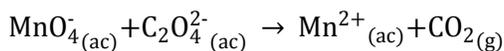


Balaceo de ecuaciones de oxidación - reducción
Método de medias reacciones o ión electrón

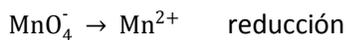
A continuación se presentan dos ejemplos de balanceo de ecuaciones de reacciones de óxido-reducción, se enlistan los pasos a seguir y se comparan uno a uno los pasos en medio ácido (lado izquierdo) y en medio básico (lado derecho)

Balaceo en medio ácido

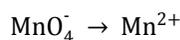
Reacción sin balancear



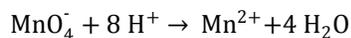
- 1) Dividir en medias reacciones de oxidación y reducción



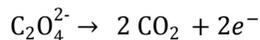
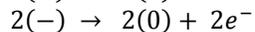
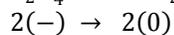
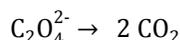
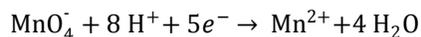
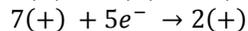
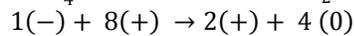
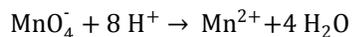
- 2) Hacer balance de materia
- Balancear los elementos distintos de H y O



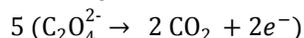
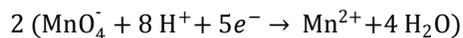
- Balancear los O agregando H₂O
- Balancear los H agregando H⁺



- 3) Hacer balance de carga

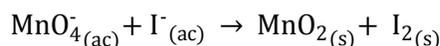


- 4) Multiplicar cada media reacción por un factor entero, para igualar el número de electrones

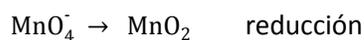


Balaceo en medio básico

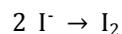
Reacción sin balancear



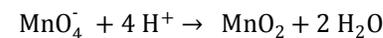
- 1) Dividir en medias reacciones de oxidación y reducción



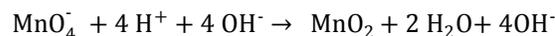
- 2) Hacer balance de materia
- Balancear los elementos distintos de H y O



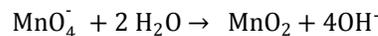
- Balancear los átomos de H y O como si la reacción se llevara a cabo en medio ácido



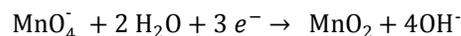
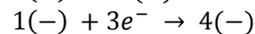
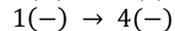
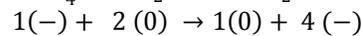
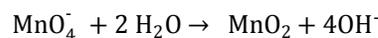
- Añadir iones OH⁻ por cada ión H⁺ agregado, en ambos lados de la ecuación



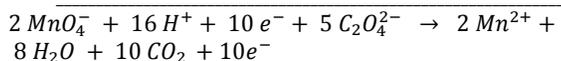
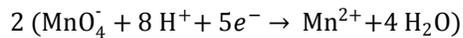
- Combinar los iones OH⁻ y H⁺ para formar H₂O y simplificar la reacción



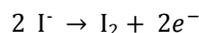
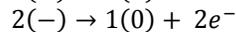
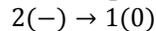
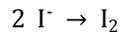
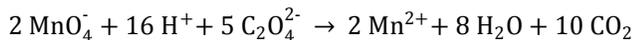
- 3) Hacer balance de carga



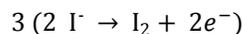
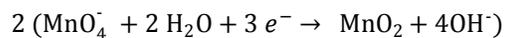
- 5) Sumar medias reacciones y simplificar eliminando las especies que aparezcan en ambos lados de la ecuación



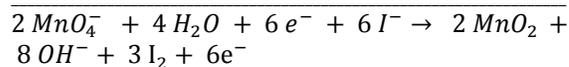
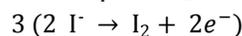
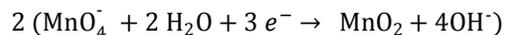
Reacción iónica balanceada



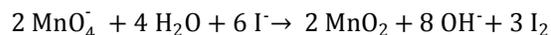
- 4) Multiplicar cada media reacción por un factor entero, para igualar el número de electrones



- 5) Sumar medias reacciones y simplificar eliminando las especies que aparezcan en ambos lados de la ecuación



Reacción iónica balanceada



Bibliografía consultada:

- Brown T. L., LeMay H. E., Bursten B. E., *Química, La ciencia central*, Pearson Education, Séptima edición, México 1998.