PFI Standard ES-22
(Reaffirmed 1999)

RECOMMENDED PRATICE FOR COLOR CODING OF PIPING MATERIALS

Prepared by

Pipe Fabrication Institute Engineering Committee

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1. Scope

1.1 The intent of this standard is to provide a system for easy identification of piping materials by general material classifications.

2. General

2.1 This standard cannot possibly distinguish between all the various grades or specifications of material. However, the user is encouraged to develop his own identification system depending on the specific materials involved for a project. Table 1 identifies the most common grades of material used in piping systems.

2.2 Color markings are assigned on the basis of nominal chemical composition.

2.3 Identification by this method is not a substitute for other permanent manufacturer's marking, as is required by applicable ASTM or other piping material specifications.

2.4 The principal purpose of this standard is to simplify identification of the pipe during storage and after the pipe has been cut for fabrication or returned to stock.

2.5 Where pipe spool pieces are painted after completion of fabrication, further material color marking is not necessary except where required by code or the purchaser. Spool pieces are generally marked with special identifications (i.e. piece mark numbers) which identifies the material on a paper document.

2.6 Paint and marking materials for use on nuclear piping systems shall be approved as suitable for the material to which it will be applied. Marking materials for stainless steel and nickel alloy piping must not contain undesirable substances such as chlorides, fluorides, sulfur, and low melting point metals.

3. Location Of Marking

3.1 Pipe shall be marked with paint, dyes, tapes, etc., for its full length.

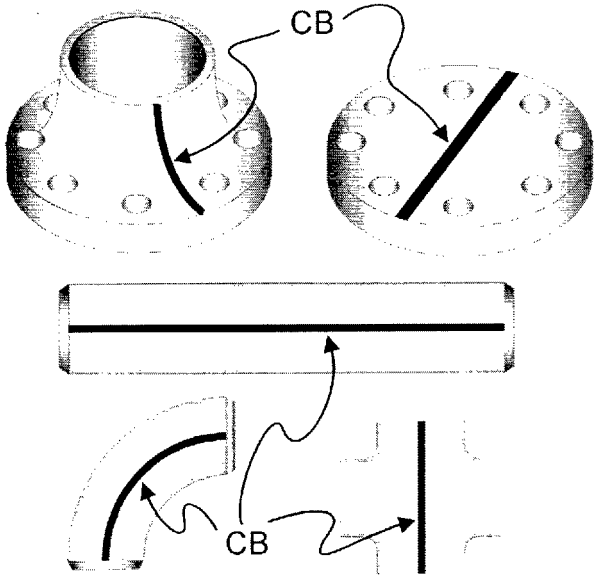
3.2 Flanges shall be banded on the back of the flange at the intersection of the back face and the hub.

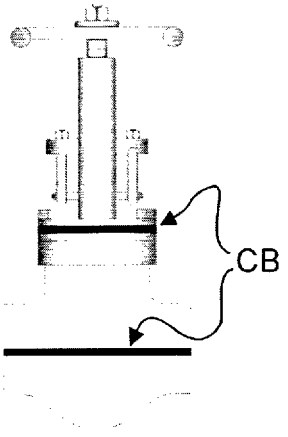
3.3 Fittings shall be striped from bevel to bevel.

3.4 Miscellaneous material shall be color marked so as to provide proper identity.

3.5 The paint shall not cover welding surfaces.

3.6 Typical markings are shown in Figure 1.





CB = Color band location

Note : Do not apply paint to gasket-seating areas or weld bevel areas

Figure 1 - Application of Color Code

Table 1
COLOR CODE FOR MATERIAL IDENTIFICATION

Material	*Common Designation*	*UNS Designation*	*Color of Stripe(s)*
Carbon Steel			
Carbon Steel, Electric Resistance Welded Pipe	A53 Gr. B/API 5LB Wld	None	1 solid white
Carbon Steel, Smls, specified tensile strength under 70,000 psi (483 MPA)	A53 Gr. B	K03005	No Marking
Carbon Steel, killed steel	A106 Gr. B	K03006	1 solid green
Carbon Steel, specified tensile strength 70,000 psi (483 MPA) and over	A106 Gr. C	K03501	2 solid green
Carbon Steel, low temperature (impact tested)	A333 Gr. 6	K03006	1 solid red
High Yield Carbon Steel			
52,000 min. yield	API 5LX-52		1 solid yellow, 1 solid green
60,000 min. yield	API 5LX-60		1 solid yellow, 1 solid pink
65,000 min. yield	API 5LX-65		2 solid yellow
70,000 min. yield	API 5LX-70		1 solid yellow, 1 solid orange
Low Alloy Materials			
C-Mo steel	A335 Gr. P1	K11522	1 solid orange
1 Cr-1/2 Mo Steel	A335 Gr. P12	K11562	1 solid orange, 1 solid blue
1 1/4 Cr-1/2 Mo Steel	A335 Gr. P11	K11597	1 solid yellow
2 1/4 Cr-1 Mo Steel	A335 Gr. P22	K21590	1 solid blue
5 Cr-1/2 Mo Steel	A335 Gr. P5	K41545	1 solid blue, 1 solid yellow
9 Cr-1/2 Mo Steel	A335 Gr. P9	S50400	2 solid orange
Ferritic and Martensitic Stainless Steels			
Type 405	A268 TP405	S40500	1 solid green, 1 solid black
Type 410	A268 TP410	S41000	1 solid green, 1 solid red
Austenitic Stainless Steels			
Type 304	A312 TP304	S30400	1 solid black
Type 304L	A312 TP304L	S30403	2 solid black
Type 304H	A312 TP304H	S30409	1 intermittent black
Type 309	A358 Gr309	S30900	1 solid black, 1 solid brown
Type 310	A358 Gr310	S31000	1 solid green, 1 solid orange
Type 316	A312 TP316	S31600	1 solid gray
Type 316L	A312 TP316L	S31603	2 solid gray
Type 316H	A312 TP316H	S31609	1 intermittent gray
Type 317	A312 TP317	S31700	1 solid brown, 1 solid green
Type 317L	A312 TP317L	S31703	1 solid brown, 1 solid red
Type 321	A312 TP321	S32100	1 solid pink
Type 321H	A312 TP321H	S32109	2 solid pink
Type 347	A312 TP347	S34700	1 solid brown
Type 347H	A312 TP347H	S34709	2 solid brown
Nickel Based Alloys			
Nickel 200	B161	N02200	1 solid black, 1 solid pink
Incoloy 800	B407	N08800	1 solid black, 1 solid orange
Incoloy 800H	B407	N08810	1 solid gray, 1 solid red
Incoloy 825	B423	N08825	1 solid gray, 1 solid blue
Inconel 600	B167	N06600	2 solid blue
Inconel 625	B444	N06625	1 solid blue, 1 solid pink
Hastelloy Alloy B-2	B622	N10665	1 solid red, 1 solid orange
Hastelloy Alloy C-276	B622	N10276	1 solid red, 1 solid blue
Hastelloy Alloy C-22	B622	N06022	2 solid red
Hastelloy Alloy G	B622	N06007	1 solid red, 1 solid yellow
Carpenter Alloy 20 CB-3	B464	N08020	1 solid black, 1 solid blue
Monel 400	B165	N04400	1 solid black, 1 solid yellow
Aluminum Alloys			
Alloy 3003 Aluminum	B241	A93003	1 solid purple
Alloy 6061 Aluminum	B241	A96061	1 solid tan

Note: Any product manufactured by welding shall have an additional white stripe.

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