

## Safety

### 17 Can you explain about the risk and harm of cryogen?

Cryogen is liquid which is compressed nitrogen gas and helium.

Boiling point of liquid nitrogen is  $-196^{\circ}\text{C}$  and boiling point of liquid helium is  $-253^{\circ}\text{C}$ .

For that reason, be aware of frostbite.

In addition, it is necessary to be careful for anoxia by a decrease in oxygen levels in the room as liquid nitrogen vaporizes rapidly.

Bad working conditions result in anoxia which is a high risk of death, and lead to a secondary disaster which involve rescuers. Therefore, it is necessary to study the risk of cryogen and take proper preventive measures for using cryogen.

Level	Concentration of oxygen in air(%)	Symptoms
	18	Safely limit
1	16~12	Increase pulse rate and breathing rate, difficulty concentrating mentally
2	14~9	Defective judgment, sighs frequency
3	10~6	Nausea, vomit, immobile condition
4	Under 6	Faint or fall unconscious with gasping respiration (one breathe in oxygen-free condition)

When using an elevator to carry liquid nitrogen, never ever get on the same elevator with the liquid nitrogen (Carry liquid nitrogen itself only on an elevator.)

When handling cryogen, handle it very carefully in a closed room not to be anoxia.