



PHARMA DEVILS
QUALITY ASSURANCE DEPARTMENT

STANDARD OPERATING PROCEDURE

Department: Quality Assurance	SOP No.:
Title: Standard Operating Procedure for Color, Code, Identification of Utility Pipelines	Effective Date:
Supersede Revision No.: Nil	Next Review Date:
Revision No.: 00	Page No.: 1 of 12

1.0 OBJECTIVE:

To lay down a Procedure for Colour Code Identification of Utility Pipelines.

2.0 SCOPE:

This SOP is applicable for Identification of all Utility Pipelines by Colour Coding, Colour Band, Direction Arrows, Tags & Valves at manufacturing sites.

3.0 RESPONSIBILITY:

QA (Operating Person): Preparation, Checking, Distribution, Retrieval, Approval & Training & effective implementation of this SOP in all the applicable areas.

Engineering: Implementation of Color codes on Utility Pipelines in Plant.

4.0 ACCOUNTABILITY:

Head Engineering & QA: Approval, Ensure Training and Implementation of SOP.

5.0 DEFINITION: Not Applicable

6.0 PROCEDURE:

Note: To make SOP user friendly, better understandable and to ensure full compliance, if there is a need to demonstrate then Diagrams, Flow Charts, Decision Trees and Pictures shall be considered as a part of the SOP.

6.1 Identification:

The system of color coding consists of a ground color and color bands superimposed on it.

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STANDARD OPERATING PROCEDURE

Department: Quality Assurance	SOP No.:
Title: Standard Operating Procedure for Color, Code, Identification of Utility Pipelines	Effective Date:
Supersede Revision No.: Nil	Next Review Date:
Revision No.: 00	Page No.: 2 of 12

6.1.1 Ground Colour:

The ground color identifies the basic nature of the fluid carried and also distinguishes one fluid from another.

6.1.2 Color Bands:

Colour bands are superimposed on ground color to distinguish:

- 6.1.2.1** One kind or condition of a fluid from another kind or condition of the same fluid or
- 6.1.2.2** One fluid from another belonging to the same group.

6.1.3 Application:

6.1.3.1 Ground Colour:

Ground Colour shall be applied throughout the entire length depends upon the nature of fluid as mentioned in **Annexure – I (Color Code for pipeline identification)**. However, SS Pipelines shall not be painted & only Colour Bands shall be painted over SS Pipe Lines.

6.1.3.2 Color Bands:

Colour bands shall be superimposed on the ground color and shall be applied near the valves, flanged joints, tappings, junctions, points where the pipe line passes through walls, or valve station. In few cases of water system color bands are applicable not on ground color as mentioned in **Annexure – I (Colour Code for Pipeline Identification)**.

6.1.3.2.1 The minimum width of the narrowest color band shall be 25 mm.

6.1.3.2.2 Whenever more than one color band is indicated, the bands shall be arranged in the sequence follows the direction of flow.

----	Prepared By Operating Person	Checked By Department Head	Approved By Head Quality Assurance
Name			
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STANDARD OPERATING PROCEDURE

Department: Quality Assurance	SOP No.:
Title: Standard Operating Procedure for Color, Code, Identification of Utility Pipelines	Effective Date:
Supersede Revision No.: Nil	Next Review Date:
Revision No.: 00	Page No.: 3 of 12

6.1.3.2.3 The relative proportional widths of first color band to the subsequent bands shall be 4:1 Pipe color bands shall be painted on the pipe.

6.1.3.2.4 Paper or Plastic Banding of Pipe shall not be acceptable.

First Color Band:

Pipe Size:	Color Band Size
Less than 1” Diameter	1” Wide
1” to 12” Diameter	Equal to Pipe diameter
Greater than 12” Diameter	12” wide

Second color Band:

Less than 1” Diameter	½ Wide
1” to 12” Diameter	½ Pipe Diameter
Greater than 12” Diameter	6” Wide

6.2 Application of Colour Bands in Pipelines:

6.2.1 Straight lines of pipe shall be identified at intervals of 30 feet maximum and at least once in each room.

6.2.2 Turned Pipe shall be identified at a point approximately within 2 feet.

6.2.3 For pipe runs of 50 feet or less the distance between bands shall be 30 inches. For pipe runs of 50 feet or more, spacing between bands shall be 72 inches.

6.2.4 Lettering:

This recommended size of lettering for pipes of different diameters is given below:

----	Prepared By Operating Person	Checked By Department Head	Approved By Head Quality Assurance
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STANDARD OPERATING PROCEDURE

Department: Quality Assurance	SOP No.:
Title: Standard Operating Procedure for Color, Code, Identification of Utility Pipelines	Effective Date:
Supersede Revision No.: Nil	Next Review Date:
Revision No.: 00	Page No.: 4 of 12

OD of the pipe size of Lettering,

Up to 30 mm : 10 mm

Above 30-50 mm : 20 mm

Above 50-80 mm : 30 mm

Above 80-150 mm : 40 mm

Above 150-250 mm : 63 mm

Above 250 mm : 90 mm

6.2.4.1 Color of Letters shall be White on dark back ground pipes & shall be Black on light back ground pipes.

6.2.5 Direction of Flow:

To indicate the direction of flow, arrows or lettering shall be painted near valves, junctions, wall openings etc. along the pipe & shall be Black or White in color in contrast to the color on which they are superimposed.

6.2.5.1 Colour of Arrows/Letters shall be White on dark ground pipes & shall be Black on light back ground pipes.

6.2.6 Valves & Short Pipe Lengths:

Identifying devices for Valves and the sections of pipe that are too short to be identified with Colour bands, Lettered Labels, and arrows shall be identified with SS Metal Tags with embossed letter.

Color: Valves shall be painted Red & Hand Wheels shall be painted Black.

6.2.7 Visibility of Markings:

----	Prepared By Operating Person	Checked By Department Head	Approved By Head Quality Assurance
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STANDARD OPERATING PROCEDURE

Department: Quality Assurance	SOP No.:
Title: Standard Operating Procedure for Color, Code, Identification of Utility Pipelines	Effective Date:
Supersede Revision No.: Nil	Next Review Date:
Revision No.: 00	Page No.: 5 of 12

Attention should be given to the visibility of Colour markings and the letterings. Where the pipelines are located above the normal line of vision of the operating personnel, the lettering should be placed below the horizontal line of the pipes at proper location so that the operator can easily notice and identify them from the floor level.

6.3 Frequency of Colour Coding checking:

6.3.1 All Pipelines shall be reviewed after **Six months** for the color coding by Engineering Department & shall be recorded in Format “**Review Report of Color Code for Utility Pipelines**” as shown in **Annexure – II**.

6.3.2 On the basis of recommendation of Review Report, the pipelines shall be repainted, if any discoloration observed.

6.3.3 Area concern personnel shall intimate to Engineering Department if any discoloration are observed as per **Annexure – III**.

7.0 ABBREVIATIONS:

FO	: Furnish Oil
HP	: High Pressure
LP	: Low Pressure
LPG	: Liquid Petroleum Gas
MP	: Mild Pressure
OD	: Outer Diameter
Pvt.	: Private
QA	: Quality Assurance
RO	: Reverse Osmosis

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PHARMA DEVILS

QUALITY ASSURANCE DEPARTMENT

STANDARD OPERATING PROCEDURE

Department: Quality Assurance	SOP No.:
Title: Standard Operating Procedure for Color, Code, Identification of Utility Pipelines	Effective Date:
Supersede Revision No.: Nil	Next Review Date:
Revision No.: 00	Page No.: 6 of 12

SOP : Standard Operating Procedure

SS : Stainless Steel

8.0 ANNEXURES:

ANNEXURE No.	TITLE OF ANNEXURE	FORMAT No.
Annexure - I	Colour Code for Utility Pipeline Identification	
Annexure - II	Review Report of Color Code for Utility Pipelines	
Annexure - III	Intimation for Color Coding	

9.0 DISTRIBUTION:

Master Copy Quality Assurance Department

Controlled Copy No.: 01 Quality Assurance Department.

Controlled Copy No.: 02 Engineering Department.

10.0 REFERENCES:

Treatment Plant Piping Identification Systems Division 15, 15780-2.

11.0 REVISION HISTORY:

Revision No.	Change Control No.	Details of Changes	Reason of Changes	Effective Date	Done By
00	Not Applicable	Not Applicable	New SOP		

----	Prepared By Operating Person	Checked By Department Head	Approved By Head Quality Assurance
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PHARMA DEVILS

QUALITY ASSURANCE DEPARTMENT

STANDARD OPERATING PROCEDURE

Department: Quality Assurance	SOP No.:
Title: Standard Operating Procedure for Color, Code, Identification of Utility Pipelines	Effective Date:
Supersede Revision No.: Nil	Next Review Date:
Revision No.: 00	Page No.: 7 of 12

ANNEXURE-I



PHARMA DEVILS

QUALITY ASSURANCE DEPARTMENT

COLOUR CODING FOR UTILITY PIPELINE IDENTIFICATION

NAME OF UTILITY LINE	GROUND COLOUR	FIRST COLOUR BAND	SECOND COLOUR BAND	COLOUR REFERENCE
WATER:				
Raw Water	Dark Green	.....	.....
Soft Water	Light Green	.....	.....
Potable Water	Sea Green	Light Blue	.....
Purified Water	.....	Green	Light Orange	
Water for Injection (Aluminium Cladding)	.....	Light Blue	Dark Blue	
Chilled Water Line (Aluminium Insulation)	.....	Sea Green	French Blue	
Fire Water	Red	.....	.....
Condenser Line Soft Water	Light Green	.....	.....
RO Permeate	SS Pipe	Green	Sky Blue	
RO Reject	Green	Red	
Cooling Water Supply –	Dark Blue	Red	

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STANDARD OPERATING PROCEDURE

Department: Quality Assurance	SOP No.:
Title: Standard Operating Procedure for Color, Code, Identification of Utility Pipelines	Effective Date:
Supersede Revision No.: Nil	Next Review Date:
Revision No.: 00	Page No.: 8 of 12

NAME OF UTILITY LINE	GROUND COLOUR	FIRST COLOUR BAND	SECOND COLOUR BAND	COLOUR REFERENCE
Plant Effluent				
Cooling Water Return – Plant Effluent	Dark Blue	Red	.....

GASES & OTHERS

Nitrogen (Pure)	.....	Canary Yellow	Black	
Nitrogen (Gaseous)	Canary Yellow	Black	.....
LPG	Red	Yellow	.....
Oxygen (Gaseous)	Sky Blue	White	.....
Compressed Air Line	Sky Blue	.....	.....
Vacuum Line	Light Grey	Black	.....
Drain & Steam Condensate Drain	Black	White	.....
FO Line (Insulated)	.....	Black	.....
Prohibited Area	Yellow	Black	.....
Final Effluent	Dark Blue	Red	.....
Chlorine Solution	Yellow	.....	.....
Lime Slurry	Yellow	.....	.....
Sodium Hypochlorite	Yellow	
Process Air	Sky Blue	Green	
Product Air	Green	Light Green	

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STANDARD OPERATING PROCEDURE

Department: Quality Assurance	SOP No.:
Title: Standard Operating Procedure for Color, Code, Identification of Utility Pipelines	Effective Date:
Supersede Revision No.: Nil	Next Review Date:
Revision No.: 00	Page No.: 9 of 12

NAME OF UTILITY LINE	GROUND COLOUR	FIRST COLOUR BAND	SECOND COLOUR BAND	COLOUR REFERENCE
Water Hydrant	Red	.....	.....
BOILER WATER				
Boiler Feed water makeup	Dark Blue	Orange	.....
Boiler Feed Water	Dark Blue	Orange	.....
Continuous Blow Down	Dark Blue	Orange	.....
STEAM				
Boiler Steam Line (Aluminium Insulation)	.....	Orange	Red	
Steam	.....	Orange	Red	
Pure Steam Line (Aluminium Steam Line)	.....	Light Red	.....
HYDRAULIC OILS				
Hydraulic Oil Supply	White	Orange	.....
Hydraulic Oil Return	White	Orange	.....
FUEL SUPPLY				
Diesel	Light Yellow	Black	
SANITARY SEWER/STORM DRAINS				
Roof Drain	Black or same color as Building	

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Department: Quality Assurance	SOP No.:
Title: Standard Operating Procedure for Color, Code, Identification of Utility Pipelines	Effective Date:
Supersede Revision No.: Nil	Next Review Date:
Revision No.: 00	Page No.: 10 of 12

NAME OF UTILITY LINE	GROUND COLOUR	FIRST COLOUR BAND	SECOND COLOUR BAND	COLOUR REFERENCE
	Walls			
Plant Drain (System Related)	Black	.....	.....	██████████
Storm Drain	Black	.....	.....	██████████
Sump Pump Discharge	Black	.....	.....	██████████
Sanitary Sewer	Black	.....	.....	██████████
Sanitary Vent	Black	.....	.....	██████████

FORMAT No.:

Page x of y

----	Prepared By Operating Person	Checked By Department Head	Approved By Head Quality Assurance
Name			
Signature			
Date			

FORMAT No.:



PHARMA DEVILS

QUALITY ASSURANCE DEPARTMENT

STANDARD OPERATING PROCEDURE

Department: Quality Assurance	SOP No.:
Title: Standard Operating Procedure for Color, Code, Identification of Utility Pipelines	Effective Date:
Supersede Revision No.: Nil	Next Review Date:
Revision No.: 00	Page No.: 11 of 12

ANNEXURE-II



PHARMA DEVILS

QUALITY ASSURANCE DEPARTMENT

REVIEW REPORT OF COLOUR CODE FOR UTILITY PIPELINES

Frequency: 6 months

Area/Location	Name of Pipelines	Checked By (Engineering) Sign & Date	Verified By (QA) Sign & Date	Remark

Conclusion:

Recommendation:

Reviewed By:
Engineering
Sign & Date

Approved By:
Head QA
Sign & Date

FORMAT No.:

Page x of y

----	Prepared By Operating Person	Checked By Department Head	Approved By Head Quality Assurance
Name			
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QUALITY ASSURANCE DEPARTMENT

STANDARD OPERATING PROCEDURE

Department: Quality Assurance	SOP No.:
Title: Standard Operating Procedure for Color, Code, Identification of Utility Pipelines	Effective Date:
Supersede Revision No.: Nil	Next Review Date:
Revision No.: 00	Page No.: 12 of 12

ANNEXURE III



PHARMA DEVILS

QUALITY ASSURANCE DEPARTMENT

INTIMATION FOR COLOUR CODING

Block:
Date:

Area:

To
Engineering Department/Block Head,
Please attend the below mentioned Complaint at the earliest.

Name of the machine/Area		Time	
		Complaint time:	
Nature of the Complaint:			
Complaint logged by:		Complaint Checked by:	

FORMAT No.:

Page x of y

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Name			
Signature			
Date			