CLAIMS

1. A bulk storage container for particulate material comprising:

a vessel having an inner wall defining a containment volume for particulate material;

an opening for receiving the particulate material into the vessel;

a closure member for closing the opening;

sealing means for sealing the opening when closed by the closure member;

a gas outlet duct in fluid connection with the vessel for removing gas from the vessel, the gas outlet duct connectable to a vacuum source adapted to withdraw gas from the vessel to create a vacuum in the vessel when the opening has been closed and sealed by the closure member; and

a valve for closing the gas outlet duct to seal the vessel for transit or storage.

2. A bulk storage container according to Claim 1 in which the vessel comprises a cylindrical wall section, a top panel closing the upper end of the cylindrical wall section and a conical base section connected to and tapering inwardly away from the lower end of the cylindrical wall section, in which the opening is defined in the upper panel and a secondary opening defining an outlet is provided at the tapered end of the base section, and in which the container includes a secondary closure member which is movable to an open position to permit removal of the particulate material from the vessel via the secondary opening.

3. A bulk storage container according to Claim 2 further comprising secondary sealing means for sealing the secondary opening in the closed position.

4. A bulk storage container according to Claim 1, 2 or 3 further comprising an outlet vent configured to permit air to purged from the vessel when a gas is supplied into the vessel via the gas duct.

5. A bulk storage container according to Claim 4 in which the outlet vent comprises a unidirectional valve.

6. A bulk storage container according to any preceding claim, further comprising a pressure meter adapted to indicate the pressure within the container.

7. A bulk material handling assembly for transferring particulate material to a storage container for transport or storage, the assembly comprising:

a bulk storage container according to any preceding claim;

a feeder vessel from which the container is filled;

a filling duct for connecting the feeder vessel to the container;

sealing means configured to provide a seal between the filling duct and the container at about the opening of the container to prevent the release of particulate material from the opening during filling;

a vacuum source connected to the gas duct of the container to remove gas from the sealed container during filling and to evacuate gas from the container when opening is closed and sealed for transit or storage.

8. A bulk material handling assembly according to Claim 7 in which the feeder vessel comprises a hopper having an opening in its base to which the filling duct is connected and an entry port configured to permit the hopper to be filled with particulate material entrained within a carrier gas flow; and

a gas extraction duct in fluid connection with the interior of the hopper and connected to the vacuum source to promote the flow of gas into the hopper.

9. A bulk material handling assembly according to Claim 8 further comprising a dust extractor, the dust extractor comprising:

an annular collar surrounding the filling duct such that a void is defined between the inner wall of the collar and the filling duct;

a dust extraction duct in fluid connection with the void between the filling duct and inner periphery of the collar and connected to the vacuum source to facilitate the application of a vacuum to the void; and

a valve arrangement configured to selectively switch the application of the vacuum between the gas extraction duct in fluid connection with the interior of the hopper and the dust extraction duct connected to the annular collar such that the vacuum is applied to the collar and not the hopper when the particulate material is being transferred from the hopper to the container via the filling duct.

10. A bulk material handling assembly according to Claim 9 in which the valve means comprises a first valve arranged to close the fluid connection between the hopper and the vacuum source and a second valve arranged to close the fluid connection between the annular collar and the vacuum source.

11. A method of storing particulate material for transit or storage in a bulk storage container according to any of Claims 1 to 7, the method comprising:

filling the vessel with the particulate material;

closing and sealing the opening with the closure member;

removing gas from the vessel by withdrawing gas from the vessel via the gas outlet duct to create a vacuum in the vessel; and

closing the valve to seal the vessel for transit or storage.