



## Title: Unloading, Storage, Handling and Use of Gas Cylinders

|                        |  |                       |        |
|------------------------|--|-----------------------|--------|
| <b>SOP No.:</b>        |  | <b>Revision No.:</b>  | 00     |
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### 1.0 OBJECTIVE:

To lay down a procedure for Unloading, Storage, Handling and Use of Gas Cylinders.

### 2.0 SCOPE:

This SOP is applicable for the handling of storage & unloading of Compressed air / Nitrogen / LPG cylinder.

### 3.0 RESPONSIBILITY:

**Officer/Executive** : EHS  
**Officer/Executive** : Engineering  
**Officer/Executive** : Store  
**Officer/Executive** : Security  
**Officer/Executive** : QC  
**Officer/Executive** : Production

### 4.0 ACCOUNTABILITY:

Department Head : EHS  
Department Head : Engineering

### 5.0 ABBREVIATIONS:

SOP : Standard Operating Procedure  
No. : Number  
EHS : Environment Health & Safety  
PPE : Personnel Protective Equipment  
QA : Quality Assurance

### 6.0 PROCEDURE:

#### 6.1 Pre Startup Checks :

- 6.1.1** Before receiving / retrieving activity of cylinder, check and ensure that there is no ongoing activity of cutting /welding or any civil work if found any then take the prevention.
- 6.1.2** Check and ensure that cylinder storage is properly cleaned.
- 6.1.3** Do not store newly received cylinders in storage area until and unless empty cylinders are removed from storage area.
- 6.1.4** Before placing / removing the cylinders from storage area, check and ensure that status label is affixed on it as per **Annexure IV**.



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**6.1.5** Inspect the cylinder with status label, physically before storing it in cylinder storage area.

**6.2 Fresh Receipt and issue of cylinders:**

**6.2.1** Unload cylinders directly on a rubber mattress and during unload make sure that cylinders bottom end touches the ground first and nozzle end (upright portion) of cylinders will not hit the ground first.

**6.2.2** Cylinder shall be transported by means of suitable hand trolley provide with chain or bracket if required.

**6.2.3** Check physically for any damage in cylinders at the time of receipt from the supplier along with its valve / nozzle protection cap, if Valve/ nozzle protection cap is not available then cylinder should not be received.

**6.2.4** If in any case if the identification / color coding of cylinder is missed then do not unload it unless and until it is properly identified.

**6.2.5** Do not lubricate cylinder valves.

**6.2.6** Use only Standard Keys for the opening and closing the valves of cylinders.

**6.2.7** While removing the cylinder from gas bank, close the regulator value and release the pressure from header pendant.

**6.3 Storage:**

**6.3.1** Gas cylinder storage areas must be segregated from exit corridors and egress paths.

**6.3.2** The cylinder storage area should be dry, free of combustible materials and debris (e.g. timber, card board, packaging materials) to prevent flame impingement on gas cylinders in a fire.

**6.3.3** All the gas cylinders (whether empty or full) must be secured in an upright position to prevent falling by using an appropriate clamping, chain, strap as may seems appropriate.

**6.3.4** All gas cylinders must be fitted with a protective valve cap or guard while in storage.

**6.3.5** Storage areas for cylinders must be designed to accommodate the gases used and provide adequate spacing and/or segregation in accordance with applicable codes.

**6.3.6** Storage areas should be designated by hazard class and marked clearly with appropriate warning signs that restrict access.



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**6.3.7** Status label on gas cylinder as per **Annexure – IV** should be labeled to indicate whether the cylinder is full or empty.

**6.3.8** Consideration must be given to separate storage of full and empty containers.

**6.3.9** Do not Store cylinders where they can become part of an electrical circuit, an excessive heat and location free from traffic.

**6.4 Handling and Use :**

**6.4.1** Before usage of cylinder, check and ensure that there is no leakage from the header pendent.

**6.4.2** Operate the cylinder slowly by opening the valve by using appropriate standard key and check for any leakage.

**6.4.3** If any leakage is observed in the cylinder then immediately isolate it from the area and take necessary prevention and after rectification of issue again operate the cylinder.

**6.4.4** When cylinders are in operation do not change the cylinder until and unless the feeding valves are properly closed.

**6.4.5** Open Flames, lights, mobile phones, lighting of fires, welding and smoking shall be strictly prohibited while operation of cylinder shifting i.e. storage/ removal of cylinder from storage area.

**NOTE:** If any cylinder is leaking, then complete the following steps:

1. Close the valve of line and cylinder.
2. Contact to safety department at ..... from any premise phone.
3. Evacuate the area until the EHS emergency team arrives.

**7.0 ANNEXURES:**

| <b>ANNEXURE No.</b> | <b>TITLE OF ANNEXURE</b>                      | <b>FORMAT No.</b> |
|---------------------|---|-------------------|
| Annexure-I          | Color Codding of Cylinder                     |                   |
| Annexure-II         | Safe Cylinder Handling and Storage            |                   |
| Annexure-III        | Compressed Gas Yard Monthly Safety Inspection |                   |
| Annexure-IV         | Status Label                                  |                   |

**ENCLOSURES:** SOP training record

**8.0 DISTRIBUTION:**

- Controlled Copy No. 01                      Quality Assurance
- Controlled Copy No. 02                      Engineering
- Controlled Copy No. 03                      Safety



# PHARMA DEVILS

ENGINEERING DEPARTMENT

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- Controlled Copy No. 04                      QC
- Controlled Copy No. 05                      Production
- Master Copy                                      Quality Assurance

## 9.0 REFERENCES:

- Gas Cylinder Rules, 2016
- IS: 4379 – 1991

## 10.0 REVISION HISTORY:

### CHANGE HISTORY LOG

| Revision No. | Change Control No. | Details of Changes | Reason for Change | Effective Date | Updated By |
|--------------|--------------------|--------------------|-------------------|----------------|------------|
|              |                    |                    |                   |                |            |














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## ANNEXURE-I

### COLOR CODING OF CYLINDER

| GAS                                  | Oxygen   | Nitrogen   | Carbon -<br>Di -<br>Oxide  | Ammonia  | Freon -<br>12  | Argon  | Chlorine   | Hydrogen   | Acetylene  | LPG  | Air  |
|--------------------------------------|--|--|--|--|--|--|--|--|--|--|--|
| <b>Visual Identification</b>         |  |  |  |  |  |  |  |  |  |  |  |
| <b>Distinctive Color Body Band</b>   | Black<br>None  | Grey<br>None   | Black<br>White   | Black<br>Red<br>Golden<br>Yellow   | Violet<br>(Bottom &<br>Neck)<br>None   | Peacock<br>Blue<br>None  | Yellow<br>None   | Red<br>None  | Maroon<br>None   | Red<br>None  | French<br>Grey<br>None   |
| <b>Size in Common use Length (M)</b> | 1.6<br>1.45  | 1.6<br>1.45  | 1.52<br>1.22   | 1.5<br>1.6   | 1.4  | 1.5  | 1.5<br>2.0   | 1.6<br>1.45  | 1.2  | 1.2  | 1.6<br>1.45  |



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## ANNEXURE II SAFE CYLINDER HANDLING AND STORAGE

### SAFE CYLINDER HANDLING AND STORAGE



1. **SECURE** cylinder properly at all times.
2. **STORE** cylinder in cool, well ventilated, fire- resistant areas in accordance with central, state & local Statutory Guildlines.
3. **LOCATE** cylinder where they will not be knocked over or damaged by falling objects.
4. **CLOSE** valves and **SECURE** caps not in use.
5. **INSPECT** cylinder for leaks and support brackets regularly for structural integrity.
6. **TRANSPORT** cylinder using hand trolley with chain/ brackets designed for this purpose.
7. **REPORT** leaks or damage to your supervisor immediately.

### EMERGENCY INFORMATION

|       |       |
|-------|-------|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |



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**ANNEXURE-III**  
**COMPRESSED GAS YARD MONTHLY SAFETY INSPECTION**

**Department** : \_\_\_\_\_ **Date:** \_\_\_\_\_  
**Location** : \_\_\_\_\_  
**First Copy** : Engineering  
**Second Copy** : Safety Department  
**Third Copy** : Area Owner (Concerned Department)

**Purpose (Compressed Yard used for)** \_\_\_\_\_

| S.No. | CHECK LIST  | YES / NO | Action Plan if Not ok |
|-------|---|----------|-----------------------|
| 1.    | Compressed Gas Yard dry, Cool and Well Ventilated.  |          |                       |
| 2.    | Cylinders stored away from incompatibles, excessive heat, continuous dampness, salt or other chemicals. |          |                       |
| 3.    | Cylinders maintained at temperature below 50°C  |          |                       |
| 4.    | Compressed gas cylinder storage areas must be segregated from exit corridors and egress paths.          |          |                       |
| 5.    | Each cylinder have dully filled status label affixed on it.   |          |                       |
| 6.    | Cylinder in upright position and immobilized by Chains or brackets.                                     |          |                       |
| 7.    | Cylinder stored away from electrical connections, sources of ignition, Combustible waste material.      |          |                       |
| 8.    | The bottom of the cylinder protected from the ground to prevent rusting.                                |          |                       |
| 9.    | Filled cylinder labeled and stored away from empty cylinder.  |          |                       |
| 10.   | Compressed gas stored in a dedicated area.  |          |                       |
| 11.   | Compressed gas cylinder has safety pressure relief valves.  |          |                       |
| 12.   | Cylinder valves closed at all times, except when cylinder is in use.                                    |          |                       |
| 13.   | Wrenches or other tools for opening & closing valves prohibited   |          |                       |
| 14.   | Compressed gas yard have the contents and precautionary/ labeling clearly marked on the exterior.       |          |                       |
| 15.   | Compressed gas cylinder is moved with the help of Hand Trolley.   |          |                       |
| 16.   | Approved leak detection liquid used to detect flammable gas leaks                                       |          |                       |
| 17.   | All Compressed gas cylinder connections checked for integrity and tightness                             |          |                       |



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Special Instructions, if any: \_\_\_\_\_

**Checked By:**  
**Sign & Date**  
**(Head Concerned Department)**

Special Instructions, if any: \_\_\_\_\_

**Checked By:**  
**Sign & Date**  
**(Head Engineering)**

Special Instructions, if any: \_\_\_\_\_

**Checked By:**  
**Sign & Date**  
**(Head EHS)**





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**ANNEXURE-IV**

**STATUS LABEL**

|                                      |  |
|--------------------------------------|--|
|                                      |  |
| <b>STATUS LABEL</b>                  |  |
| <b>Type of Cylinder</b>              |  |
| <b>Status (Empty/ Full)</b>          |  |
| <b>Checked By (Sign &amp; Date)</b>  |  |
| <b>Reviewed By (Sign &amp; Date)</b> |  |