Question:

Enter the net ionic equation, including phases, for the reaction of AgNO$_3$(aq) with K$_2$SO$_3$(aq).

Answer:

The reaction between given two salts can be expressed in a full chemical equation:

$$2AgNO_{3(aq)} + K_2SO_{3(aq)} \rightarrow Ag_2SO_{3(s)} \downarrow + 2KNO_{3(aq)}$$
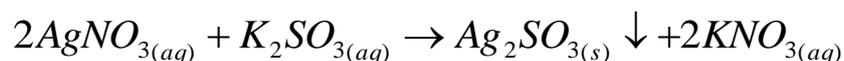
Silver sulphite is precipitated as a white powder Ag$_2$SO$_3$.

The complete ionic equation is derived from the full chemical equation:

$$2Ag^+{}_{(aq)} + 2NO_3^-{}_{(aq)} + 2K^+{}_{(aq)} + SO_3^{2-}{}_{(aq)} \rightarrow Ag_2SO_{3(s)} \downarrow + 2K^+{}_{(aq)} + 2NO_3^-{}_{(aq)}$$
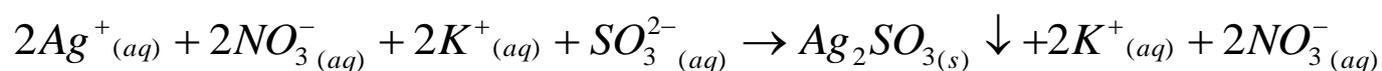
The <u>net ionic</u> equation is obtained as the following after reducing a complete ionic equation:

$$2Ag^+{}_{(aq)} + SO_3^{2-}{}_{(aq)} \rightarrow Ag_2SO_{3(s)} \downarrow$$