_2 + \text{H}_2\text{O}$
3 $\text{Cu} + \text{HCl} \rightarrow \boxed{\times}$	12 $\text{Al} + \text{HNO}_3(\text{конц. хол}) \rightarrow \boxed{\times}$
4 $\text{Cu} + \text{Cl}_2 \rightarrow \text{CuCl}_2$	13 $\text{C} + \text{HNO}_3(\text{конц.}) \rightarrow \text{CO}_2 + \text{NO}_2 + \text{H}_2\text{O}$
8 $\text{Cu} + \text{H}_2\text{SO}_4(\text{разб.}) \rightarrow \boxed{\times}$	14 $\text{S} + \text{HNO}_3(\text{конц.}) \rightarrow \text{H}_2\text{SO}_4 + \text{NO}_2 + \text{H}_2\text{O}$
6 $\text{Cu} + \text{H}_2\text{SO}_4(\text{конц.}) \rightarrow \text{CuSO}_4 + \text{SO}_2 + \text{H}_2\text{O}$	15 $\text{P} + \text{HNO}_3(\text{конц.}) + \text{H}_2\text{O} \rightarrow \text{H}_3\text{PO}_4 + \text{NO}_2$

7	$\text{Cu} + \text{HNO}_3(\text{разб}) \rightarrow \text{Cu}(\text{NO}_3)_2 + \text{NO} + \text{H}_2\text{O}$	16	$\text{C} + \text{H}_2\text{SO}_4(\text{конц}) \rightarrow \text{CO}_2 + \text{SO}_2 + \text{H}_2\text{O}$
8	$\text{Cu} + \text{HNO}_3(\text{конц}) \rightarrow \text{Cu}(\text{NO}_3)_2 + \text{NO}_2 + \text{H}_2\text{O}$	17	$\text{S} + \text{H}_2\text{SO}_4(\text{конц}) \rightarrow \text{SO}_2 + \text{H}_2\text{O}$
9	$\text{Fe} + \text{HNO}_3(\text{разб}) \rightarrow \text{Fe}(\text{NO}_3)_3 + \text{NO} + \text{H}_2\text{O}$	18	$\text{P} + \text{H}_2\text{SO}_4(\text{конц}) \rightarrow \text{H}_3\text{PO}_4 + \text{SO}_2 + \text{H}_2\text{O}$

### Растворение в воде и щелочах (+сплавление с щелочами)

1	$\text{Cl}_2 + \text{H}_2\text{O} \rightarrow \text{HCl} + \text{HClO}$	10	$\text{Al} + \text{KOH} + \text{H}_2\text{O} \rightarrow \text{K}[\text{Al}(\text{OH})_4] + \text{H}_2\uparrow$
2	$\text{Cl}_2 + \text{KOH}_{\text{хол}} \rightarrow \text{KCl} + \text{KClO} + \text{H}_2\text{O}$	11	$\text{Al} + \text{KOH} \xrightarrow{\text{сплавл}} \text{K}_3\text{AlO}_3(\text{KAlO}_2 + \text{K}_2\text{O}) + \text{H}_2$
3	$\text{Cl}_2 + \text{KOH}_{\text{конц}} \xrightarrow{t^\circ\text{C}} \text{KCl} + \text{KClO}_3 + \text{H}_2\text{O}$	12	$\text{Zn} + \text{KOH} + \text{H}_2\text{O} \rightarrow \text{K}_2[\text{Zn}(\text{OH})_4] + \text{H}_2\uparrow$
4	$\text{Br}_2 + \text{KOH} \rightarrow \text{KBr} + \text{KBrO} + \text{H}_2\text{O}$	13	$\text{Zn} + \text{KOH} \xrightarrow{\text{сплавл}} \text{K}_2\text{ZnO}_2 + \text{H}_2\uparrow$
5	$\text{I}_2 + \text{KOH} \rightarrow \text{KI} + \text{KIO}_3 + \text{H}_2\text{O}$	14	$\text{P} + \text{KOH} + \text{H}_2\text{O} \rightarrow \text{PH}_3\uparrow + \text{KH}_2\text{PO}_2$
6	$\text{NO}_2 + \text{H}_2\text{O} \rightarrow \text{HNO}_2 + \text{HNO}_3$	15	$\text{S} + \text{KOH} \rightarrow \text{K}_2\text{S} + \text{K}_2\text{SO}_3(\text{K}_2\text{S}_2\text{O}_3) + \text{H}_2\text{O}$
7	$\text{NO}_2 + \text{H}_2\text{O} + \text{O}_2 \rightarrow \text{HNO}_3$	16	$\text{Si} + \text{KOH} + \text{H}_2\text{O} \rightarrow \text{K}_2\text{SiO}_3 + 2\text{H}_2\uparrow$
8	$\text{NO}_2 + \text{KOH} \rightarrow \text{KNO}_2 + \text{KNO}_3 + \text{H}_2\text{O}$	17	$\text{Si} + \text{KOH} \xrightarrow{\text{сплавл}} \text{K}_4\text{SiO}_4 + 2\text{H}_2\uparrow$
9	$\text{NO}_2 + \text{KOH} + \text{O}_2 \rightarrow \text{KNO}_3 + \text{H}_2\text{O}$	18	

### Разное

1	$\text{NaF}_{\text{ТВ}} + \text{H}_2\text{SO}_4(\text{конц}) \rightarrow \text{HF}\uparrow + \text{NaHSO}_4$	2	$\text{NaBr}_{\text{ТВ}} + \text{H}_2\text{SO}_4(\text{конц}) \rightarrow \text{Br}_2 + \text{SO}_2 + \text{H}_2\text{O} + \text{NaHSO}_4$
3	$\text{NaCl}_{\text{ТВ}} + \text{H}_2\text{SO}_4(\text{конц}) \rightarrow \text{HCl}\uparrow + \text{NaHSO}_4$	4	$\text{NaI}_{\text{ТВ}} + \text{H}_2\text{SO}_4(\text{конц}) \rightarrow \text{I}_2 + \text{SO}_2 + \text{H}_2\text{O} + \text{NaHSO}_4 \cdot 2\text{H}_2\text{O}$
5	$\text{NaNO}_3_{\text{ТВ}} + \text{H}_2\text{SO}_4(\text{конц}) \xrightarrow{t^\circ\text{C}} \text{HNO}_3\uparrow + \text{Na}_2\text{SO}_4$	6	$\text{Cl}_2 + \text{NaI} \rightarrow \text{I}_2 + 2\text{NaCl}$
7	$\text{Br}_2 + \text{KI} \rightarrow \text{I}_2 + 2\text{HBr}$	8	$\text{Cl}_2 + \text{KBr} \rightarrow \text{Br}_2 + 2\text{KCl}$
9	$\text{H}_2\text{S} + \text{SO}_2 \rightarrow \text{S} + \text{H}_2\text{O}$	10	$\text{SO}_2 + \text{I}_2 + \text{H}_2\text{O} \rightarrow \text{H}_2\text{SO}_4 + \text{HI}$
11	$\text{Zn} + \text{FeSO}_4 \rightarrow \text{Fe} + \text{ZnSO}_4$	12	$\text{Fe} + \text{ZnCl}_2 \rightarrow \boxed{\phantom{\text{X}}}$
13	$\text{Zn} + \text{CuCl}_2 \rightarrow \text{Cu} + \text{ZnCl}_2$	14	$\text{Cu} + \text{Hg}(\text{NO}_3)_2 \rightarrow \text{Hg} + \text{Cu}(\text{NO}_3)_2$
15	$\text{KI} + \text{FeCl}_3 \rightarrow \text{FeCl}_2 + \text{I}_2\downarrow + \text{KCl}$	16	$\text{KI} + \text{CuCl}_2 \rightarrow \text{CuCl} + \text{I}_2\downarrow$
17	$\text{HCl} + \text{MnO}_2 \rightarrow \text{Cl}_2 + \text{MnCl}_2 + \text{H}_2\text{O}$	18	$\text{HBr} + \text{MnO}_2 \rightarrow \text{Br}_2 + \text{MnCl}_2 + \text{H}_2\text{O}$
19	$\text{KClO}_3 \xrightarrow{t^\circ\text{C}} \text{KCl} + \text{KClO}_4$	20	$\text{KClO}_3 \xrightarrow{\text{MnO}_2, t^\circ\text{C}} \text{KCl} + \text{O}_2$
21	$\text{K}_2\text{Cr}_2\text{O}_7 \xrightarrow{t^\circ\text{C}} \text{K}_2\text{CrO}_4 + \text{Cr}_2\text{O}_3 + \text{O}_2$	22	$\text{K}_2\text{CrO}_4 \rightarrow \boxed{\phantom{\text{X}}}$
23	$\text{KMnO}_4 \xrightarrow{t^\circ\text{C}} \text{K}_2\text{MnO}_4 + \text{MnO}_2 + \text{O}_2$	24	$\text{H}_2\text{O}_2 \xrightarrow{t^\circ\text{C}} \text{H}_2\text{O} + \text{O}_2$
25	$\text{K}[\text{Cr}(\text{OH})_4] + \text{Br}_2 + \text{KOH} \rightarrow \text{K}_2\text{CrO}_4 + \text{KBr} + \text{H}_2\text{O}$	26	$\text{Cr}_2(\text{SO}_4)_3 + \text{KMnO}_4 + \text{H}_2\text{O} \rightarrow \text{K}_2\text{Cr}_2\text{O}_7 + \text{MnO}_2 + \text{H}_2\text{SO}_4$
27	$\text{CrCl}_3 + \text{H}_2\text{O}_2 + \text{KOH} \rightarrow \text{K}_2\text{CrO}_4 + \text{KCl} + \text{H}_2\text{O}$	28	$\text{Ca}_3(\text{PO}_4)_2 + \text{C} + \text{SiO}_2 \xrightarrow{t^\circ\text{C}} \text{CO} + \text{P} + \text{CaSiO}_3$
29	$\text{Na}_2\text{HPO}_4 \xrightarrow{t^\circ\text{C}} \text{Na}_4\text{P}_2\text{O}_7 + \text{H}_2\text{O}$	30	$\text{H}_3\text{PO}_4(\text{безводн}) \xrightarrow{t^\circ\text{C}} \text{H}_4\text{P}_2\text{O}_7 + \text{H}_2\text{O}$
31	$\text{FeS}_2 + \text{HNO}_3(\text{конц}) \rightarrow \text{Fe}_2(\text{SO}_4)_3 + \text{NO}_2 + \text{H}_2\text{O}$	32	$\text{CuS} + \text{HNO}_3(\text{конц}) \rightarrow \text{CuSO}_4 + \text{NO}_2 + \text{H}_2\text{O}$
33	$\text{S} + \text{HI} \xrightarrow{t^\circ\text{C}} \text{I}_2 + \text{H}_2\text{S}$	34	$\text{H}_2\text{S} + \text{I}_2 \rightarrow 2\text{HI} + \text{S}$

