

高等学校理工科参考丛书

·曹忠良 王珍云编·

无机化学反应方程式手册

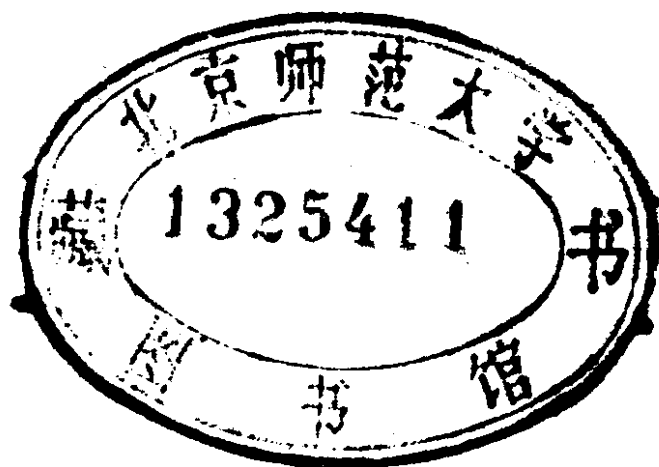


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湖南科学技术出版社

内 容 简 介

本书收编了无机化学及分析化学方面的重要化学反应方程式八千余个。按元素周期表中元素的自然分类规律，将各族元素的单质和化合物的重要化学反应方程式，有规律地编排成册，便于查阅。

这是一本基本的化学工具书，资料新颖，内容全面，编排合理。可供从事化学及有关工作的同志，包括大专院校师生、中学化学教师、化学研究人员、各行业化验室工作人员、化工厂技术人员等查阅。

无机化学反应方程式手册

曹忠良 王珍云 编

责任编辑：罗盛祖

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编 者 的 话

化学反应方程式是最集中、最简明表示化学变化内容的一种形式，是化学工作者一种特殊的语言。为了满足广大的化学工作者从事科研、教学和生产的需要，编者广泛地收集和整理了具有实用价值的无机化学反应方程式八千余个汇编成册，以供查阅。

一、本手册是按元素周期表中元素的自然分类规律编排的。根据同族元素具有相似的化学性质这一特点，我们对每族元素中具有代表性的一、二个元素的各种化学反应方程式收集较全面，而对其它元素只选择一些特征性的反应方程式。这样就能使本手册既具有较强的实用性，又不至于篇幅过大。

二、本手册共分十六章，编排顺序是：先非金属，后金属；先单质，后化合物。化合物又依照氢化物、氧化物、碱、酸、盐等顺序排列。

三、对于卤化物、硫酸盐、硝酸盐、磷酸盐、碳酸盐等，因种类繁多，涉及面广，如果将有关化学反应式集中放在卤素、硫、氮、磷、碳等章节中，这些部分便会显得过于拥挤，因此，我们将这些反应方程式适当分散在其它各有关章节中。

四、读者在查找某一化学反应方程式时，只要知道反应物分子中的主要元素是属于哪一类，就可在有关章节中找到。例如要查



就可在十三章“铁”元素的化合物〔 FeSO_4 〕一栏中找到。

五、反应条件的简要说明，附在反应方程式的“ —— ”上下方。文字说明较多的，附在反应方程式的下面（ ）内。反应物为气体或固体的化学反应方程式，在其分子式的后面标上（气）（固）字。但常温常压下，人们一般熟知的气态物质如 CO_2 、 SO_2 、 H_2S 、 N_2 、 Cl_2 、 O_2 ……则不加标示。生成物中的“固体”或“气体”用“ \downarrow ”或“ \uparrow ”来表示。一些不大常见的化合物的名称，注明在其化学式的下面（ ）内。

六、由于篇幅所限，本手册以收集氧化-还原反应方程式为主。常见的反应方程式省略了一部分。文字叙述仅作关键性的说明，力求简明扼要。

我们在编写本手册过程中，曾得到湖南师范学院刘明清、张惠元二位副教授的具体指导，还得到肖仰云、潘正卿、黄忠道等同志的帮助。初稿完成后，经湖南教育学院李朝略同志逐条审阅、修改、增删定稿。在此表示衷心的感谢！

编者 1981年12月

附录

常见阳离子与常用试剂的反应表

常见阴离子与常用试剂的反应表

各种盐类的溶解情况表

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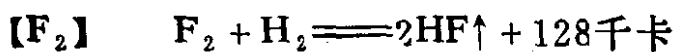
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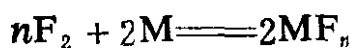
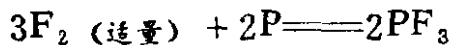
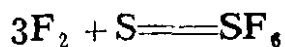
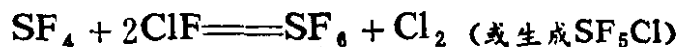
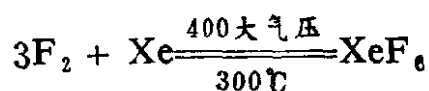
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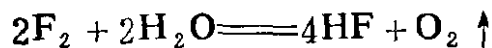
1.1 氟 $2s^2 2p^5$ $F = 18.9984$



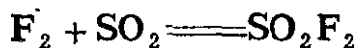
(在冷暗情况下也能发生剧烈反应)



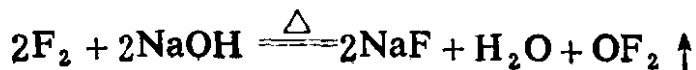
(M表示大多数金属, $n=1, 2, 3, \dots$)

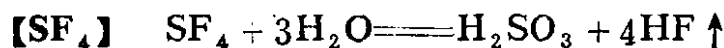
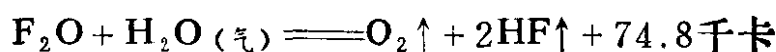
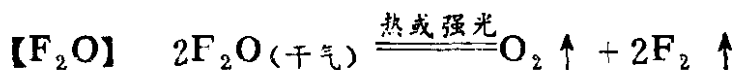
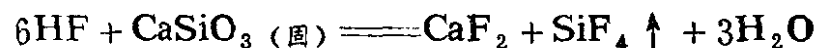
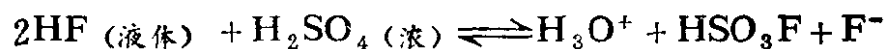
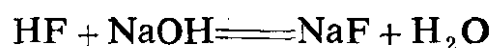
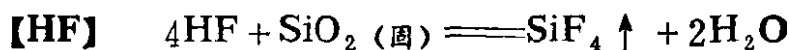
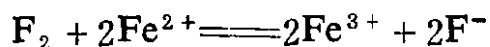
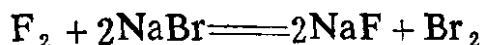


(反应剧烈, 甚至还可产生O₃。在极低温下20°K, F₂与H₂O作用能生成HFO, 但HFO很不稳定, 易分解放出O₂)

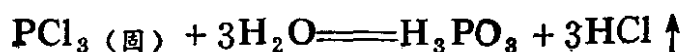
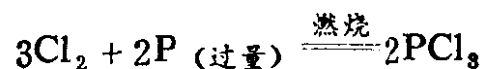
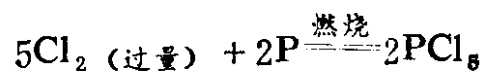
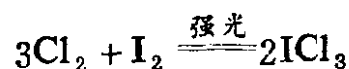
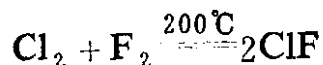
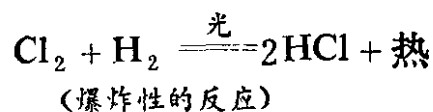
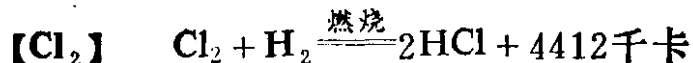


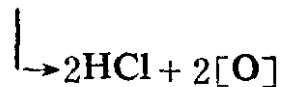
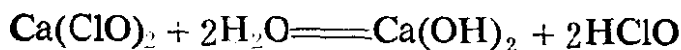
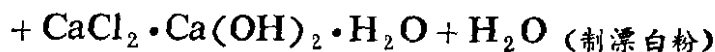
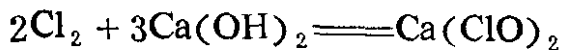
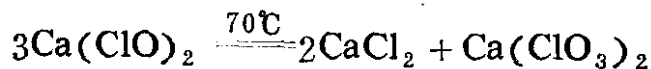
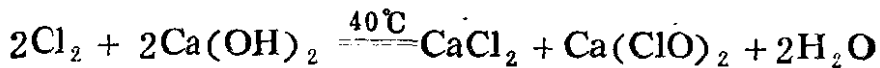
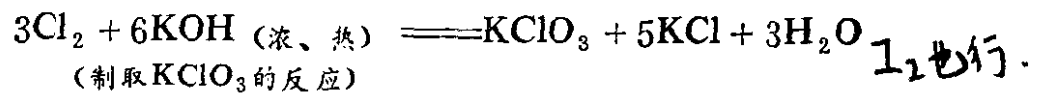
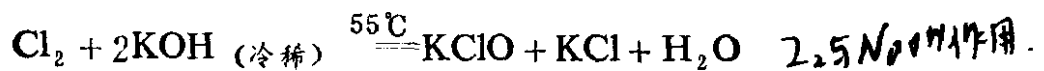
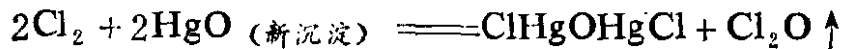
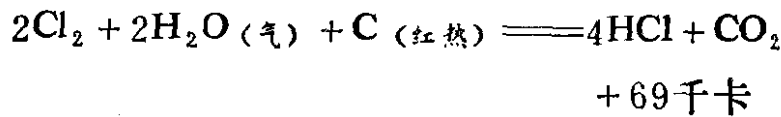
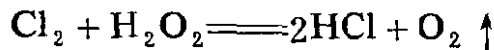
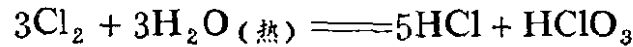
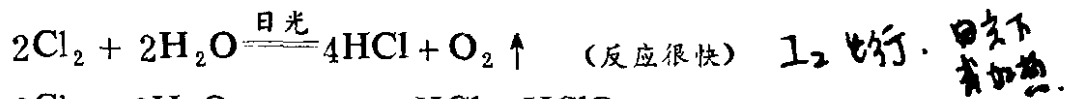
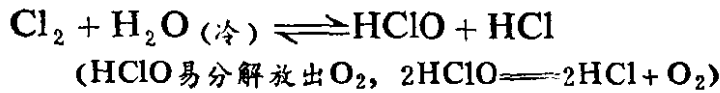
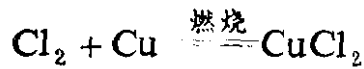
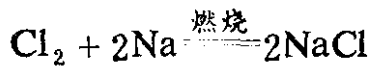
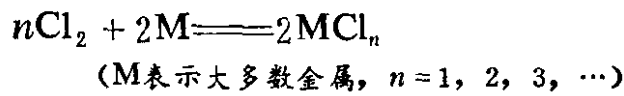
(F₂在SO₂中燃烧的反应)



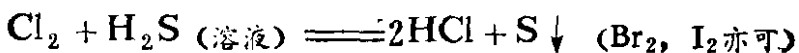
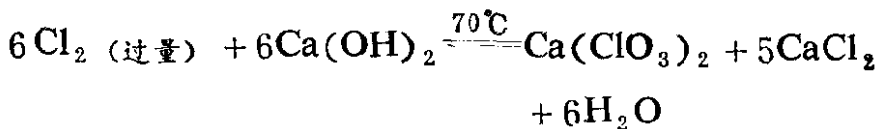


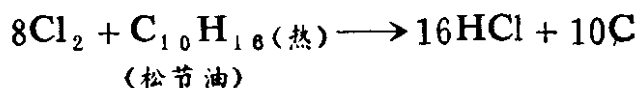
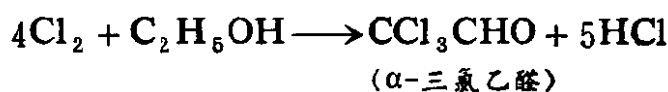
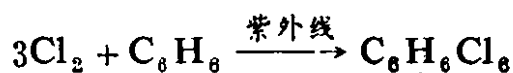
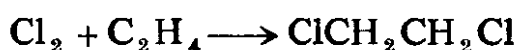
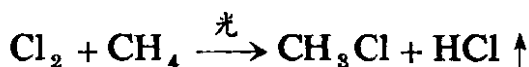
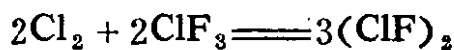
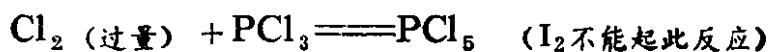
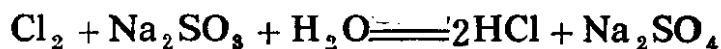
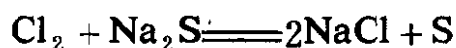
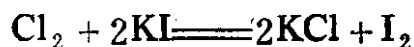
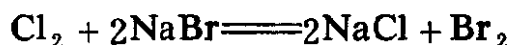
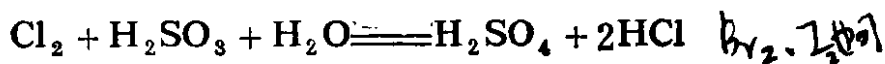
1.2 氯 $3s^2 3p^5$ $\text{Cl} = 35.453$





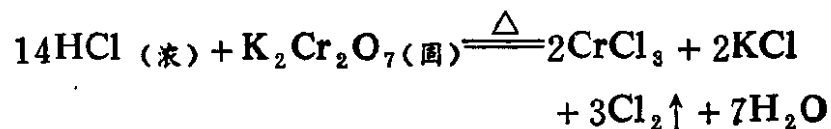
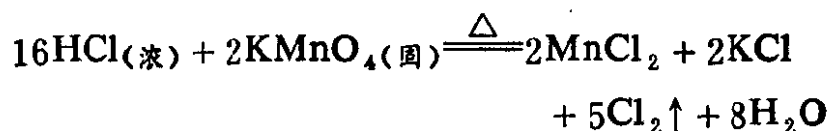
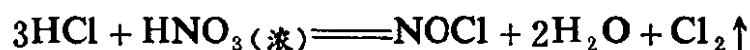
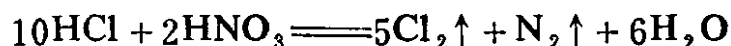
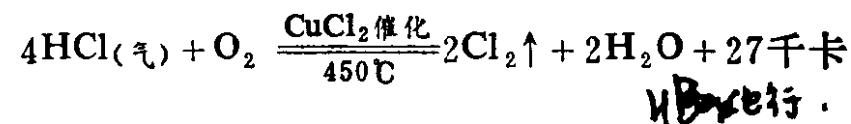
(漂白粉的漂白原理)



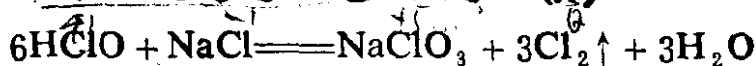
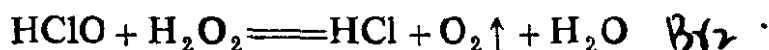
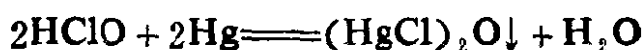
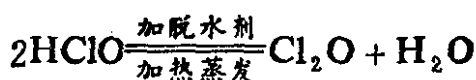
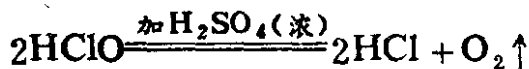
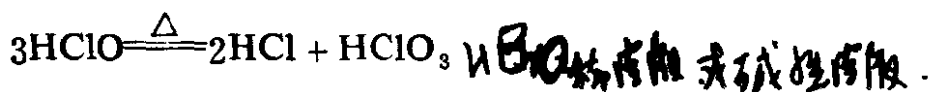
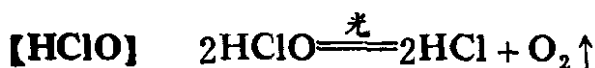
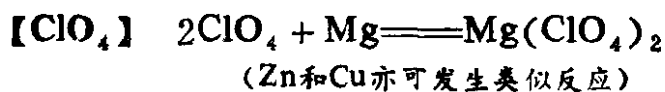
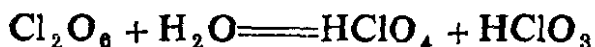
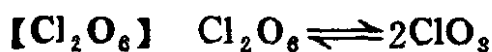
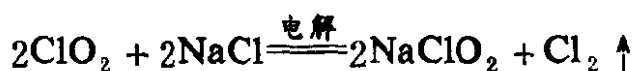
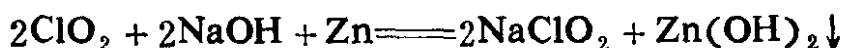
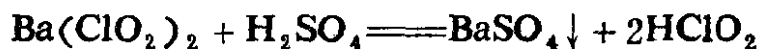
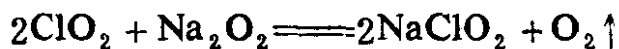
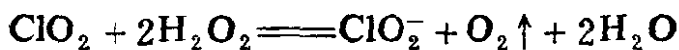
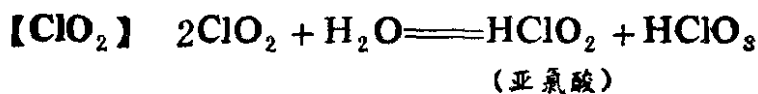
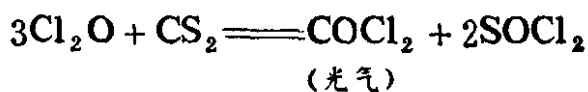


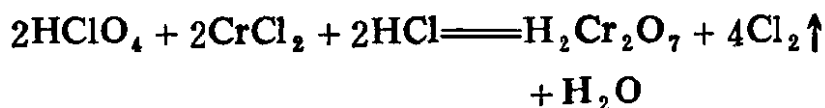
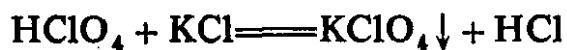
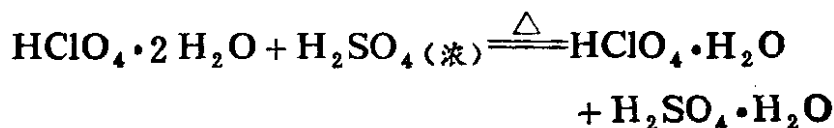
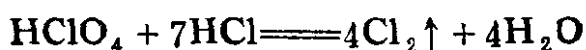
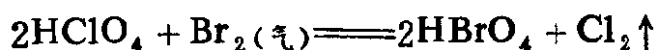
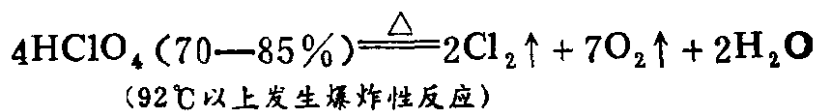
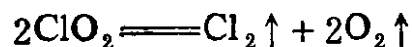
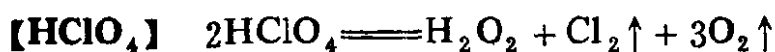
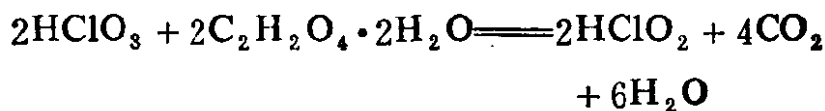
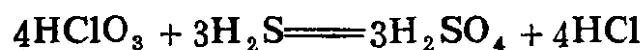
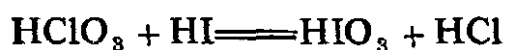
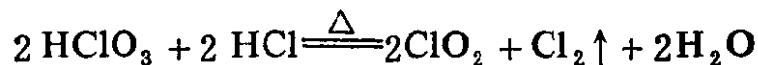
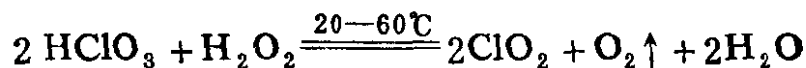
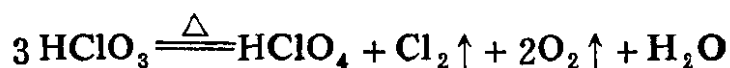
【HCl】 HCl(气)——氯化氢

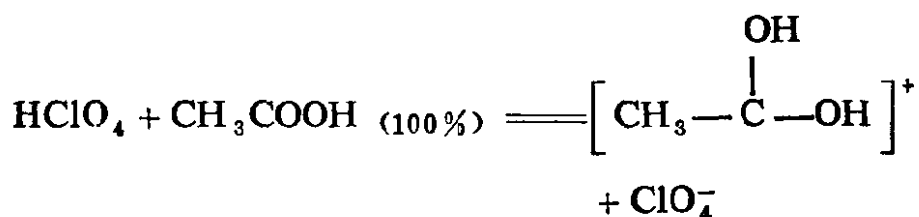
HCl——盐酸



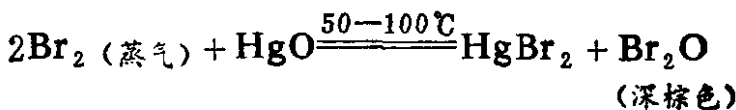
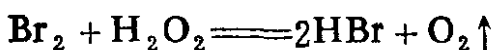
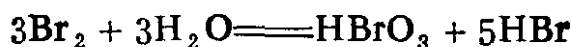
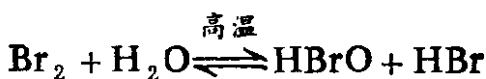
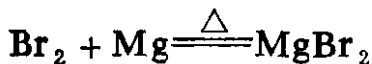
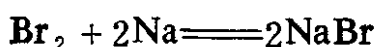
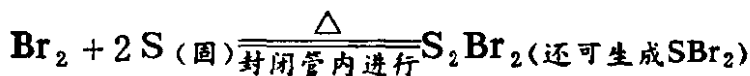
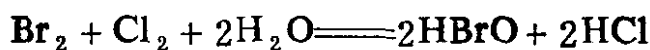
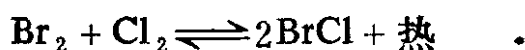
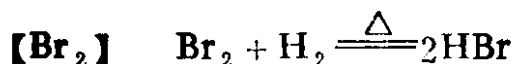
【Cl₂O】 Cl₂O + H₂O \rightleftharpoons 2HClO 3Y₂O + 2N₂M.

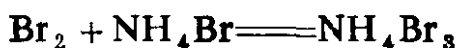
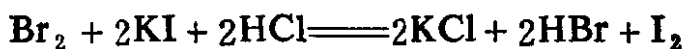
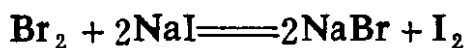
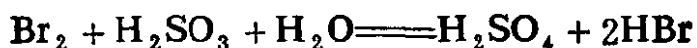
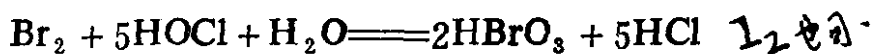
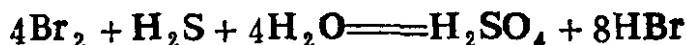
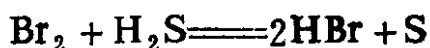






1.3 溴 $4s^2 4p^5$ Br = 79.904





(制取 NaBrO_3 的反应方程式)

