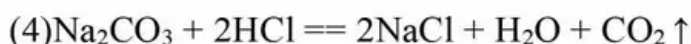
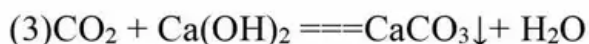
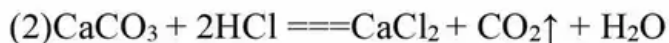
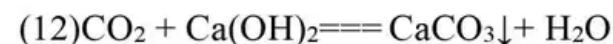
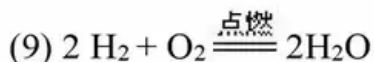
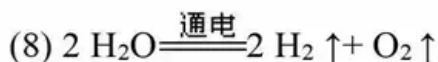
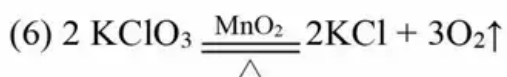
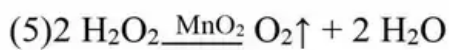
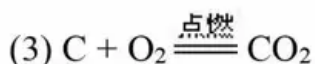
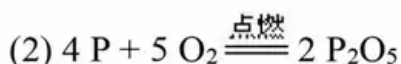
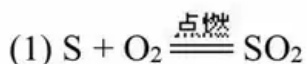


九年级化学方程式总汇

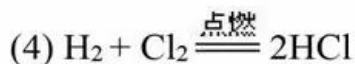
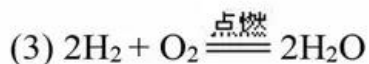
第一单元 走进化学世界



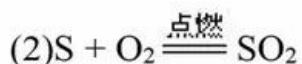
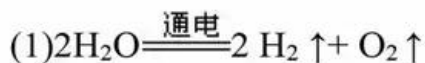
第二单元 我们周围的空气



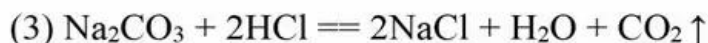
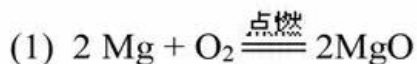
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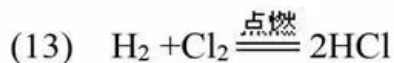
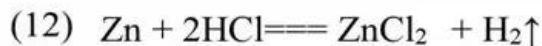


第四单元 物质构成的奥秘

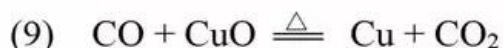
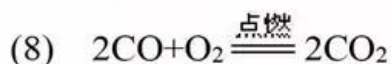
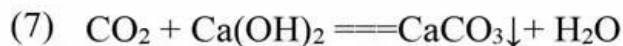
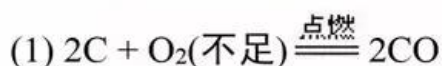


第五单元 化学方程式

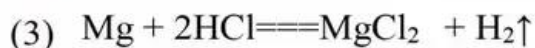
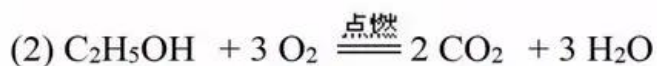




第六单元 碳和碳的氧化物



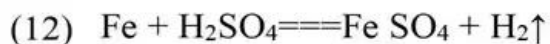
第七单元 燃料及其利用



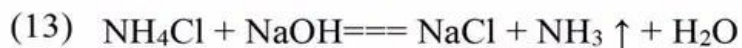
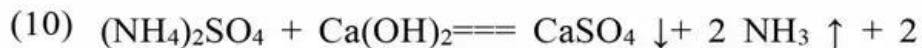
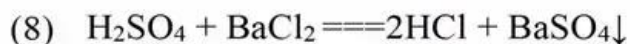
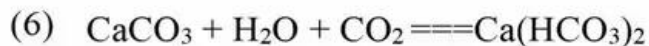
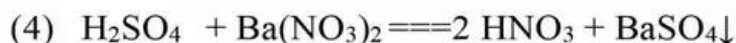
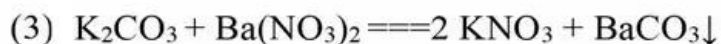
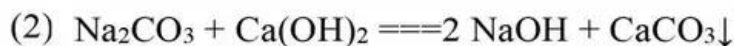
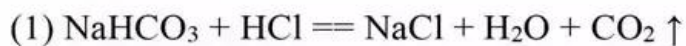
- (4) $\text{Zn} + \text{H}_2\text{SO}_4 \rightleftharpoons \text{ZnSO}_4 + \text{H}_2\uparrow$
- (5) $\text{H}_2\text{O} + \text{SO}_2 \rightleftharpoons \text{H}_2\text{SO}_3$
- (6) $\text{Zn} + \text{H}_2\text{SO}_3 \rightleftharpoons \text{ZnSO}_3 + \text{H}_2\uparrow$
- (7) $\text{Mg} + \text{H}_2\text{SO}_3 \rightleftharpoons \text{MgSO}_3 + \text{H}_2\uparrow$
- (8) $\text{CaCO}_3 + \text{H}_2\text{SO}_3 \rightleftharpoons \text{CaSO}_3\downarrow + \text{H}_2\text{O} + \text{CO}_2\uparrow$
- (9) $\text{Na}_2\text{CO}_3 + 2\text{HCl} \rightleftharpoons 2\text{NaCl} + \text{H}_2\text{O} + \text{CO}_2\uparrow$
- (10) $2\text{H}_2 + \text{O}_2 \xrightarrow{\text{点燃}} 2\text{H}_2\text{O}$

第八单元 金属和金属材料

- (1) $4\text{Al} + 3\text{O}_2 \rightleftharpoons 2\text{Al}_2\text{O}_3$
- (2) $\text{Zn} + 2\text{HCl} \rightleftharpoons \text{ZnCl}_2 + \text{H}_2\uparrow$
- (3) $\text{Fe} + 2\text{HCl} \rightleftharpoons \text{FeCl}_2 + \text{H}_2\uparrow$
- (4) $\text{Fe} + \text{H}_2\text{SO}_4 \rightleftharpoons \text{FeSO}_4 + \text{H}_2\uparrow$
- (5) $2\text{Al} + 3\text{H}_2\text{SO}_4 \rightleftharpoons \text{Al}_2(\text{SO}_4)_3 + 3\text{H}_2\uparrow$
- (6) $2\text{Cu} + \text{O}_2 \xrightarrow{\Delta} 2\text{CuO}$
- (7) $\text{Fe}_2\text{O}_3 + 3\text{CO} \xrightarrow{\text{高温}} 2\text{Fe} + 3\text{CO}_2$
- (8) $\text{Mg} + \text{H}_2\text{SO}_4 \rightleftharpoons \text{MgSO}_4 + \text{H}_2\uparrow$
- (9) $\text{Zn} + \text{CuSO}_4 \rightleftharpoons \text{ZnSO}_4 + \text{Cu}$
- (10) $\text{Al} + 3\text{AgNO}_3 \rightleftharpoons 3\text{Ag} + \text{Al}(\text{NO}_3)_3$
- (11) $\text{Fe} + \text{CuCl}_2 \rightleftharpoons \text{FeCl}_2 + \text{Cu}$



第十一单元 盐 化肥



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- (14) $\text{NH}_4\text{NO}_3 + \text{NaOH} \rightleftharpoons \text{NaNO}_3 + \text{NH}_3 \uparrow + \text{H}_2\text{O}$
- (15) $(\text{NH}_4)_2\text{SO}_4 + \text{Ba}(\text{NO}_3)_2 \rightleftharpoons 2 \text{NH}_4\text{NO}_3 + \text{BaSO}_4 \downarrow$
- (16) $\text{AgNO}_3 + \text{NH}_4\text{Cl} \rightleftharpoons \text{NH}_4\text{NO}_3 + \text{AgCl} \downarrow$
- (17) $\text{Na}_2\text{CO}_3 + \text{CaCl}_2 \rightleftharpoons \text{CaCO}_3 \downarrow + 2 \text{NaCl}$
- (17) $\text{K}_2\text{CO}_3 + 2\text{HCl} \rightleftharpoons 2\text{KCl} + \text{H}_2\text{O} + \text{CO}_2 \uparrow$
- (19) $\text{CuSO}_4 + \text{BaCl}_2 \rightleftharpoons \text{CuCl}_2 + \text{BaSO}_4 \downarrow$
- (20) $\text{HCl} + \text{NaOH} \rightleftharpoons \text{NaCl} + \text{H}_2\text{O}$
- (21) $\text{CaCO}_3 + 2\text{HCl} \rightleftharpoons \text{CaCl}_2 + \text{CO}_2 \uparrow + \text{H}_2\text{O}$
- (22) $\text{NH}_3 + \text{CO}_2 + \text{H}_2\text{O} + \text{NaCl} \rightleftharpoons \text{NH}_4\text{Cl} + \text{NaHCO}_3 \downarrow$

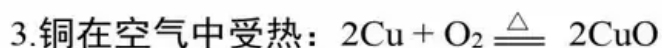
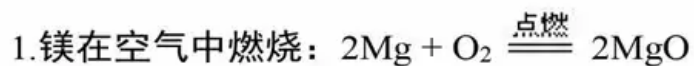
第十二单元 化学与生活



化学方程式分类汇总

一.物质与氧气的反应:

(1)单质与氧气的反应:



5. 氢气在空气中燃烧： $2\text{H}_2 + \text{O}_2 \xrightarrow{\text{点燃}} 2\text{H}_2\text{O}$

6. 红磷在空气中燃烧： $4\text{P} + 5\text{O}_2 \xrightarrow{\text{点燃}} 2\text{P}_2\text{O}_5$

7. 硫粉在空气中燃烧： $\text{S} + \text{O}_2 \xrightarrow{\text{点燃}} \text{SO}_2$

8. 碳在氧气中充分燃烧： $\text{C} + \text{O}_2 \xrightarrow{\text{点燃}} \text{CO}_2$

9. 碳在氧气中不充分燃烧： $2\text{C} + \text{O}_2 \xrightarrow{\text{点燃}} 2\text{CO}$

(2) 化合物与氧气的反应：

10. 一氧化碳在氧气中燃烧： $2\text{CO} + \text{O}_2 \xrightarrow{\text{点燃}} 2\text{CO}_2$

11. 甲烷在空气中燃烧： $\text{CH}_4 + 2\text{O}_2 \xrightarrow{\text{点燃}} \text{CO}_2 + 2\text{H}_2\text{O}$

12. 酒精在空气中燃烧： $\text{C}_2\text{H}_5\text{OH} + 3\text{O}_2 \xrightarrow{\text{点燃}} 2\text{CO}_2 + 3\text{H}_2\text{O}$

二. 几个分解反应：

13. 水在直流电的作用下分解： $2\text{H}_2\text{O} \xrightarrow{\text{通电}} 2\text{H}_2\uparrow + \text{O}_2\uparrow$

14. 加热碱式碳酸铜： $\text{Cu}_2(\text{OH})_2\text{CO}_3 \xrightarrow{\text{点燃}} 2\text{CuO} + \text{H}_2\text{O} + \text{CO}_2\uparrow$

15. 加热氯酸钾(有少量的二氧化锰)： $2\text{KClO}_3 \xrightarrow{\text{点燃}} 2\text{KCl} + 3\text{O}_2\uparrow$

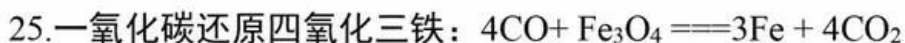
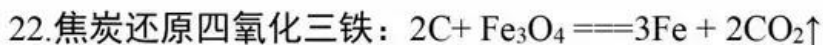
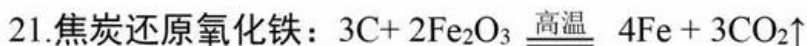
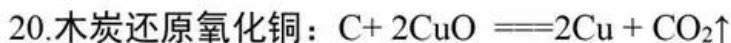
16. 加热高锰酸钾： $2\text{KMnO}_4 \xrightarrow{\text{点燃}} \text{K}_2\text{MnO}_4 + \text{MnO}_2 + \text{O}_2\uparrow$

17. 碳酸不稳定而分解： $\text{H}_2\text{CO}_3 \xrightarrow{\text{点燃}} \text{H}_2\text{O} + \text{CO}_2\uparrow$

18. 高温煅烧石灰石： $\text{CaCO}_3 \xrightarrow{\text{点燃}} \text{CaO} + \text{CO}_2\uparrow$

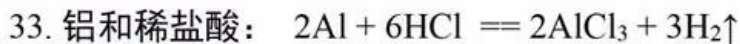
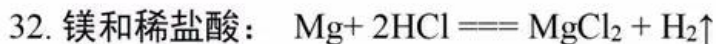
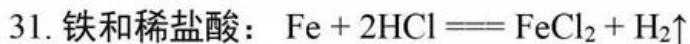
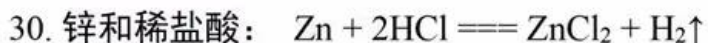
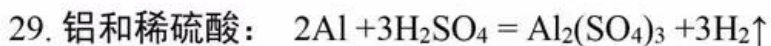
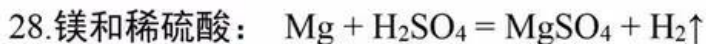
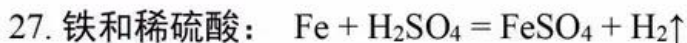
三. 几个氧化还原反应：

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四.单质、氧化物、酸、碱、盐的相互关系

(1) 金属单质 + 酸 ----- 盐 + 氢气 (置换反应)



(2)金属单质 + 盐(溶液) ----- 另一种金属 + 另一种盐 (置换反应)

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34. 铁和硫酸铜溶液反应: $\text{Fe} + \text{CuSO}_4 \rightleftharpoons \text{FeSO}_4 + \text{Cu}$

35. 锌和硫酸铜溶液反应: $\text{Zn} + \text{CuSO}_4 \rightleftharpoons \text{ZnSO}_4 + \text{Cu}$

36. 铜和硝酸汞溶液反应: $\text{Cu} + \text{Hg}(\text{NO}_3)_2 \rightleftharpoons \text{Cu}(\text{NO}_3)_2 + \text{Hg}$

(3)碱性氧化物 + 酸 ----- 盐 + 水 (复分解反应)

37. 氧化铁和稀盐酸反应: $\text{Fe}_2\text{O}_3 + 6\text{HCl} \rightleftharpoons 2\text{FeCl}_3 + 3\text{H}_2\text{O}$

38. 氧化铁和稀硫酸反应: $\text{Fe}_2\text{O}_3 + 3\text{H}_2\text{SO}_4 \rightleftharpoons \text{Fe}_2(\text{SO}_4)_3 + 3\text{H}_2\text{O}$

39. 氧化铜和稀盐酸反应: $\text{CuO} + 2\text{HCl} \rightleftharpoons \text{CuCl}_2 + \text{H}_2\text{O}$

40. 氧化铜和稀硫酸反应: $\text{CuO} + \text{H}_2\text{SO}_4 \rightleftharpoons \text{CuSO}_4 + \text{H}_2\text{O}$

41. 氧化镁和稀硫酸反应: $\text{MgO} + \text{H}_2\text{SO}_4 \rightleftharpoons \text{MgSO}_4 + \text{H}_2\text{O}$

42. 氧化钙和稀盐酸反应: $\text{CaO} + 2\text{HCl} \rightleftharpoons \text{CaCl}_2 + \text{H}_2\text{O}$

(4)酸性氧化物 + 碱 ----- 盐 + 水 (非复分解反应)

43. 苛性钠暴露在空气中变质: $2\text{NaOH} + \text{CO}_2 \rightleftharpoons \text{Na}_2\text{CO}_3 + \text{H}_2\text{O}$

44. 苛性钠吸收二氧化硫气体: $2\text{NaOH} + \text{SO}_2 \rightleftharpoons \text{Na}_2\text{SO}_3 + \text{H}_2\text{O}$

45. 苛性钠吸收三氧化硫气体: $2\text{NaOH} + \text{SO}_3 \rightleftharpoons \text{Na}_2\text{SO}_4 + \text{H}_2\text{O}$

46. 消石灰放在空气中变质: $\text{Ca}(\text{OH})_2 + \text{CO}_2 \rightleftharpoons \text{CaCO}_3 \downarrow + \text{H}_2\text{O}$

47. 消石灰吸收二氧化硫: $\text{Ca}(\text{OH})_2 + \text{SO}_2 \rightleftharpoons \text{CaSO}_3 \downarrow + \text{H}_2\text{O}$

(5)酸 + 碱 ----- 盐 + 水(复分解反应)

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48. 盐酸和烧碱起反应: $\text{HCl} + \text{NaOH} \text{====} \text{NaCl} + \text{H}_2\text{O}$

49. 盐酸和氢氧化钾反应: $\text{HCl} + \text{KOH} \text{====} \text{KCl} + \text{H}_2\text{O}$

50. 盐酸和氢氧化铜反应: $2\text{HCl} + \text{Cu}(\text{OH})_2 \text{====} \text{CuCl}_2 + 2\text{H}_2\text{O}$

51. 盐酸和氢氧化钙反应: $2\text{HCl} + \text{Ca}(\text{OH})_2 \text{====} \text{CaCl}_2 + 2\text{H}_2\text{O}$

52. 盐酸和氢氧化铁反应: $3\text{HCl} + \text{Fe}(\text{OH})_3 \text{====} \text{FeCl}_3 + 3\text{H}_2\text{O}$

53. 氢氧化铝药物治疗胃酸过多:



54. 硫酸和烧碱反应: $\text{H}_2\text{SO}_4 + 2\text{NaOH} \text{====} \text{Na}_2\text{SO}_4 + 2\text{H}_2\text{O}$

55. 硫酸和氢氧化钾反应: $\text{H}_2\text{SO}_4 + 2\text{KOH} \text{====} \text{K}_2\text{SO}_4 + 2\text{H}_2\text{O}$

56. 硫酸和氢氧化铜反应: $\text{H}_2\text{SO}_4 + \text{Cu}(\text{OH})_2 \text{====} \text{CuSO}_4 + 2\text{H}_2\text{O}$

57. 硫酸和氢氧化铁反应:

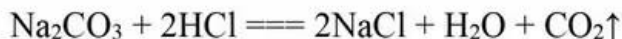


58. 硝酸和烧碱反应: $\text{HNO}_3 + \text{NaOH} \text{====} \text{NaNO}_3 + \text{H}_2\text{O}$

(6) 酸 + 盐 ----- 另一种酸 + 另一种盐(复分解反应)

59. 大理石与稀盐酸反应: $\text{CaCO}_3 + 2\text{HCl} \text{====} \text{CaCl}_2 + \text{H}_2\text{O} + \text{CO}_2\uparrow$

60. 碳酸钠与稀盐酸反应:



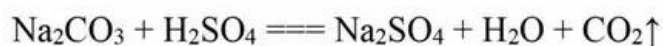
61. 碳酸镁与稀盐酸反应:



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62.盐酸和硝酸银溶液反应： $\text{HCl} + \text{AgNO}_3 \rightleftharpoons \text{AgCl}\downarrow + \text{HNO}_3$

63.硫酸和碳酸钠反应：



64.硫酸和氯化钡溶液反应： $\text{H}_2\text{SO}_4 + \text{BaCl}_2 \rightleftharpoons \text{BaSO}_4\downarrow + 2\text{HCl}$

(7)碱 + 盐 ----- 另一种碱 + 另一种盐(复分解反应，且两种反应物均可溶)

65.氢氧化钠与硫酸铜： $2\text{NaOH} + \text{CuSO}_4 \rightleftharpoons \text{Cu}(\text{OH})_2\downarrow + \text{Na}_2\text{SO}_4$

66.氢氧化钠与氯化铁： $3\text{NaOH} + \text{FeCl}_3 \rightleftharpoons \text{Fe}(\text{OH})_3\downarrow + 3\text{NaCl}$

67.氢氧化钠与氯化镁： $2\text{NaOH} + \text{MgCl}_2 \rightleftharpoons \text{Mg}(\text{OH})_2\downarrow + 2\text{NaCl}$

68.氢氧化钠与氯化铜： $2\text{NaOH} + \text{CuCl}_2 \rightleftharpoons \text{Cu}(\text{OH})_2\downarrow + 2\text{NaCl}$

69.氢氧化钙与碳酸钠： $\text{Ca}(\text{OH})_2 + \text{Na}_2\text{CO}_3 \rightleftharpoons \text{CaCO}_3\downarrow + 2\text{NaOH}$

(8)盐 + 盐 ----- 新盐 1+新盐 2(复分解反应，且两种反应物均可溶)

70.氯化钠溶液和硝酸银溶液： $\text{NaCl} + \text{AgNO}_3 \rightleftharpoons \text{AgCl}\downarrow + \text{NaNO}_3$

71.硫酸钠和氯化钡： $\text{Na}_2\text{SO}_4 + \text{BaCl}_2 \rightleftharpoons \text{BaSO}_4\downarrow + 2\text{NaCl}$

五.其它反应：

72.二氧化碳溶解于水： $\text{CO}_2 + \text{H}_2\text{O} \rightleftharpoons \text{H}_2\text{CO}_3$

73.生石灰溶于水： $\text{CaO} + \text{H}_2\text{O} \rightleftharpoons \text{Ca}(\text{OH})_2$

74.氧化钠溶于水： $\text{Na}_2\text{O} + \text{H}_2\text{O} \rightleftharpoons 2\text{NaOH}$

75.三氧化硫溶于水： $\text{SO}_3 + \text{H}_2\text{O} \rightleftharpoons \text{H}_2\text{SO}_4$

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76.硫酸铜晶体受热分解： $\text{CuSO}_4 \cdot 5\text{H}_2\text{O} \xrightarrow{\Delta} \text{CuSO}_4 + 5\text{H}_2\text{O}$

77.无水硫酸铜作干燥剂： $\text{CuSO}_4 + 5\text{H}_2\text{O} \xrightarrow{\Delta} \text{CuSO}_4 \cdot 5\text{H}_2\text{O}$