- Operator protective clothing
- Cyanide detection
- Procedure in the event of a fire in the oxidation
- Dealing with suspected cyanide poisoning

Operator protective clothing

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Basic safety clothing for plant operator

Operator protective clothing

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Head Protection

Lightweight baseball “bumpcap”

Operator protective clothing

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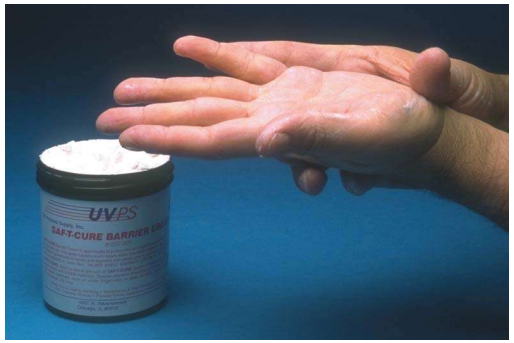
Additional protection depending upon plant position

All areas!



Barrier Crème

Noisy areas!

Ear Plugs

Operator protective clothing

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Oxidation, when working on the slits

Nomex Face mask and gloves

Operator protective clothing

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LT and HT Furnaces

Thick Welding type gloves for “pull through” in the furnaces

Operator protective clothing

Surface Treatment and Sizing

Working with Ammonium Bicarbonate or Ammonium Sulfate (Surface Treatment)
Working with Epoxy Sizings

Disposable plastic gloves, non powdered, non latex.
When mixing electrolyte use splash proof goggles.
Use respiratory protection if mixing electrolyte/sizing in an enclosed space.

Operator protective clothing

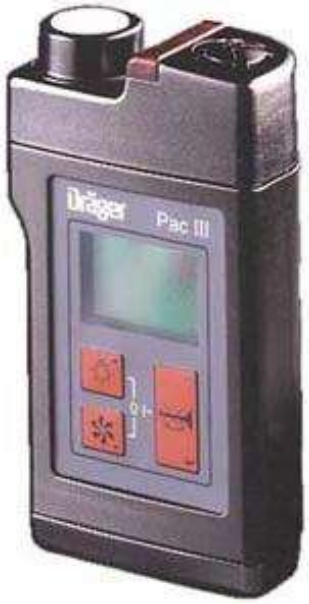
Winding

Cotton gloves for general work in the winding area

Disposable plastic gloves, non-powdered, non-latex when handling the finished spools of carbon fiber. Note: Sweat and other skin secretion are very detrimental to carbon fiber product quality.

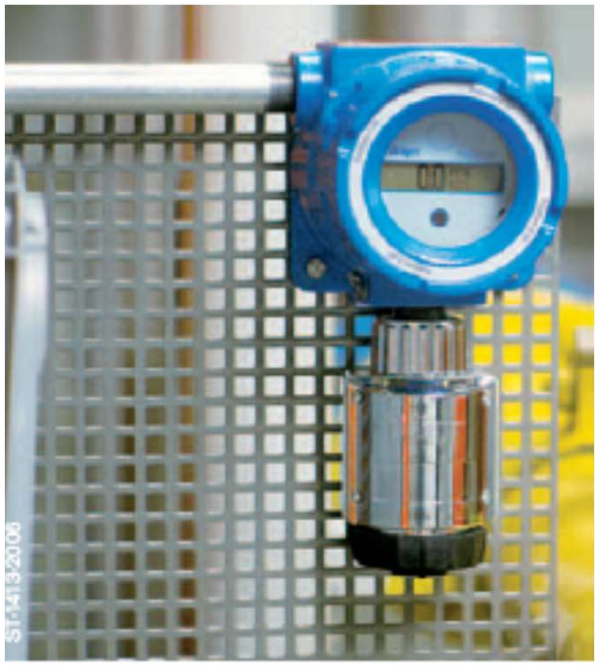
Cyanide Detection

Personal cyanide alarm (Draeger PAC III model)



Cyanide Detection

Mounted cyanide alarm (Draeger Polytron 2 XP tox)



Note: This unit works with Draeger Sensor HCN - 69 09 650 for hydrogen cyanide.

Procedure in the event of a fire in the Oxidation

In the event of a fire warning, or engagement of the fire suppression system on the oxidation, evacuate all personnel to the end of the plant behind the winders. Initiate a count of all possible personnel, including visitors and sub contractors.

Procedure in the event of a fire in oxidation

In the event of missing people, trained firefighters, with breathing apparatus and protective clothing should reenter the plant to initiate a search. Breathing apparatus can also be stored near the winding section of the plant, which can be used by trained plant operators.

Fire Fighter

Trained Plant Operator

Dealing with suspected cyanide poisoning

The client should consult with their medical professional before starting up carbon fiber manufacture as to the danger and treatment of cyanide products.

Most carbon fiber manufacturers have the following procedure installed:

At least two cyanide antidote kits are kept in the plant, near the winding section.

These kits are for the use of a doctor only.

The nearest emergency hospital should be informed to stock such kit too.

Dealing with suspected cyanide poisoning

Initial first aid, which can be carried out by trained first-aiders before arrival of a doctor

1. Remove patient to non-contaminated area

2. Call doctor immediately

3. If patient has stopped breathing, administer artificial respiration until normal respiration started.

4. Break an ampoule of amyl nitrite Inhalant in a handkerchief.

5. Hold it in front of the patient's mouth for 15 sec., followed by a rest for 15 seconds. Then reapply.

6. Wash off any cyanide present on the skin. Remove any clothing that is contaminated by cyanide

Dealing with suspected cyanide poisoning

Medical description of the treatment of cyanide poisoning:

The cyanide antidote kit first uses a small inhaled dose of amyl nitrite followed by intravenous sodium nitrite. This converts a portion of the hemoglobin's iron from ferrous iron to ferric iron, converting the hemoglobin into methaemoglobin.

Cyanide is more strongly drawn to methaemoglobin than to the cytochrome oxidase of the cells, effectively pulling the cyanide off the cells and onto the methaemoglobin. Once bound with the cyanide, the Methaemoglobin becomes cyanmethaemoglobin. The next part of the cyanide antidote kit is sodium thiosulfate, which is administered intravenously.

The sodium thiosulfate and cyanmethaemoglobin become thiocyanate, releasing the hemoglobin, and the thiocyanate is excreted by the kidneys.

Dealing with suspected cyanide poisoning

Cyanide poisoning in the carbon fiber industry is very rare.

Review your procedures with your companies' medical professional every 12 months.

Ensure the contents of the first aid kits are regularly renewed. (Check and record "Use Before" dates)

The End

Thank You