



NATIONAL PETROCHEMICAL COMPANY
STANDARDS

MATERIAL STANDARD

COMMODITY CODE LEGEND

NPCS-MS-PI-01

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GENERAL

The major objective of the piping material take-off system is to help its user in determining and maintaining an exact record of the piping components and their quantities which are required for the completion of the piping work on a project or a job. This commodity code procedure (which is having unique codes for different piping items) has been devised to identify piping items. This standard code has a seven digit structure for all items except for valves (8th. digit has been used for valves for special features).

This unique commodity code ensures:

- Consistency of data.
- Facilitate transfer of piping items from one project to another project.
- Maintaining an exact record of piping items.
- Easy communication.

Important note

Blank spaces available against element code, material code or any other commodity code digit may be used for need based updation. The updation shall be done with a caution by maintaining only one master.

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ELEMENT CODE

All piping items are allotted Z-digit code (number only). These items are classified into 7 groups as given in table below:

GROUP NAME	GROUP CODE	ELEMENT CODES
PIPES/TUBES	1	10 to 19
FLANGES	2	20 to 29; 90 to 97
FITTINGS	3	30 to 59
VALVES	4	60 to 79
BOLTS	5	98
GASKETS	6	99
MISCELANEOUS-I	7	80 to 88
MISCELANEOUS-II	8	89

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MATERIAL CODE

Piping & tubing materials are allotted 2-digit code (number only) from 01 to 99 against each group of elements. These 99 materials are further classified into 4 groups as given in table below:

GROUP	NAME	MATERIAL	CODES
	Carbon Steel, Galvanised CS, Alloy Steel	01	to 49
	Stainless Steel	50	to 79
	Copper/CS/SS (for tubing materials *)	80	to 89
	Rubber/Pipe/..... Lined materials	90	to 99

* Other three groups are for piping material.

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OTHER DETAILS

Having fixed the item code and material code, i.e. first four digits, other suffix characters are added for end details, rating, Sch./Thk. & other specialities in order to make the full commodity code which becomes unique for summarizing.



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STRUCTURE

The commodity code is composed of a maximum of eight characters (or symbols). The first two digits denote the element code (Ref. Appendix-A) and 3rd. & 4th. digits denote the material of the component (Ref. Appendix-B). The remaining digits, i.e. 5th. digit, 6th. digit, 7th. digit & 8th. digit, are suffixed for the preset categories/groups of piping components as follows:

5.1

PIPES

- 5th. Digit (number only)

This digit denotes the end details (Ref. Appendix-C). These items have been divided in two groups, i.e. flanged pipe items & non-flanged pipe items.

- 6th. Digit (letter or number)

In case of non-flanged items, this digit shall be substituted by "Q".

In case of flanged items, this digit shall be substituted as per Appendix-D.

- 7th. Digit (letter)

This digit shall denote the Sch/Thk. of the commodity as per Appendix-E. For the ease of future provision, this digit shall be lettered for Stainless Steel & non-Stainless Steel piping items separately as per the above referred Appendix.

- 8th. Digit (blank)

Since there is no more variable information required to specify pipes, the eighth digit shall go blank.

Hence, all types of pipes shall have seven digit commodity code.

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5.2

FLANGES

- 5th. Digit (number only)

This digit denotes the end details (Ref. Appendix-F) of the flanges (i.e. facing & finish).

- 6th. Digit (number only)

This digit denotes the rating of the flanges. (Ref. Appendix-G)

- 7th. Digit (letter or number)

All flange items have been split in two groups as follows:

a) Group-I (flanges requiring Sch./Thk.):

The items having element code 20, 21, 22, 90, 91, 92, 93 & 94 are covered in this group. The items shall have 7th. digit as per corresponding pipe Sch./Thk. (Ref. Appendix-H)

b) Group-II (flange items not requiring Sch./Thk.)

The items having element code 25, 26, 27, 28 & 29 are covered in this group. Since, there is no more variable information required to specify these items, 7th. digit for these items shall be substituted by "Q".

- 8th. Digit (blank)

This digit shall go blank as no more variable information is required for these items.

5.3

FITTINGS

- 5th. Digit (number only)

This digit denotes the end details of the fittings. Fittings are divided into three groups as follows:

a) Small bore (all items, i.e. one size/two size).

b) Big bore (one size items).

c) Big bore (two size items).

Based upon the above groups, refer Appendix-I, Group I, II & III for the above groups a, b & c respectively.



6th. Digit (number only or letter)

This digit denotes the rating, schedule & specialities (specialities are being assigned to the items need not rating & schedule both, i.e. Nipple, Mitres, Elbows/Bends, etc.). For the purpose of ease, all the fitting items have been divided into four groups as follows:

- a) Small bore (all items i.e., one size/two size)
- b) Big bore (one size items).
- c) Big bore (two size items).
- d) Flanged items.

Based upon the above groups, refer Appendix J, Group-I, II, III & IV for the above groups a, b, c & d respectively.

- 7th. Digit (letter or number)

This digit denotes the schedule/thickness of fittings. Fittings are divided into two groups as follows:

- a) Non flanged fittings. (all items)
- b) Flanged items.

Based upon the above groups, refer Appendix-K, group-1 & II for the above groups a & b respectively.

Exception : Some of the items in this group (i.e. items with element code 55,56,57,58 & 59) which are pipe made, shall have material code picked-up from the appendix-B; material code for pipes.

5.4

VALVES

- 5th. Digit (number only)

This digit denotes the end details (Ref. Appendix-L) of the valves.

- 6th. Digit (number only)

This digit denotes the rating of the valves. (Ref. Appendix-N)



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* 7th. Digit (letter only)

This digit denotes the basic design features of the valves. (Ref. Appendix-N)
For the purpose of covering all the basic design features under this digit, valves have been divided into seven groups as follows:

- a) Gate valves.
- b) Globe valves.
- c) Check valves.
- d) Ball valves.
- e) Plug valves.
- f) Butterfly valves.
- g) Angle valves.

Based upon the above groups, refer Appendix-N, group-I, II, III, IV, V, VI & VII for the above groups a, b, c, d, e, f & g respectively.

- 8th. Digit (number or letter)

This digit denotes the special requirements for the valves. (Ref. Appendix-P)
Valves have been divided into two groups as follows:

- a) Butterfly valves.
- b) Other than butterfly valves.

Based upon the above groups, refer Appendix-P, group-I & II for the above groups a & b respectively.

5.5

BOLTING

* 5th. Digit (number only)

This digit denotes the type of bolting.
(Ref. Appendix-Q)

- 6th. Digit (number only)*

This digit denotes the rating of the flange assembly for which the bolting is being used.
(Ref. Appendix-R)



- 7th. Digit (number or letter)*

This digit denotes the type of assembly for which the bolting is being used. (Ref. Appendix-S)

* 6th. Digit & 7th. digit.

Denote the intermediate parameters which shall be used through programming to find out the size of the bolting (i.e diameter & length both). Hence, the final commodity code for bolting, shall only have first five digits applicable. The 6th. & 7th. Digits which are only for intermediate use for picking-up right size (dia. & length) through programming shall be substituted by "Q" (in place of 6th & 7th. digits individually).

5.6

GASKET

- 5th. Digit (number only)

This digit denotes the type of gaskets. (Ref. Appendix-T)

- 6th. Digit (number only)

This digit denotes the class rating for which this gasket is to be used. (Ref. Appendix-U)

- 7th. Digit (number only)

This digit denotes the gasket thickness. (Ref. Appendix-V)

5.7

MISCELLANEOUS ITEMS (PART-I)

- 5th. Digit (number only)

This digit denotes the end details. (Ref. Appendix-W)

- 6th. Digit (number only)

This digit denotes the rating of these items. (Ref. Appendix-X)

- 7th. Digit (number only)

This digit denotes the sub types. These items have been divided into two groups as follows:

a) Items with element code 80, 81 & 82.



b) Items with element code 83, 84.

Based upon the above groups, refer Appendix-Y, Group-I & II for the items under above groups a & b respectively.

5.8

MISCELLANEOUS ITEMS (PART-II)

Since the number of such items are very less and also not covered in the material specification. These items are not considered same as the items covered in clauses 5.1 to 5.7.

These items are considered directory items and are allotted some definite numbers, and when these items are encountered, they shall be allotted one of these numbers in continuation and the directory shall be updated time to time. The numbers to be allotted to these items are as follows:

Sample Cabinet	890001Q	to	890999Q
Sample Cooler	891001Q	to	891999Q
SIGHT GLASS	8920016,	to	892999Q
FLEXIBLE HOSE ASSEMBLY	893001Q	to	893999Q
EYE WASH	894001Q	to	894999Q
LOADING ARM	8950018	to	895999Q
SPRING HANGER	896001Q	to	896999Q
FIRE HYDRANT	897001Q	to	897999Q
YARD HYDRANT	8980010	to	898999Q
SPRINKLER	899001Q	to	899999Q
RED UNION (COMP. TUBE)	890001C	to	890999C
UNION (CONMP. TUBE)	891001C	to	891999C
TEE (COMP. TUBE)	892001C	to	892999C
MALEADOPTER (COMP. TUBE)	893001C	to	893999C
FEMALE ADOPTER (COMP. TUBE)	894001C	to	894999C
(NEED BASED UPDATION)	895001C	to	895999C
(NEED BASED UPDATION)	896001C	to	896999C



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(NEED BASED UPDATION)	897001C	t o	897999C
(NEED BASED UPDATION)	898001C	t o	89899SC
(NEED BASED UPDATION)	899001C	t o	899999C
BEND (REDUCING)	890001F	t o	890999F
CROSS (REDUCING)	891001F	t o	891999F
ELBOW 90" (REDUCING)	892001F	t o	892999F
RETURN BENDS	893001F	to	893999F
(NEED BASED UPDATION)	894001F	t o	894999F
(NEED BASED UPDATION)	895001F	t o	895999F
(NEED BASED UPDATION)	896001F	t o	896999F
(NEED BASED UPDATION)	897001F	t o	897999F
(NEED BASED UPDATION)	898001F	t o	898999F
(NEED BASED UPDATION)	8990011:	to	899999F
EXPANSION JOINT	890001M	t o	890999M
LOCK NUT	89100111	to	891999M
FOOT VALVE	892001	to	892999M
(NEED BASED UPDATION)	893001M	t o	893999M
(NEED BASED UPDATION)	894001M	t o	894999M
(NEED BASED UPDATION)	8950019	to	895999M
(NEED BASED UPDATION)	896001M	t o	896999M
(NEED BASED UPDATION)	897001M	t o	897999M
(NEED BASED UPDATION)	898001M	t o	898999M
(NEED BASED UPDATION)	899001M	t o	899999M



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GUIDE FOR CODING

The structure of the commodity code for various piping items is as follows:

PIPES

DIGITS	1st. & 2nd.	3rd. & 4th.	5th.	6th.	7th.
Description	Element code	Material code	End Details	No informa- tion for non- flanged & rating/ facing & finish for flanged pipes	I- Sch./Thk
Refrenc- es	Appendix A	Appendix B	Appendix C	Appendix D	Appendix E
I -					-4

FLANGES

DIGITS	1st. & 2nd	3rd. & 4th.	5th.	6th.	7th.
Description	Element code	I Material code	End Details	Rating	Sch./Thk & No Informa- tion for Non-Sch/ Thk. Items
Refrenc- es	Appendix A	Appendix B	Appendix F	Appendix G	Appendix II
					-I

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FITTINGS

DIGITS	1st. & 2nd	3rd. & 4th.	5th.	6th.	7th.
Descrip- tion	Element code	Material code	End Details	Sch./Thk Rating & Spical- ities	Sch./Thk
Refrenc- es	Appendix A	Appendix B	Appendix I	Appendix J	Appendix K

VALVES

Digits	1st. & 2nd.	3rd. & 4th.	5th.	6th.	7th.	8th.
Descrip- tion	Element Code	Mater- ial Code	End Detail- ls	Rating	Basic Design Featur- es	Speci- ality
Referen- ces	Appendix A	Appen- dix B	Appen- dix L	Appen- dix M	Append- dix N	Append dix P

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BOLTING

DIGITS	1st. & 2nd.	3rd. & 4th.	5th.	6th.	7th.
I					
Descrip- tion	Element Code	Material Code	Type of Bolting	Rating	Assembly Type
Refrenc- es	Appendix A	Appendix B	Appendix Q	Appendix R	Appendix S

GASKETS

DIGITS	1st. & 2nd.	3rd. & 4th.	5th.	6th.	7th.
I					
Descrip- tion	Element Code	Material Code	Type	Rating	Thick- ness
Refrenc- es	Appendix A	Appendix B	Appendix T	Appendix U	Appendix V

MISCELLANEOUS ITEMS (PART-I]

(i.e. STRAINERS & TRAPS)

DIGITS	1st. & 2nd.	3rd. & 4th.	5th.	6th.	7th.
I					
Descrip- tion	Element Code	Material Code	End Details	Rating	Sub. Types.
Refrenc- es	Appendix A	Appendix B	Appendix W	Appendix X	Appendix Y

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APPENDIX - A

ELEMENT CODES FOR PIPES

I	ELEMENT DESCRIPTION	CODE
		1st. & 2nd.
	PIPE (SEAMLESS)	10
	PIPE (E.R.W)	11
	PIPE (E.FS.W)	12
	PIPE (S.A.W)	13
	PIPE (C.WELDED)	14
	PIPE (F.B.W)	15
	(NEED BASED UPDATION)	16
	(NEED BASED UPDATION)	17
	(NEED BASED UPDATION)	18
	TUBE/SMLS.	19

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APPENDIX - A
(Contd.)

ELEMENT CODES FOR FLANGES

I I-	ELEMENT DESCRIPTION	I CODE	
		1st.&	2nd.
	FLANGE (WELDING NECK)	20	
	(SOCKET WELDED)	21	
	(SCREWED)	22	
	(NEED BASED UPDATION)	23	
	(NEED BASED UPDATION)	24	
	(FIG-81	25	
	(SPACER & BLIND)	26	
	(SLIP-ON)	21	
	(BLIND)	2	8
	(LAP JOINT)	29	
	(ORIFICE, WN)	90	
	(ORIFICE, SW)	91	
	(ORIFICE, SCRD.)	92	
	(STUB END, WN)	93	
	(LONG NECK)	94	
	(T & G)	95	
	(NEED BASED UPDATION)	96	
	(NEED BASED UPDATION)	97	

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APPENDIX - A
(Contd.)

ELEMENT CODES FOR FITTINGS (ONE SIZE ITEMS)

ELEMENT DESCRIPTION (ONE SIZE ITEMS)	CODE	
	1st.	2nd.
90" ELBOW	I	30
45 ° ELBOW		31
(NEED BASED UPDATION)		32
CROSS		33
90" BEND		34
45" BEND		35
ADOPTER		36
THREDOLET		37
EQUALTEE		38
FULL COUPLING		39
HALF COUPLING		40
EXTRA LONG COUPLING		41
UNION		42
ELBOWLET		43
WELDOLET		44
SOCKOLET		45
SWEEPOLET		46
CAP		47
PLUG		48

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APPENDIX - A
(Contd.)

ELEMENT CODES FOR FITTINGS (TWO SIZE ITEMS)

ELEMENT (TWO SIZE ITEMS)	CODE	
	1st.	2nd.
INSERT	4	9
BUSHING		50
REDUCING COUPLING		51
REDUCING TEE		52
CONCENTRIC REDUCER		53
ECCENTRIC REDUCER		54
CONCENTRIC SWAGE		55
ECCENTRIC SWAGE		56

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ELEMENT CODES FOR FITTINGS (PIPE MADE FITTINGS)

I	ELEMENT DESCRIPTION (PIPE MADE)	I CODE	
		1st.	2nd.
	90" MITRE	57	
	45" MITRE	58	
	NIPPLE	59	

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APPENDIX - A
(Contd.)

ELEMENT CODE FOR VALVES

ELEMENT DESCRIPTION		CODE 1st.& 2nd.;
GATE	VALVE	60
GLOBE	VALVE	61
CHECK	VALVE	62
BALL	VALVE	63
PLUG	VALVE	64
BUTTERFLY	VALVE	65
DIAPHRAGM	VALVE	66
NEEDLE	VALVE	67
PINCH	VALVE	68
ANGLE	VALVE	69
3-WAY	PLUG	70
4-WAY	PLUG	71
ANGLE	STOP	72
3-WAY	GLOBE	73
FLUSH	BOTTOM	74
3-WAY	BALL	75
4-WAY	BALL	76
(NEED	BASED UPDATIONI	77
(NEED	BASED UPDATION)	78
(NEED	BASED UPDATIONI	79

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APPENDIX - A
(Contd.)

ELELMENT CODE FOR BOLTS

ELEMENT DESCRIPTION	CODE
	1st.& 2nd.
BOLTING	98

ELEMENT CODE FOR GASKETS

ELEMENT DESCRIPTION	CODE
	1st.& 2nd.
GASKETS	99

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APPENDIX - A
(Contd.)

ELEMENT CODE FOR MISCELLANEOUS ITEMS (PART-I)

ELEMENT DESCRIPTION	CODE 1st.& 2nd.
(NEED BASED UPDATION)	80
TEMPORARY STRAINER	81
PERMANENT STRAINER	82
STEAM TRAPS	83
AIR TRAPS	84
(NEED BASED UPDATION)	85
(NEED BASED UPDATION)	86
(NEED BASED UPDATION)	87
(NEED BASED UPDATION)	88

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APPENDIX - A
(Contd.)

ELEMENT CODE FOR MISCELLANEOUS ITEMS (PART-II)

ELEMENT	DESCRIPTION	CODE	
		1st.	2nd.
SAMPLE	CABINET	89	
SAMPLE	COOLER	89	
SIGHT	GLASS	a9	
FLEXIELE	HOSE ASSEMBLY	89	
EYE	WASH	89	
LOADING	ARM	89	
SPRING	HANGER	89	
FIRE	HYDRANT	89	
YARD	HYDRANT	89	
SPRINKLER		89	
RED UNION	(COMP. TUBE)	89	
'UNION	(COMP. TUBE1	89	
TEE	(COMP. TUBE)	89	
MALE ADAPTER	(COMP. TUBE)	89	
FEMALE ADAPTER	(COMP. TUBE)	89	
BEND	(REDUCING1	89	
CROSS	(REDUCING)	89	
ELBOW	90" (REDUCING)	89	
RETURN	BEND	89	
EXPANSION	JOINT	89	
LOCK	NUT	89	
FOOT	VALVE	89	

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APPENDIX - B

MATERIAL CODE FOR PIPES

MATERIAL	CODE 3rd.& 4th.
API 5L GR.A	01
API 5L GR.B	02
ASTM A 53 GR.A	03
ASTM A 53 GR.B	04
ASTM A 53 GR.F	05
ASTM A 106 GR.A	06
ASTM A 106 GR.B	07
ASTM A 672 GR.C70, CL.12	08
ASTM A 672 GR.C70, CL.13	09
ASTM A 672 GR.C70, CL.22	10
ASTM A 333 GR.6	11
ASTM A.671 GR.CC70, CL.32	12
ASTM A 672 GR.A55	13
ASTM A 139 GR.B	14
ASTM A 139 GR.E	15
ASTM A 672 GR.55, CL.13	16
	17
	18
	19
ASTM A 120 (GALV.)	20
ASTM A 53 (GALV.)	21
ASTM A 106 GR.B (GALV.)	22

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APPENDIX - B
(Contd.)

MATERIAL CODE FOR PIPES

MATERIAL	CODE 3rd.& 4th.;
	23
	24
	25
ASTM A 333 GR.3	26
	27
	28
ASTM A 335 GR.P1	29
	30
ASTM A 335 GR.P2	31
	32
ASTM A 335 GR.P5	33
5CR. A 691 CL.42	34
ASTM A 335 GR.P7	35
ASTM A 335 GR.P9	36
9CR. A 691 GR.42	31
ASTM A 335 GR.P11	38
1.25CR A 691, CL.42	39
ASTM A 335 GR.P12	40
1 Cr A 691, CL.42	41
ASTM A 335 GR.P22	42
2.25 Cr A 691, CL.42	43
	44

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APPENDIX - B
(Contd.)

MATERIAL CODE FOR PIPES

MATERIAL	CODE 3rd.& 4th.
	45
	46
	47
	48
	49
ASTM A 312 TP 304	50
ASTM A 358 TP 304, CL.1	51
ASTM A 358 TP 304, CL.2	52
ASTM A 312 TP 304 L	53
ASTM A 358 TP 304 L, CL.1	54
	55
	56
ASTM A 312 TP 316	57
ASTM A 358 TP 316,CL.3	58
	59
ASTM A 312 TP 316L	60
ASTM A 358 TP 316 L,CL.1	61
ASTM A 312 TP 316H	62
	63
	64
ASTM A 312 TP 321	65
ASTM A 376 TP 316H	66

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APPENDIX - B
(Contd.)

MATERIAL CODE FOR PIPES

MATERIAL	CODE 3rd.& 4th.
	67
	68
	69
	70
	71
	72
	73
	74
	75
	76
	77
	78
	79
ASTM B 68, SOFT ANNEALED	80
	81
	82
	83
	84
ASTM A 179, SOFT ANNEALED	85
	86
	87
CS (PTFE LINED)	88

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APPENDIX - B
(Contd.)

MATERIAL CODE FOR PIPES

MATERIAL	CODE 3rd.& 4th.
CS (SARAN LINED)	89
API 5L GR.B(RUB. LINED)	90
ASTM A 53 GR.B (RUB.LINED)	91
ASTM A 106 GR.B(RUB.LINED)	92
ASTM A 53 GR.A(PTFE LINED)	93
API 5L GR.B (PTFE LINED)	94
PVC	95
	96
	97
	98
	99

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