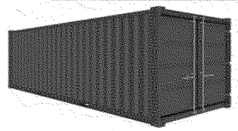
Chrysotile Asbestos Diaphragm Construction

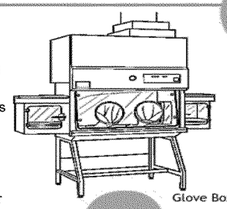


Shipping Container

1 The port of entry receives asbestos in sealed shipping containers. The material is packaged in dust-proof woven plastic bags on wooden pallets that have been shrink-wrapped in plastic. The container is marked per DOT requirements and is shipped to the plant unopened.

2 Asbestos is unloaded and stored in an isolated, enclosed area with restricted access limited only to trained personnel per OSHA regulations.

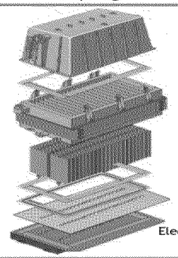
3 Raw asbestos is transported in the dust proof woven plastic bags to a glove box as needed for diaphragm preparation. Personnel monitoring is conducted for full shifts and specific tasks based on job observations or planned inspections.



Glove Box

4 Asbestos is mixed with caustic soda and salt to create a "slurry." Halar or Teflon modifiers are added to the slurry to allow for handling/storage in a dry non-friable form.

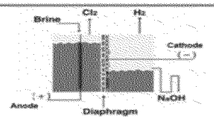
5 The asbestos slurry is deposited onto a screen and is heated in an oven to sinter the Halar or Teflon fibers to the asbestos, forming a non-friable asbestos diaphragm.



Electrolytic Cell Assembly

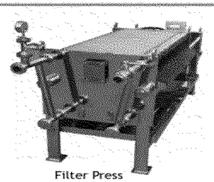
6 The diaphragm is inspected and physically joined with other parts of the electrolytic cell and sealed. It is then ready to be placed in service.

7 Asbestos is mostly inert and separates the sodium hydroxide (caustic soda), hydrogen, and chlorine. Asbestos is confined within the production process.



Electrolytic Cell Process

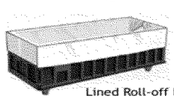
8 Diaphragms need to be replaced periodically, while other parts may be reused. An operator uses wet methods (e.g. high pressure water) to remove the non-friable asbestos coating from the screen. The water and solids are sent to the filter press where excess water is removed.



Filter Press

9 The filtered solids are transferred into bulk bags or lined dumpsters that are tightly sealed and marked per federal and state regulations. The solids are then disposed in landfills licensed to accept asbestos containing waste.

Bulk Bag



Lined Roll-off Dumpster

Chlor-Alkali Process Controls and Protections

The safety and health of our workers is our top priority.

Engineering controls, PPE, training and medical surveillance are used to meet or exceed strict EPA and OSHA requirements.

Engineering Controls → **PPE** → **Training** → **Medical Surveillance**

- Wet Methods
- Ventilation
- Glove Box
- Modifiers

Activities that have the potential to generate friable/dry asbestos are performed using wet methods, in a ventilated area, with HEPA filters, or inside a glove box. Halar or Teflon modifiers are added to the asbestos to allow handling/ storage in a dry non-friable form.

- Respiratory Protection
- Disposable Gloves and Suits
- Rubber Boots

Employees wear protective clothing to prevent potential contact with asbestos. Cleanup procedures are in place to reduce potential spread of asbestos-containing material (including footwear and work areas).

- Employee Training

OSHA requires training to prevent exposure to asbestos. Employees working in designated areas receive asbestos training at the time of assignment and at least every three years thereafter. Employees are trained to properly handle and dispose of asbestos-containing materials, including PPE.

- Medical Exams

Medical surveillance, as per OSHA regulations, is offered to employees as required. Employees receive a medical examination at the time of assignment to a designated area, annually and upon termination of employment.

Personnel monitoring is conducted to provide quantitative exposure data, verify functionality of engineering controls, determine medical surveillance, define Regulated Areas, and to demonstrate compliance.

American Chemistry Council