


INTER PLANT STANDARD – STEEL INDUSTRY		
	<b>SAFETY PROCEDURE FOR GAS CUTTING – BY REGULAR/CONTRACTOR’S WORKERS</b>	<b>IPSS:1-11-017-12</b>
	Corresponding IS 818:1968	

## 0. FOREWORD

- 0.1 This Inter Plant Standard, formulated by the Standards Committee on Personnel Safety Appliances & Procedures, IPSS 1:11, with the active participation of the representatives of steel plants and associated organizations in the field, were adopted in April 2012.
- 0.2 Activities involving multiple agencies in a steel plant invariably require a co-ordinated approach for smooth progress of work. This aspect assumes greater significant when the activity is either hazardous in nature or carried out in hazardous ambience.
- 0.3 This standard is part of a series of Inter Plant Standards in the area of safety in steel plants with a view to providing guidance to all concerned in accident prevention.

## 1. SCOPE

- 1.1 This Inter Plant Standard provides guidance in carrying out gas cutting work at site. It involves following preliminary actions to avoid accidents:
- 1) Checking / cleaning transportation of gas cutting set or unit and all other equipment concerned.
  - 2) Fixing of gas cutting set.
  - 3) Checking of leakage from different fittings.
  - 4) PPEs needed to carry out job.
  - 5) Precautions to be taken during back fire.
  - 6) Dismantling of set
  - 7) Work permission by site In-charge/Section in-charge before start of the work.
  - 8) Ascertaining qualification/training of gas cutter
  - 9) Joining of hoses.

- 10) Fire fighting arrangements.
- 11) All equipments like gas cutting torch, hose, non-return valves and pressure regulators should be examined by competent persons at least once in a period of 15 days. A log book of examination of equipment should be maintained.
- 12) Gas cutting being a routine and hazardous job SMP for the same needs to be enforced.

## 2. **TERMINOLOGY**

- 2.1 For the purpose of this standard, the definitions given in IS 818 shall apply, besides the definition given under 2.11.
- 2.2 Confined space – A small or restricted space, such as a tank, boiler, pressure vessel or small compartment of a ship.

## 3. **NECESSARY DOCUMENTATION**

- 3.1 Work permission from concerned department/site incharge or side clearance is absolutely necessary before start the of work (Please refer IPSS:1-11-007-01).
- 3.2 Check list of Job Safety Analysis for gas cutting job.
- 3.3 A copy of IPSS for working at height.
- 3.4 A copy of IPSS for working on confined space.
- 3.5 A copy of IPSS for working on fire prone area.
4. **SAFETY TALK:** Depending upon the type of cutting job to be carried out, necessary safety talk shall/must be delivered to the group before start of the job.

## 5. **SPECIAL CONDITION**

- a) Cutting job at height.
- b) Cutting job at confined space.
- c) Cutting job for dismantling of old/existing structure.
- d) Cutting job for gas lines.
- e) Cutting job at oil & grease area.

6. **EXECUTION OF GAS CUTTING JOB:** The following points shall be strictly adhered to, while carrying out gas cutting job:

6.1 **PREPARATION**

6.1.1 Gas cutting set shall be properly cleaned / checked and kept in a special trolley for transportation.

6.1.2 Nozzle shall be used as per job specification.

6.1.3 Nozzle shall be cleaned by proper method. Before using it, ensure that the hoses are clear (no jamming is there).

6.1.4 Clamps shall be used for joining hoses whenever required.

6.1.5 Ensure non-return valve on Dissolved Acetylene (DA) cylinders.

6.1.6 Ensure proper fire fighting arrangements at work place where job is to be carried out.

6.1.7 Opening key must be hung on DA cylinder all the time during work.

6.1.8 DA cylinder shall be in vertical and Oxygen cylinder shall be in horizontal position during work, with proper fixing arrangement.

6.1.9 Provision of flash back arrestor as per IS : 11006-1984 (Specification of flashback arrestor / flame arrestor) shall be ensured in the welding / gas cutting sets on the oxygen and fuel gas line in the regulator as well as nozzle side to avoid flashback.

6.1.10 LPG / BCG Cylinders should not be exposed to heat.

6.1.11 Wet gunny bags may be used along the LPG cylinder,

6.1.12 All cylinders shall be stored at a safe distance, of not less than 10 metre from all operations which result in excessive heat.

6.2 **WORK PLACE INSPECTION**

6.2.1 Moving machinery near work vicinity.

6.2.2 Gas prone area.

6.2.3 Oily / Grease area.

a) Proper shutdown shall be taken before carrying out job in such areas [from EL-16 , ED-20, D etc.]

b) Gas Prone Area

- i) All gas lines are to be inspected and proper precaution shall be taken. Proper shut down shall be taken before carrying out the job.
  - ii) Air sampling shall be done before start of the work and at regular intervals.
  - iii) Proper fire fighting arrangement must be made before start of the work.
- c) Oil/Grease area: Area shall be cleaned by proper method & or shall be covered by non-combustible material before start of the work.
7. **WORK PERMISSION:** Work permission shall be taken in proper format as per IPSS:1-11-007-01.
8. **GAS CUTTING JOB [SPECIFIC AREA]**
- 8.1 **Cutting Job At Height**
- IPSS:1-11-005-98 , CLAUSE No. 3 AND 4 APPLICABLE.
- 8.2 **CUTTING JOB ON CONFINED SPACE**
- FOR JOBS IN CONFINED SPACE, IPSS:1-11-006-06 SHALL BE FOLLOWED.
- 8.3 **CUTTING JOB FOR DISMANTLING OF OLD/EXISTING STRUCTURE**
- 8.3.1 Structure which has to be cut shall be tied with wire rope and care has to be taken that no one is just above the cut point to avoid swing, after cutting job is over. Use of manila rope is strictly prohibited.
- 8.3.2 Cutting job shall be carried out in presence of experienced personnel/supervisor/site incharge.
9. **PRECAUTION TO BE TAKEN IN CASE OF BACK FIRE**
- a) Fold the oxygen pipe tightly.
  - b) Close DA cylinder.
  - c) Allow Oxygen to flow till fire extinguishes.
  - d) Close Oxygen cylinder.
- 9.1 **JOINING OF HOSE WHENEVER REQUIRED:** Oxygen hose pipe shall be joined by putting non-ferrous material pipe with clamp on both side whereas Acetylene hose shall be joined with ferrous material pipe clamped on both sides.

**9.2 DISMANTLING OF CUTTING SET AFTER CUTTING JOB IS OVER**

9.2.1 Close DA Cylinder valve tightly.

9.2.2 Blow off oxygen for some time [as per length of both the hose] so that Acetylene present in DA hose gets completely out.

9.2.3 Close the O2 cylinder valve.

9.2.4 Open the nipple of DA cylinder and then open rest of the nipples.

10. **PPE's USED** : Gas cutter must wear safety goggles, cotton clothing, long hand gloves on both the hands, full body harness.

**11. TRAINING & MEDICAL TEST**

11.1 Medically fit and trained person shall be allowed to carry out gas cutting job.

11.2 Special training must be imparted to individuals.

11.3 Appropriate regular medical test shall be carried out to individuals from time to time.

11.4 Permission from Registered Medical Practitioner shall be taken for individuals to carry out jobs at height [fitness certificate].