

**HOW TO IDENTIFY AMMONIA CYLINDER?**

Colour on cylinder body = Black

Neck of cylinder body = Yellow + Red

**PROPERTY OF AMMONIA (USE MSDS FOR MORE DETAILS)**

Colour = Colourless,

Odour = Pungent & Irritating

CAS No = 7664-41-7

UN No = 1005

Lower Explosive Limit-16% (LEL)

Upper Explosive Limit- 25% (UEL)

TLV (TWA) – 25 ppm

STEL – 35 ppm

Corrosive to skin, eyes, lungs

It may lead to damage to the kidney (long-term exposure)

**WHEN DECOMPOSING AT HIGH TEMPERATURES, IT GENERATES HIGHLY FLAMMABLE HYDROGEN**



**IF AMMONIA SPILL OR LEAK**

- Restrict access to the area or barricading.
- Don't enter without wearing PPEs
- If no PPEs available, use a wet cloth on the nose
- Don't touch spill/leak content with bare hands.
- Stop leakage if possible.
- Notify the safety officer and other key personnel
- Remove heat or ignition source from nearby area
- Use water curtain/spray to absorb ammonia vapour in water.



Air Tight goggles



Hand Gloves  
(Butyl Rubber)

**PPEs REQUIRE TO HANDLE AMMONIA EMERGENCY**



Air Purifier Cartridge  
If ammonia is <250 ppm



Use SCBA set if the content  
is not known



Full Body Chemical  
Resistant Suit

**EFFECT OF AMMONIA AT DIFFERENT CONCENTRATION**

1 to 5 ppm	Repeated prolonged exposure causes no injury
25 ppm	No adverse effect on the average worker, Exposure should not be more than 8 hours.
35 ppm	No adverse effect on the average worker, Exposure should not be more than 15 minutes for 4 times in a day
400 to 700 ppm	Nose, throat and eye irritation, Infrequent irritation for 30 minutes causes no serious injury
2000 to 3000 ppm	Coughing and severe eye irritation Exposure must be avoided. It may lead to fatal even after short-duration exposure.
5000 to 10000 ppm	Respirator spasm. Rapid asphyxia Exposure must be avoided. It may lead to fatal immediately.

**FIRST-AID MEASURES**

Nose (Inhalation)	Skin Penetration	Eye	Mouth (Ingestion)
Remove the victim to fresh air	Flush with water	Flush with water (15 min)	Take 1-2 glasses of milk/water

**SAFETY DURING CYLINDER HANDLING**

- Check the validity of the cylinder (see marking on the neck of the cylinder or see marking on ring fitted valve)
- Never drop the cylinder while loading or unloading
- Never use a rope sling, or electric magnet for loading or unloading
- Avoid sliding or rolling of cylinder
- Don't put oil or lubricant on the valve to check the leak
- Don't temper the number and marking printed on the neck of the cylinder
- Don't use the cylinder as a rolling device
- Ensure valve protection/ valve cap is available
- Don't put continued water shower on the cylinder to keep it cool (it leads to shortened cylinder life)

**HOT WORK NEAR AMMONIA STORAGE MUST BE UNDER PREVIEW OF PERMIT SYSTEM**

**VALVE SAFETY**



Unsecured Valve  
(NOT ACCEPTABLE)

Secured Valve  
(ACCEPTABLE)

**STORAGE SAFETY REQUIREMENTS**

- Keep the cylinder upright
- Keep the steam line or heating device away
- Avoid direct sunlight
- Keep storage dry and cool
- Ensure the pressure control release system working
- Isolated storage (preferably away from the building)
- Secure arrangement (tie with a chain attached with permanent structure)
- Install a safety shower system near to ammonia cylinder
- Place safety signs at the entrance
- Place instruction in the local language (preferably in pictorial)
- Install water sprinkler system on cylinder storage for emergency action
- Place fire extinguisher near to storage (all types of extinguisher are suitable)

**SAFETY SIGNS**



**EXTERNAL DOWNLOAD**

- |                |   |
|----------------|---|
| IS 4544:2000   | Ammonia – Code of Safety<br><a href="https://law.resource.org/pub/in/bis/S04/is.4545.8.1983.pdf">https://law.resource.org/pub/in/bis/S04/is.4545.8.1983.pdf</a> |
| IS 8198-7:1988 | Ammonia Cylinder<br><a href="https://law.resource.org/pub/in/bis/S08/is.8198.7.1988.pdf">https://law.resource.org/pub/in/bis/S08/is.8198.7.1988.pdf</a>         |

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