The HilbertBalance.wl file should be placed in the same directory as this file. Before proceeding, ensure that Normaliz (https://www.normaliz.uni-osnabrueck.de/) is installed and specify the full path of normaliz.exe, and run the following line to import HilbertBalance. (For Mac and Linux OS, the file name may differ. At present, normaliz-3.9.4 was well tested for HilbertBalance (https://github.com/Normaliz/Normaliz/releases/tag/v3.9.4)).

In[•]:=
```
SetDirectory[NotebookDirectory[]];
<< "HilbertBalance`";
NormalizPath =
  "D:\\bak-HP-GAME\\Mathematica\\BalanceBand\\normaliz-3.9.4\\normaliz.exe";
(*NormalizPath= "/Users/zhang/Downloads/normaliz-3.9.4/normaliz";*)
```

$ClO_3^- + Cl^- + H^+ \rightarrow ClO_2 + Cl_2 + H2O$

In[•]:=
```
HilbertBalance["ClO3+Cl+H->ClO2+Cl2+H2O", "Charge" → {-1, -1, 1, 0, 0, 0}]
```

$ClO_3^{-1} + Cl^{-1} + H^{+1} \rightarrow ClO_2 + Cl_2 + H_2O$

$ClO_3^{-1} + 5Cl^{-1} + 6H^{+1} = 3Cl_2 + 3H_2O$

$2ClO_3^{-1} + 2Cl^{-1} + 4H^{+1} = 2ClO_2 + Cl_2 + 2H_2O$

$5ClO_3^{-1} + Cl^{-1} + 6H^{+1} = 6ClO_2 + 3H_2O$

In[•]:=
```
balanceMatrix["ClO3+Cl+H->ClO2+Cl2+H2O", "Charge" → {-1, -1, 1, 0, 0, 0}]
```

Out[•]=
```
⟨|M → {{1, 1, 0, -1, -2, 0}, {0, 0, 1, 0, 0, -2},
    {3, 0, 0, -2, 0, -1}, {-1, -1, 1, 0, 0, 0}}, Elements → {Cl, H, O, Charge},
 Compounds → ⟨|1 → ⟨|ClO3 → ⟨|Cl → 1, O → 3, Charge → -1|⟩, Cl → ⟨|Cl → 1, Charge → -1|⟩,
     H → ⟨|H → 1, Charge → 1|⟩|⟩, 2 → ⟨|ClO2 → ⟨|Cl → 1, O → 2, Charge → 0|⟩,
     Cl2 → ⟨|Cl → 2, Charge → 0|⟩, H2O → ⟨|H → 2, O → 1, Charge → 0|⟩|⟩|⟩,
 TableHead → {{ClO3, Cl, H, ClO2, Cl2, H2O}, {Cl, H, O, Charge}},
 Null → {{5, 1, 6, 6, 0, 3}, {-4, 4, 0, -6, 3, 0}},
 HilbertBasis →
  ⟨|N → 3, Hilb → {{1, 5, 6, 0, 3, 3}, {2, 2, 4, 2, 1, 2}, {5, 1, 6, 6, 0, 3}}|⟩|⟩
```

NH4ClO4 + HNO3 + HCl + H2O -> H5ClO6 + N2O + NO + NO2 + Cl2

In[•]:=
```
HilbertBalance["NH4ClO4+HNO3+HCl+H2O->H5ClO6+N2O+NO+NO2+Cl2"]
```

$NH_4ClO_4+HNO_3+HCl+H_2O \to H_5ClO_6+N_2O+NO+NO_2+Cl_2$

$2HNO_3+HCl+H_2O=H_5ClO_6+N_2O$
$4HNO_3+HCl=H_5ClO_6+2NO+2NO_2$
$6HNO_3+2HCl+H_2O=2H_5ClO_6+5NO+NO_2$
$6HNO_3+4HCl=2H_5ClO_6+6NO+Cl_2$
$6HNO_3+4HCl=2H_5ClO_6+N_2O+3NO+NO_2+Cl_2$
$6HNO_3+4HCl=2H_5ClO_6+2N_2O+2NO_2+Cl_2$
$8HNO_3+2HCl=2H_5ClO_6+N_2O+NO+5NO_2$
$8HNO_3+3HCl+2H_2O=3H_5ClO_6+8NO$
$8HNO_3+7HCl=3H_5ClO_6+2N_2O+4NO+2Cl_2$
$8HNO_3+7HCl=3H_5ClO_6+3N_2O+NO+NO_2+2Cl_2$
$10HNO_3+10HCl=4H_5ClO_6+4N_2O+2NO+3Cl_2$
$12HNO_3+3HCl=3H_5ClO_6+2N_2O+8NO_2$
$12HNO_3+13HCl=5H_5ClO_6+6N_2O+4Cl_2$
$NH_4ClO_4+HNO_3=H_5ClO_6+N_2O$
$NH_4ClO_4+5HNO_3+HCl=2H_5ClO_6+5NO+NO_2$
$NH_4ClO_4+7HNO_3+2HCl+H_2O=3H_5ClO_6+8NO$
$2NH_4ClO_4+6HNO_3+HCl=3H_5ClO_6+8NO$

In[•]:=
```
balanceMatrix["NH4ClO4+HNO3+HCl+H2O->H5ClO6+N2O+NO+NO2+Cl2"]
```

Out[•]=

```
⟨|M → {{1, 0, 1, 0, -1, 0, 0, 0, -2}, {4, 1, 1, 2, -5, 0, 0, 0, 0},
    {1, 1, 0, 0, 0, -2, -1, -1, 0}, {4, 3, 0, 1, -6, -1, -1, -2, 0}},
 Elements → {Cl, H, N, O}, Compounds → ⟨|1 → ⟨|NH4ClO4 → ⟨|N → 1, H → 4, Cl → 1, O → 4|⟩,
     HNO3 → ⟨|H → 1, N → 1, O → 3|⟩, HCl → ⟨|H → 1, Cl → 1|⟩, H2O → ⟨|H → 2, O → 1|⟩|⟩,
   2 → ⟨|H5ClO6 → ⟨|H → 5, Cl → 1, O → 6|⟩, N2O → ⟨|N → 2, O → 1|⟩,
     NO → ⟨|N → 1, O → 1|⟩, NO2 → ⟨|N → 1, O → 2|⟩, Cl2 → ⟨|Cl → 2|⟩|⟩|⟩,
 TableHead → {{NH4ClO4, HNO3, HCl, H2O, H5ClO6, N2O, NO, NO2, Cl2}, {Cl, H, N, O}},
 Null → {{-6, 6, 13, 0, -1, 0, 0, 0, 4}, {-2, 10, 3, 0, 1, 0, 0, 8, 0},
   {2, 6, 1, 0, 3, 0, 8, 0, 0}, {1, 1, 0, 0, 1, 1, 0, 0, 0}, {-1, 1, 1, 1, 0, 0, 0, 0, 0}},
 HilbertBasis → ⟨|N → 17, Hilb → {{0, 2, 1, 1, 1, 1, 0, 0, 0}, {0, 4, 1, 0, 1, 0, 2, 2, 0},
     {0, 6, 2, 1, 2, 0, 5, 1, 0}, {0, 6, 4, 0, 2, 0, 6, 0, 1}, {0, 6, 4, 0, 2, 1, 3, 1, 1},
     {0, 6, 4, 0, 2, 2, 0, 2, 1}, {0, 8, 2, 0, 2, 1, 1, 5, 0}, {0, 8, 3, 2, 3, 0, 8, 0, 0},
     {0, 8, 7, 0, 3, 2, 4, 0, 2}, {0, 8, 7, 0, 3, 3, 1, 1, 2}, {0, 10, 10, 0, 4, 4, 2, 0, 3},
     {0, 12, 3, 0, 3, 2, 0, 8, 0}, {0, 12, 13, 0, 5, 6, 0, 0, 4}, {1, 1, 0, 0, 1, 1, 0, 0, 0},
     {1, 5, 1, 0, 2, 0, 5, 1, 0}, {1, 7, 2, 1, 3, 0, 8, 0, 0}, {2, 6, 1, 0, 3, 0, 8, 0, 0}}|⟩|⟩
```

HClO3 -> HClO4 + Cl2 + O2 + H2O -> Cl2 + O2 + H2O

In[•]:=
```
HilbertBalance["HClO3->HClO4+Cl2+O2+H2O->Cl2+O2+H2O"]
```

$HClO_3 \to HClO_4+Cl_2+O_2+H_2O \to Cl_2+O_2+H_2O$

$4HClO_3=2Cl_2+5O_2+2H_2O=2Cl_2+5O_2+2H_2O$
$8HClO_3=4HClO_4+2Cl_2+3O_2+2H_2O=4Cl_2+10O_2+4H_2O$
$12HClO_3=8HClO_4+2Cl_2+O_2+2H_2O=6Cl_2+15O_2+6H_2O$
$28HClO_3=20HClO_4+4Cl_2+4H_2O=14Cl_2+35O_2+14H_2O$

In[•]:=
```
balanceMatrix["HClO3->HClO4+Cl2+O2+H2O->Cl2+O2+H2O"]
```

Out[•]=
```
⟨|M → {{1, -1, -2, 0, 0, 0, 0, 0}, {1, -1, 0, 0, -2, 0, 0, 0}, {3, -4, 0, -2, -1, 0, 0, 0},
    {0, 1, 2, 0, 0, -2, 0, 0}, {0, 1, 0, 0, 2, 0, 0, -2}, {0, 4, 0, 2, 1, 0, -2, -1}},
 Elements → {Cl, H, O}, Compounds → ⟨|1 → ⟨|HClO3 → ⟨|H → 1, Cl → 1, O → 3|⟩|⟩,
   2 → ⟨|HClO4 → ⟨|H → 1, Cl → 1, O → 4|⟩,
     Cl2 → ⟨|Cl → 2|⟩, O2 → ⟨|O → 2|⟩, H2O → ⟨|H → 2, O → 1|⟩|⟩,
   3 → ⟨|Cl2 → ⟨|Cl → 2|⟩, O2 → ⟨|O → 2|⟩, H2O → ⟨|H → 2, O → 1|⟩|⟩|⟩,
 TableHead → {{HClO3, HClO4, Cl2, O2, H2O, Cl2, O2, H2O}, {Cl, H, O, Cl, H, O}},
 Null → {{-4, -4, 0, 2, 0, -2, -5, -2}, {0, 4, -2, -7, -2, 0, 0, 0}},
 HilbertBasis → ⟨|N → 4, Hilb → {{4, 0, 2, 5, 2, 2, 5, 2}, {8, 4, 2, 3, 2, 4, 10, 4},
     {12, 8, 2, 1, 2, 6, 15, 6}, {28, 20, 4, 0, 4, 14, 35, 14}}|⟩|⟩
```

C2H5NO2 + C3H7NO3 + C6H14N4O2 + C5H9NO2 + C9H11NO2 -> H2O + C50H73N15O11

In[•]:=
```
HilbertBalance["C2H5NO2+C3H7NO3+C6H14N4O2+C5H9NO2+C9H11NO2->H2O+C50H73N15O11"]
```

$C_2H_5NO_2+C_3H_7NO_3+C_6H_{14}N_4O_2+C_5H_9NO_2+C_9H_{11}NO_2 \to H_2O+C_{50}H_{73}N_{15}O_{11}$

$8C_3H_7NO_3+15C_6H_{14}N_4O_2+3C_5H_9NO_2+19C_9H_{11}NO_2=32H_2O+6C_{50}H_{73}N_{15}O_{11}$
$9C_3H_7NO_3+14C_6H_{14}N_4O_2+9C_5H_9NO_2+16C_9H_{11}NO_2=39H_2O+6C_{50}H_{73}N_{15}O_{11}$
$10C_3H_7NO_3+13C_6H_{14}N_4O_2+15C_5H_9NO_2+13C_9H_{11}NO_2=46H_2O+6C_{50}H_{73}N_{15}O_{11}$
$11C_3H_7NO_3+12C_6H_{14}N_4O_2+21C_5H_9NO_2+10C_9H_{11}NO_2=53H_2O+6C_{50}H_{73}N_{15}O_{11}$
$12C_3H_7NO_3+11C_6H_{14}N_4O_2+27C_5H_9NO_2+7C_9H_{11}NO_2=60H_2O+6C_{50}H_{73}N_{15}O_{11}$
$13C_3H_7NO_3+10C_6H_{14}N_4O_2+33C_5H_9NO_2+4C_9H_{11}NO_2=67H_2O+6C_{50}H_{73}N_{15}O_{11}$
$14C_3H_7NO_3+9C_6H_{14}N_4O_2+39C_5H_9NO_2+C_9H_{11}NO_2=74H_2O+6C_{50}H_{73}N_{15}O_{11}$
$15C_3H_7NO_3+31C_6H_{14}N_4O_2+41C_9H_{11}NO_2=57H_2O+12C_{50}H_{73}N_{15}O_{11}$
$43C_3H_7NO_3+26C_6H_{14}N_4O_2+123C_5H_9NO_2=229H_2O+18C_{50}H_{73}N_{15}O_{11}$
$C_2H_5NO_2+C_3H_7NO_3+2C_6H_{14}N_4O_2+3C_5H_9NO_2+2C_9H_{11}NO_2=8H_2O+C_{50}H_{73}N_{15}O_{11}$
$C_2H_5NO_2+8C_3H_7NO_3+18C_6H_{14}N_4O_2+24C_9H_{11}NO_2=33H_2O+7C_{50}H_{73}N_{15}O_{11}$
$C_2H_5NO_2+16C_3H_7NO_3+10C_6H_{14}N_4O_2+48C_5H_9NO_2=89H_2O+7C_{50}H_{73}N_{15}O_{11}$
$2C_2H_5NO_2+C_3H_7NO_3+5C_6H_{14}N_4O_2+7C_9H_{11}NO_2=9H_2O+2C_{50}H_{73}N_{15}O_{11}$
$2C_2H_5NO_2+3C_3H_7NO_3+3C_6H_{14}N_4O_2+12C_5H_9NO_2+C_9H_{11}NO_2=23H_2O+2C_{50}H_{73}N_{15}O_{11}$
$3C_2H_5NO_2+5C_3H_7NO_3+4C_6H_{14}N_4O_2+21C_5H_9NO_2=38H_2O+3C_{50}H_{73}N_{15}O_{11}$
$9C_2H_5NO_2+4C_6H_{14}N_4O_2+18C_5H_9NO_2+2C_9H_{11}NO_2=33H_2O+3C_{50}H_{73}N_{15}O_{11}$
$10C_2H_5NO_2+7C_6H_{14}N_4O_2+15C_5H_9NO_2+7C_9H_{11}NO_2=34H_2O+4C_{50}H_{73}N_{15}O_{11}$
$10C_2H_5NO_2+2C_3H_7NO_3+5C_6H_{14}N_4O_2+27C_5H_9NO_2+C_9H_{11}NO_2=48H_2O+4C_{50}H_{73}N_{15}O_{11}$
$11C_2H_5NO_2+10C_6H_{14}N_4O_2+12C_5H_9NO_2+12C_9H_{11}NO_2=35H_2O+5C_{50}H_{73}N_{15}O_{11}$
$11C_2H_5NO_2+4C_3H_7NO_3+6C_6H_{14}N_4O_2+36C_5H_9NO_2=63H_2O+5C_{50}H_{73}N_{15}O_{11}$
$12C_2H_5NO_2+13C_6H_{14}N_4O_2+9C_5H_9NO_2+17C_9H_{11}NO_2=36H_2O+6C_{50}H_{73}N_{15}O_{11}$
$13C_2H_5NO_2+16C_6H_{14}N_4O_2+6C_5H_9NO_2+22C_9H_{11}NO_2=37H_2O+7C_{50}H_{73}N_{15}O_{11}$
$14C_2H_5NO_2+19C_6H_{14}N_4O_2+3C_5H_9NO_2+27C_9H_{11}NO_2=38H_2O+8C_{50}H_{73}N_{15}O_{11}$
$15C_2H_5NO_2+22C_6H_{14}N_4O_2+32C_9H_{11}NO_2=39H_2O+9C_{50}H_{73}N_{15}O_{11}$
$18C_2H_5NO_2+C_3H_7NO_3+7C_6H_{14}N_4O_2+42C_5H_9NO_2+C_9H_{11}NO_2=73H_2O+6C_{50}H_{73}N_{15}O_{11}$
$19C_2H_5NO_2+3C_3H_7NO_3+8C_6H_{14}N_4O_2+51C_5H_9NO_2=88H_2O+7C_{50}H_{73}N_{15}O_{11}$
$26C_2H_5NO_2+9C_6H_{14}N_4O_2+57C_5H_9NO_2+C_9H_{11}NO_2=98H_2O+8C_{50}H_{73}N_{15}O_{11}$
$27C_2H_5NO_2+2C_3H_7NO_3+10C_6H_{14}N_4O_2+66C_5H_9NO_2=113H_2O+9C_{50}H_{73}N_{15}O_{11}$
$35C_2H_5NO_2+C_3H_7NO_3+12C_6H_{14}N_4O_2+81C_5H_9NO_2=138H_2O+11C_{50}H_{73}N_{15}O_{11}$
$43C_2H_5NO_2+14C_6H_{14}N_4O_2+96C_5H_9NO_2=163H_2O+13C_{50}H_{73}N_{15}O_{11}$

Na + Na2O -> Na2O2

In[ ]:=
```
HilbertBalance["Na+Na2O->Na2O2"]
```

$Na+Na_2O \to Na_2O_2$

Can not be balanced.

AB + BC -> AB3C

In[ ]:=
```
HilbertBalance["AB+BC->AB3C"]
```

$AB+BC \to AB_3C$

Can not be balanced.

K2Cr2O7 + MnSO4 + CO2 + KNO3 + K2SO4 + H2O -> Cr7N66H96C42O24 + KMnO4 + H2SO4

In[ ]:=
```
HilbertBalance@
 "K2Cr2O7 + MnSO4 + CO2 + KNO3 + K2SO4 + H2O -> Cr7N66H96C42O24 + KMnO4 + H2SO4"
```

$K_2Cr_2O_7+MnSO_4+CO_2+KNO_3+K_2SO_4+H_2O \to Cr_7N_{66}H_{96}C_{42}O_{24}+KMnO_4+H_2SO_4$

$35K_2Cr_2O_7+1176MnSO_4+420CO_2+660KNO_3+223K_2SO_4+1879H_2O=10Cr_7N_{66}H_{96}C_{42}O_{24}+1176KMnO_4+1399H_2SO_4$

KNO3 + C + S -> K2S2 + CO2 + CO + N2

In[ ]:=
```
HilbertBalance@"KNO3+C+S->K2S2+CO2+CO+N2";
```

$KNO_3+C+S \to K_2S_2+CO_2+CO+N_2$

$2KNO_3+3C+2S=K_2S_2+3CO_2+N_2$
$2KNO_3+4C+2S=K_2S_2+2CO_2+2CO+N_2$
$2KNO_3+5C+2S=K_2S_2+CO_2+4CO+N_2$
$2KNO_3+6C+2S=K_2S_2+6CO+N_2$

KClO + KClO3 + HSO4 + Cl2 + K2SO4 + KCl + H2O -> KClO + KClO3 + HSO4 + Cl2 + K2SO4 + KCl + H2O

In[ ]:=
```
HilbertBalance@
  "KClO+KClO3+HSO4+Cl2+K2SO4+KCl+H2O->KClO+KClO3+HSO4+Cl2+K2SO4+KCl+H2O";
```

$KClO+KClO_3+HSO_4+Cl_2+K_2SO_4+KCl+H_2O \to KClO+KClO_3+HSO_4+Cl_2+K_2SO_4+KCl+H_2O$

$H_2O=H_2O$
$KCl=KCl$
$K_2SO_4=K_2SO_4$
$Cl_2=Cl_2$
$2Cl_2+2K_2SO_4+H_2O=KClO+2HSO_4+3KCl$
$6Cl_2+6K_2SO_4+3H_2O=KClO_3+6HSO_4+11KCl$
$HSO_4=HSO_4$
$KClO_3=KClO_3$
$KClO_3+2KCl=3KClO$
$KClO_3+2Cl_2+2K_2SO_4+H_2O=4KClO+2HSO_4+KCl$
$KClO_3+2HSO_4+5KCl=2KClO+2Cl_2+2K_2SO_4+H_2O$
$KClO_3+4HSO_4+8KCl=KClO+4Cl_2+4K_2SO_4+2H_2O$
$KClO_3+6HSO_4+11KCl=6Cl_2+6K_2SO_4+3H_2O$
$2KClO_3+2Cl_2+2K_2SO_4+KCl+H_2O=7KClO+2HSO_4$
$3KClO_3+4Cl_2+4K_2SO_4+2H_2O=11KClO+4HSO_4$
$KClO=KClO$
$KClO+4Cl_2+4K_2SO_4+2H_2O=KClO_3+4HSO_4+8KCl$
$KClO+2HSO_4+3KCl=2Cl_2+2K_2SO_4+H_2O$
$2KClO+2Cl_2+2K_2SO_4+H_2O=KClO_3+2HSO_4+5KCl$
$3KClO=KClO_3+2KCl$
$4KClO+2HSO_4+KCl=KClO_3+2Cl_2+2K_2SO_4+H_2O$
$7KClO+2HSO_4=2KClO_3+2Cl_2+2K_2SO_4+KCl+H_2O$
$11KClO+4HSO_4=3KClO_3+4Cl_2+4K_2SO_4+2H_2O$

Br2 + Na2CO3 + NaOH + NaBr + NaBrO3 + NaBrO + C2O + H2O -> Br2 + Na2CO3 + NaOH + NaBr + NaBrO3 + NaBrO + C2O + H2O

In[ ]:=
```
HilbertBalance@
  "Br2+Na2CO3+NaOH+NaBr+NaBrO3+NaBrO+C2O+H2O->Br2+Na2CO3+NaOH+NaBr+NaBrO3+NaBrO+C2O+
    H2O";
```

$Br_2+Na_2CO_3+NaOH+NaBr+NaBrO_3+NaBrO+C_2O+H_2O \to Br_2+Na_2CO_3+NaOH+NaBr+NaBrO_3+NaBrO+C_2O+H_2O$

$H_2O=H_2O$
$C_2O=C_2O$
$NaBrO=NaBrO$
$3NaBrO=2NaBr+NaBrO_3$
$4NaBrO+H_2O=Br_2+2NaOH+NaBr+NaBrO_3$
$5NaBrO+2H_2O=2Br_2+4NaOH+NaBrO_3$
$5NaBrO+C_2O=2Br_2+2Na_2CO_3+NaBr$
$6NaBrO+C_2O+H_2O=3Br_2+2Na_2CO_3+2NaOH$
$NaBrO_3=NaBrO_3$
$NaBrO_3+7NaBrO+2C_2O=4Br_2+4Na_2CO_3$
$NaBr=NaBr$
$NaBr+NaBrO+H_2O=Br_2+2NaOH$
$NaBr+NaBrO_3+2NaBrO+C_2O=2Br_2+2Na_2CO_3$
$2NaBr+NaBrO_3=3NaBrO$
$3NaBr+NaBrO_3+H_2O=Br_2+2NaOH+2NaBrO$
$3NaBr+2NaBrO_3+C_2O=2Br_2+2Na_2CO_3+NaBrO$
$4NaBr+NaBrO_3+2H_2O=2Br_2+4NaOH+NaBrO$
$4NaBr+2NaBrO_3+C_2O+H_2O=3Br_2+2Na_2CO_3+2NaOH$
$4NaBr+3NaBrO_3+NaBrO+2C_2O=4Br_2+4Na_2CO_3$
$5NaBr+NaBrO_3+3H_2O=3Br_2+6NaOH$

$7NaBr+5NaBrO_3+3C_2O=6Br_2+6Na_2CO_3$

$NaOH=NaOH$

$2NaOH+4NaBrO+C_2O=Br_2+2Na_2CO_3+2NaBr+H_2O$

$2NaOH+NaBrO_3+NaBrO+C_2O=Br_2+2Na_2CO_3+H_2O$

$2NaOH+2NaBr+2NaBrO_3+C_2O=Br_2+2Na_2CO_3+2NaBrO+H_2O$

$2NaOH+3NaBr+3NaBrO_3+2C_2O=3Br_2+4Na_2CO_3+H_2O$

$4NaOH+3NaBrO+C_2O=2Na_2CO_3+3NaBr+2H_2O$

$4NaOH+NaBrO_3+C_2O=2Na_2CO_3+NaBr+2H_2O$

$4NaOH+NaBr+2NaBrO_3+C_2O=2Na_2CO_3+3NaBrO+2H_2O$

$4NaOH+2NaBr+3NaBrO_3+2C_2O=2Br_2+4Na_2CO_3+NaBrO+2H_2O$

$6NaOH+NaBr+3NaBrO_3+2C_2O=Br_2+4Na_2CO_3+2NaBrO+3H_2O$

$6NaOH+2NaBr+4NaBrO_3+3C_2O=3Br_2+6Na_2CO_3+3H_2O$

$8NaOH+3NaBrO_3+2C_2O=4Na_2CO_3+3NaBrO+4H_2O$

$8NaOH+NaBr+4NaBrO_3+3C_2O=2Br_2+6Na_2CO_3+NaBrO+4H_2O$

$10NaOH+4NaBrO_3+3C_2O=Br_2+6Na_2CO_3+2NaBrO+5H_2O$

$10NaOH+NaBr+5NaBrO_3+4C_2O=3Br_2+8Na_2CO_3+5H_2O$

$12NaOH+5NaBrO_3+4C_2O=2Br_2+8Na_2CO_3+NaBrO+6H_2O$

$14NaOH+6NaBrO_3+5C_2O=3Br_2+10Na_2CO_3+7H_2O$

$Na_2CO_3=Na_2CO_3$

$2Na_2CO_3+3NaBrO+2H_2O=4NaOH+NaBr+2NaBrO_3+C_2O$

$2Na_2CO_3+4NaBrO+3H_2O=Br_2+6NaOH+2NaBrO_3+C_2O$

$2Na_2CO_3+NaBr+2H_2O=4NaOH+NaBrO_3+C_2O$

$2Na_2CO_3+3NaBr+2H_2O=4NaOH+3NaBrO+C_2O$

$2Na_2CO_3+4NaBr+3H_2O=Br_2+6NaOH+2NaBrO+C_2O$

$2Na_2CO_3+5NaBr+4H_2O=2Br_2+8NaOH+NaBrO+C_2O$

$2Na_2CO_3+6NaBr+5H_2O=3Br_2+10NaOH+C_2O$

$4Na_2CO_3+3NaBrO+4H_2O=8NaOH+3NaBrO_3+2C_2O$

$Br_2=Br_2$

$Br_2+2NaOH=NaBr+NaBrO+H_2O$

$Br_2+2NaOH+2NaBrO=3NaBr+NaBrO_3+H_2O$

$Br_2+2NaOH+NaBr+NaBrO_3=4NaBrO+H_2O$

$Br_2+6NaOH+2NaBrO+C_2O=2Na_2CO_3+4NaBr+3H_2O$

$Br_2+6NaOH+2NaBrO_3+C_2O=2Na_2CO_3+4NaBrO+3H_2O$

$Br_2+2Na_2CO_3+H_2O=2NaOH+NaBrO_3+NaBrO+C_2O$

$Br_2+2Na_2CO_3+2NaBrO+H_2O=2NaOH+2NaBr+2NaBrO_3+C_2O$

$Br_2+2Na_2CO_3+2NaBr+H_2O=2NaOH+4NaBrO+C_2O$

$Br_2+4Na_2CO_3+2NaBrO+3H_2O=6NaOH+NaBr+3NaBrO_3+2C_2O$

$Br_2+6Na_2CO_3+2NaBrO+5H_2O=10NaOH+4NaBrO_3+3C_2O$

$2Br_2+4NaOH+NaBrO=4NaBr+NaBrO_3+2H_2O$

$2Br_2+4NaOH+NaBrO_3=5NaBrO+2H_2O$

$2Br_2+8NaOH+NaBrO+C_2O=2Na_2CO_3+5NaBr+4H_2O$

$2Br_2+2Na_2CO_3=NaBr+NaBrO_3+2NaBrO+C_2O$

$2Br_2+2Na_2CO_3+NaBrO=3NaBr+2NaBrO_3+C_2O$

$2Br_2+2Na_2CO_3+NaBr=5NaBrO+C_2O$

$2Br_2+4Na_2CO_3+NaBrO+2H_2O=4NaOH+2NaBr+3NaBrO_3+2C_2O$

$2Br_2+6Na_2CO_3+NaBrO+4H_2O=8NaOH+NaBr+4NaBrO_3+3C_2O$

$2Br_2+8Na_2CO_3+NaBrO+6H_2O=12NaOH+5NaBrO_3+4C_2O$

$3Br_2+6NaOH=5NaBr+NaBrO_3+3H_2O$

$3Br_2+10NaOH+C_2O=2Na_2CO_3+6NaBr+5H_2O$

$3Br_2+2Na_2CO_3+2NaOH=6NaBrO+C_2O+H_2O$

$3Br_2+2Na_2CO_3+2NaOH=4NaBr+2NaBrO_3+C_2O+H_2O$

$3Br_2+4Na_2CO_3+H_2O=2NaOH+3NaBr+3NaBrO_3+2C_2O$

$3Br_2+6Na_2CO_3+3H_2O=6NaOH+2NaBr+4NaBrO_3+3C_2O$

$3Br_2+8Na_2CO_3+5H_2O=10NaOH+NaBr+5NaBrO_3+4C_2O$

$3Br_2+10Na_2CO_3+7H_2O=14NaOH+6NaBrO_3+5C_2O$

$4Br_2+4Na_2CO_3=NaBrO_3+7NaBrO+2C_2O$
$4Br_2+4Na_2CO_3=4NaBr+3NaBrO_3+NaBrO+2C_2O$
$6Br_2+6Na_2CO_3=7NaBr+5NaBrO_3+3C_2O$

GeO2 + HF -> GeF4 + H2GeF6 + H2O

In[•]:=
```
HilbertBalance["GeO2+HF->GeF4+H2GeF6+H2O"]
```

$GeO_2+HF \to GeF_4+H_2GeF_6+H_2O$

$GeO_2+4HF=GeF_4+2H_2O$
$GeO_2+6HF=H_2GeF_6+2H_2O$

C + O2 -> C + O2 + CO + CO2 -> CO2

In[•]:=
```
HilbertBalance["C+O2->C+O2+CO+CO2->CO2"(*,"Format"→"TeX"*)]
```

$C+O_2 \to C+O_2+CO+CO_2 \to CO_2$

$C+O_2=CO_2=CO_2$
$C+O_2=C+O_2=CO_2$
$2C+2O_2=O_2+2CO=2CO_2$

KMnO4 + H2O2 + H2SO4 -> KHSO4 + MnSO4 + H2O + O2

In[•]:=
```
HilbertBalance["KMnO4+ H2O2 + H2SO4->KHSO4 +MnSO4 + H2O +O2"]
```

$KMnO_4+H_2O_2+H_2SO_4 \to KHSO_4+MnSO_4+H_2O+O_2$

$2H_2O_2=2H_2O+O_2$
$2KMnO_4+H_2O_2+4H_2SO_4=2KHSO_4+2MnSO_4+4H_2O+3O_2$
$4KMnO_4+8H_2SO_4=4KHSO_4+4MnSO_4+6H_2O+5O_2$

K2Cr2O3+ H2O2 + H2SO4 -> KHSO4 + Cr2S3O12 + H2O + O2

In[•]:=
```
HilbertBalance["K2Cr2O3+ H2O2 + H2SO4 -> KHSO4 + Cr2S3O12 + H2O + O2"]
```

$K_2Cr_2O_3+H_2O_2+H_2SO_4 \to KHSO_4+Cr_2S_3O_{12}+H_2O+O_2$

$2H_2O_2=2H_2O+O_2$
$K_2Cr_2O_3+H_2O_2+5H_2SO_4=2KHSO_4+Cr_2S_3O_{12}+5H_2O$