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PIPING SYSTEM MATERIAL (PSM)
ANSI/ASME STANDARD

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												Zorzut DTN			Barbante DE			Pelizzo UQE			
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1 - ELENCO CLASSI TUBAZIONI

La presente Norma definisce l'elenco codificato delle classi tubazioni secondo Norme Danieli secondo Standards ANSI, ASME, ASTM, API, BS, MSSP, SAE, CETOP, seguendo come rating base la normativa ANSI/ASME.

Per ogni classe sono definiti i parametri principali relativi alla linea, ai fluidi di impiego, alle condizioni di progetto, alla pericolosità del fluido, ai controlli NDT ed al tipo di riscaldamento/coibentazione della stessa.

Le condizioni di progetto di linea ed i controlli non distruttivi (NDT) sono da considerarsi puramente indicativi, e dovranno essere di volta in volta verificati in accordo alle reali condizioni di esercizio di ogni singolo fluido relativamente alla Commessa.

Ogni componente la Classe tubazione é dettagliatamente specificato nei relativi data sheets di cui al punto 2 (Classi tubazioni).

Per chiave di lettura siglatura PSM vedere N 2.4.300.

Per tabella intersezioni vedere N 2.4.353

1 - PIPING CLASSES LIST

This Standard defines the codified list of Danieli piping classes according to ANSI, ASME, ASTM, API, BS, MSSP, SAE, CETOP codes, tacking into account the DIN/UNI Standards as base rating.

For each piping class this Standard defines the main parameters concerning line characteristics, design condition, fluids conditions, fluid hazard degree, NDT controls, type of heating and insulating of line.

The design conditions and non destructive test (NDT) of line are to be considered as tentative only and shall be verified for each specific job according to the real operating conditions of the fluid used.

Each component of Piping Class is specified in the data sheets listed at point 2 (Piping classes).

The PSM reading key code is explained in N 2.4.300.

For intersection tables see N 2.4.353

PIPING CLASS	FLUIDS INDEX	PAGE
AD 01 ES	AR, FW, IA, NI, PW.....	3
AD 01 FS	GN, LPG.....	3
AD 01 HM	LO, LOR.....	3
AD 01 JS	AB, AC, ACR, CW, CWR, EW, FW, GL, HZ, HZR, KW, KWR, IW, MW, NW, QW, QWR, SL, PW.....	4 - 5
AD 03 JS	CW, CWR, KW, MW	5
AD 25 JS	DEW, SA.....	5
AD 01 JZ	KWR.....	5
AD 01 PS	AR, CA, IA, NI, PA.....	6
AD 03 PS	AR, CA, NI.....	6
AD 30 XM	GR.....	7
AD 60 XM	GR.....	7
AD 01 XS	OX.....	7
AD 60 XT	GR.....	7
AD 01 YM	HD, HT, HFS.....	8
AD 30 YM	HP.....	8
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AD 30 YT	HP.....	9
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AS 01 CH	AK, NA, MW, PM.....	10
AS 01 PS	DW, KW, LO, LOD, LOR, NS, SW,.....	10
AS 03 PS	DW, KW, NS, QWR, SW,.....	11
AS 01 YM	HD, HT, HFS.....	11
AS 30 YM	HP.....	11
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AS 01 YT	HD, HT, HFS.....	12
AS 30 YT	HP.....	12
AS 60 YT	HP.....	12

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Piping Class	Line					Fluid		Design conditions		Hazard degree			NDT class N 2.8.114	Line heating		Remarks
	DN/NPS Range	Rating Class Facing	Pipe Material	Valve Trim Material	Corr. allow. mm	Fluid item	Fluid specification	barg	°C	Toxic	Explos.	Flamm.		Heat. type	Insul. type	
AD01ES	15÷100	150 RF	C steel Galvan.	13% Cr 304	0,00	AR	Argon Argon	14	65							
						FW	Acqua antincendio Fire-fighting water	14	65							Empty line (Sprinklers)
						IA	Aria per strumenti Instrument air	10	65							
						NI	Azoto Nitrogen	14	65							
						PW	Acqua potabile Drinking water	10	65							
	15÷40					DR	Dreni Drains	Atm.	65							
						VT	Sfiati Vents	Atm.	65							
AD01FS	15÷ 400	150 RF	C steel	13% Cr 304-Viton	1,00 1,60	GN	Gas naturale Natural gas	10	65		X	X		ET	HC	
						LPG	Gas propano liquido Liquid propane gas	10	65		X	X		ET	HC	
	15÷40					DR	Dreni Drains	Atm.	65		X	X				
						VT	Sfiati Vents	Atm.	65		X	X				
AD01HM	15÷ 400	150 RF	C steel	13% Cr 304-NBR	0,76	LO	Olio di lubrificazione (Mandata) Lubricating oil (Delivery)	12,5	80			X				
						LOR	Olio di lubrificazione (Ritorno) Lubricating oil (Return)	12,5	80			X				
	15÷40					DR	Dreni Drains	Atm.	65			X				
						VT	Sfiati Vents	Atm.	65			X				



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Piping Class	Line					Fluid		Design conditions		Hazard degree			NDT class N 2.8.114	Line heating		Remarks
	DN/NPS Range	Rating Class Facing	Pipe Material	Valve Trim Material	Corr. allow. mm	Fluid item	Fluid specification	barg	°C	Toxic	Explos.	Flamm.		Heat. type	Insul. type	
AD01JS	15÷ 1000	150 RF	C steel	13% Cr 304-NBR	0,76	AB	Acqua industriale di scarico Industrial sewage	12	65							
						AC	Acqua raffredd. impianti HVAC (entrata) HVAC systems cooling water (inlet)	12	65						CC	Circuiti chiusi Close rings
						ACR	Acqua raffredd. impianti HVAC (uscita) HVAC systems cooling water (outlet)	12	65						CC	
						CW	Acqua raffr. indir. circ. aperti (mandata) Indir. cool. water open circuit (delivery)	12	65							Circuiti chiusi Close rings
						CWR	Acqua raffr. indir. circuiti aperti (ritorno) Indir. cool. water open circuit (return)	12	65							
						EW	Acqua di emergenza Emergency water	12	65							Pieno d'acqua Full of water
						FW	Acqua antincendio Fire-fighting water	14	65							
						GL	Aria soffiante Blowing air	6	130						PP	Circuiti chiusi Close rings
						HZ	Acqua termostata (entrata) Thermostatized water (inlet)	12	90						HC	
						HZR	Acqua termostata (uscita) Thermostatized water (outlet)	12	90						HC	Circuiti aperti Open rings Scales≤400ppm
						KW	Acqua raffr. diretto circ. aperti (mandata) Direct cool. water open circuit (delivery)	15	65							
						KWR	Acqua raffr. diretto circuiti aperti (ritorno) Direct cooling water open circuit (return)	12	65							
						IW	Acqua grezza di reintegro Raw water (Make-up)	12	65							
						MW	Acqua filtrata di reintegro Filtered water (Make-up)	12	65							
						NW	Acqua uso industriale Industrial water	12	65							
						QW	Acqua raff. ind. circuiti chiusi (mandata) Ind. cool. water closed circuit (delivery)	12	65							Circuiti chiusi Close rings
						QWR	Acqua raffr. ind. circuiti chiusi (ritorno) Ind. cool. water closed circuit (return)	12	65							
						SL	Acqua con fanghi Sludge water	12	65							
	≥150÷ 1000	150 RF	C steel	13% Cr 304-NBR	0,76	PW	Acqua potabile Drinking water	10	65							



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Piping Class	Line					Fluid		Design conditions		Hazard degree			NDT class N 2.8.114	Line heating		Remarks
	DN/NPS Range	Rating Class Facing	Pipe Material	Valve Trim Material	Corr. allow. mm	Fluid item	Fluid specification	barg	°C	Toxic	Explos.	Flamm.		Heat. type	Insul. type	
	15÷40					DR	Dreni Drains	Atm.	65							
						VT	Sfiati Vents	Atm.	65							
AD03JS	15÷450	300 RF	C steel	13%Cr 304	0,76	CW	Acqua raffr. indir. circ. aperti (mandata) Indir. cool. water open circuit (delivery)	21	65							
						CWR	Acqua raffr. indir. circuiti aperti (ritorno) Indir. cool. water open circuit (return)	21	65							
						KW	Acqua raffr. diretto circ. aperti (mandata) Direct cool. water open circuit (delivery)	21	65							
						MW	Acqua filtrata di reintegro Filtered water (Make-up)	21	65							
	15÷40					DR	Dreni Drains	Atm.	65							
						VT	Sfiati Vents	Atm.	65							
AD25JS	15÷350	2500 RJ	C steel	HCP	0,76	DEW	Acqua di discagliatura Descaling water	300	50							
	15÷25					SA	Aria servizi Service air	300	50							
	15÷40					DR	Dreni Drains	Atm.	50							
						VT	Sfiati Vents	Atm.	50							
AD01JZ	15÷500	150 RF	C steel	13%Cr AISI 304 NBR	0,76 2,54	KWR	Acqua raffr. diretto circ. aperti (ritorno) trasporto acqua con scaglia Direct cool. water open circuit (return) scale polluted water	8	65							Scaglia - Scale > 800 ppm
	15÷40					DR	Dreni Drains	Atm.	65							
						VT	Sfiati Vents	Atm.	65							



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Piping Class	Line					Fluid		Design conditions		Hazard degree			NDT class N 2.8.114	Line heating		Remarks
	DN/NPS Range	Rating Class Facing	Pipe Material	Valve Trim Material	Corr. allow. mm	Fluid item	Fluid specification	barg	°C	Toxic	Explos.	Flamm.		Heat. type	Insul. type	
AD01PS	150÷300	150 RF	C Steel	13%Cr AISI 304	0,50	AR	Argon Argon	14	65							
	15÷300					CA	Aria compressa Compressed air	14	65							
	150÷300					IA	Aria strumenti Instrument air	10	65							
	150÷300					NI	Azoto Nitrogen	14	65							
	15÷300					PA	Aria di processo Process air	10	65							
	15÷40					DR	Dreni Drains	Atm.	65							
						VT	Sfiati Vents	Atm.	65							
AD03PS	15÷300	300 RF	C Steel	13%Cr AISI 304	0,50	AR	Argon Argon	42	65							
						CA	Aria compressa Compressed air	40	65							
						NI	Azoto Nitrogen	42	65							
	15÷40					DR	Dreni Drains	Atm.	65							
						VT	Sfiati Vents	Atm.	65							



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Piping Class	Line					Fluid		Design conditions		Hazard degree			NDT class N 2.8.114	Line heating		Remarks
	DN/NPS Range	Rating Class Facing	Pipe Material	Valve Trim Material	Corr. allow. mm	Fluid item	Fluid specification	barg	°C	Toxic	Explos.	Flamm.		Heat. type	Insul. type	
AD30XM	25÷50	3000 Lb	C steel	HCP	0,00	GR	Grasso lubrificante Lubricant grease	160	65							
	25÷40					DR	Dreni Drains	Atm.	65							
						VT	Sfiati Vents	Atm.	65							
AD60XM	25÷50	6000 Lb	C steel	HCP	0,00	GR	Grasso lubrificante Lubricant grease	320	65							
	25÷40					DR	Dreni Drains	Atm.	65							
						VT	Sfiati Vents	Atm.	65							
AD01XS	15÷300	150 RF	C Steel	AISI 316	1,27	OX	Ossigeno Oxygen	18,8	65							
	15÷40					DR	Dreni Drains	Atm.	65							
						VT	Sfiati Vents	Atm.	65							
AD60XT	OD 1/4"÷5/8"	6000 Lb	C steel	HCP	0,00	GR	Grasso lubrificante Lubricant grease	320	65							Tubing
						DR	Dreni Drains	Atm.	65							
						VT	Sfiati Vents	Atm.	65							



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Piping Class	Line					Fluid		Design conditions		Hazard degree			NDT class N 2.8.114	Line heating		Remarks
	DN/NPS Range	Rating Class Facing	Pipe Material	Valve Trim Material	Corr. allow. mm	Fluid item	Fluid specification	barg	°C	Toxic	Explos.	Flamm.		Heat. type	Insul. type	
AD01YM	15÷250	150 RF	C Steel	HCP	0,50	HD	Fluidi idraulici (Drenaggi) Hydraulic fluids (Drainages)	12,5	80							
						HT	Fluidi idraulici (Ritorno) Hydraulic fluids (Return)	12,5	80							
						HFS	Fluidi idraulici (Ricircolo) Hydraulic fluids (Recycle)	12,5	80							
	15÷40					DR	Dreni Drains	Atm.	65							
						VT	Sfiati Vents	Atm.	65							
AD30YM	15÷150	3000 Lb	C Steel	HCP	0,50	HP	Fluidi idraulici (Mandata) Hydraulic fluids (Delivery)	160	80							
	15÷40					DR	Dreni Drains	Atm.	65							
						VT	Sfiati Vents	Atm.	65							
AD60YM	15÷100	6000 Lb	C Steel	HCP	0,50	HP	Fluidi idraulici (Mandata) Hydraulic fluids (Delivery)	320	80							
	15÷40					DR	Dreni Drains	Atm.	65							
						VT	Sfiati Vents	Atm.	65							



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	DN/NPS Range	Rating Class Facing	Pipe Material	Valve Trim Material	Corr. allow. mm	Fluid item	Fluid specification	barg	°C	Toxic	Explos.	Flamm.		Heat. type	Insul. type	
AD01YT	OD 3/8"÷1.1/4"	20 bar	C Steel	HCP	0,00	HD	Fluidi idraulici (Drenaggi) Hydraulic fluids (Drainages)	12,5	80							Tubing
						HT	Fluidi idraulici (Ritorno) Hydraulic fluids (Return)	12,5	80							
						HFS	Fluidi idraulici (Ricircolo) Hydraulic fluids (Recycle)	12,5	80							
						DR	Dreni Drains	Atm.	65							
						VT	Sfiati Vents	Atm.	65							
AD30YT	OD 3/8"÷1.1/4"	210 bar	C Steel	HCP	0,00	HP	Fluidi idraulici (Mandata) Hydraulic fluids (Delivery)	160	80							Tubing
						DR	Dreni Drains	Atm.	65							
						VT	Sfiati Vents	Atm.	65							
AD60YT	OD 3/8"÷1"	400 bar	C Steel	HCP	0,00	HP	Fluidi idraulici (Mandata) Hydraulic fluids (Delivery)	320	80							Tubing
						DR	Dreni Drains	Atm.	65							
						VT	Sfiati Vents	Atm.	65							



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	DN/NPS Range	Rating Class Facing	Pipe Material	Valve Trim Material	Corr. allow. mm	Fluid item	Fluid specification	barg	°C	Toxic	Explos.	Flamm.		Heat. type	Insul. type	
AS01CH	15÷300	150 RF	AISI 316	AISI 316 EPDM	0,00	AK	Acqua concentrata Concentrated water	12	65							
				AISI 316		NA	Soda caustica 30÷50% Sodium hydroxide 30÷50%	12	65							
				AISI 316 EPDM		MW	Acqua filtrata di processo Process filtered water	12	65							With chemicals additives
						PM	Permeato (acqua pura) Permeate (pure water)	12	65							
	15÷40					DR	Dreni Drains	Atm.	65							
						VT	Sfiati Vents	Atm.	65							
AS01PS	15÷300	150 RF	AISI 304	AISI 304/ 316/EPDM/ Viton	0,00	DW	Acqua demineralizzata Demineralized water	10	65							
						KW	Acqua raffr. diretto circ. aperti (mandata) Direct cool. open circuit water (delivery)	15	80							
				AISI 304/ 316/NBR		LOD	Scarico olio Lube oil discharge	6	80							
				AISI 304/ 316/NBR		LO	Olio di lubrificazione (Mandata) Lube oil (Delivery)	9	80							
				AISI 304/ 316/NBR		LOR	Olio di lubrificazione (Ritorno) Lube oil (Return)	6	80							
				AISI 304/ 316/EPDM/ Viton		NS	Acqua neutralizzata Neutralized water	10	65							
						SW	Acqua addolcita Softened water	10	65							
	15÷40					DR	Dreni Drains	Atm.	65							
						VT	Sfiati Vents	Atm.	65							



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	DN/NPS Range	Rating Class Facing	Pipe Material	Valve Trim Material	Corr. allow. mm	Fluid item	Fluid specification	barg	°C	Toxic	Explos.	Flamm.		Heat. type	Insul. type	
AS03PS	15÷300	300 RF	AISI 304	AISI 304 EPDM/Viton	0,00	DW	Acqua demineralizzata Demineralized water	25	65							
						KW	Acqua raffr. diretto circ. aperti (mandata) Direct cool. open circuit water (delivery)	25	65							
						NS	Acqua neutralizzata Neutralized water	25	65							
						QWR	Acqua raffr. indir. circ. chiusi (ritorno) Direct cool. open circuit water (return)	25	65							
						SW	Acqua addolcita Softened water	25	65							
	15÷40					DR	Dreni Drains	Atm.	65							
						VT	Sfiati Vents	Atm.	65							
AS01YM	15÷250	150 RF	AISI 304	HCP	0,00	HD	Fluidi idraulici (Drenaggi) Hydraulic fluids (Drainages)	12,5	80							
						HT	Fluidi idraulici (Ritorno) Hydraulic fluids (Return)	12,5	80							
						HFS	Fluidi idraulici (Ricircolo) Hydraulic fluids (Recycle)	12,5	80							
	15÷40					DR	Dreni Drains	Atm.	65							
						VT	Sfiati Vents	Atm.	65							
AS30YM	15÷100	3000 Lb	AISI 304	HCP	0,00	HP	Fluidi idraulici (Mandata) Hydraulic fluids (Delivery)	160	80							
						DR	Dreni Drains	Atm.	65							
						VT	Sfiati Vents	Atm.	65							



PIPING SYSTEM MATERIAL (PSM)
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02	10/97	Changed DN 15 in 25 on AS60YM; 160in 320 bar
01	06/97	Changed SAE 6000 in 6000 Lb (AS60YM)
Rev	Date	Descrizione - Description

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Piping Class	Line					Fluid		Design conditions		Hazard degree			NDT class N 2.8.114	Line heating		Remarks
	DN/NPS Range	Rating Class Facing	Pipe Material	Valve Trim Material	Corr. allow. mm	Fluid item	Fluid specification	barg	°C	Toxic	Explos.	Flamm.		Heat. type	Insul. type	
AS60YM	25÷100	6000 Lb	AISI 304	HCP	0,00	HP	Fluidi idraulici (Mandata) Hydraulic fluids (Delivery)	320	80							
	25÷40					DR	Dreni Drains	Atm.	65							
						VT	Sfiati Vents	Atm.	65							
AS01YT	OD 3/8"÷1.1/4"	20 bar	AISI 316	HCP	0,00	HD	Fluidi idraulici (Drenaggi) Hydraulic fluids (Drainages)	12,5	80							Tubing
						HT	Fluidi idraulici (Ritorno) Hydraulic fluids (Return)	12,5	80							
						HFS	Fluidi idraulici (Ricircolo) Hydraulic fluids (Recycle)	12,5	80							
						DR	Dreni Drains	Atm.	65							
						VT	Sfiati Vents	Atm.	65							
AS30YT	OD 3/8"÷1.1/4"	210 bar	AISI 316	HCP	0,00	HP	Fluidi idraulici (Mandata) Hydraulic fluids (Delivery)	160	80							Tubing
						DR	Dreni Drains	Atm.	65							
						VT	Sfiati Vents	Atm.	65							
AS60YT	OD 3/8"÷1"	400 bar	AISI 316	HCP	0,00	HP	Fluidi idraulici (Mandata) Hydraulic fluids (Delivery)	320	80							Tubing
						DR	Dreni Drains	Atm.	65							
						VT	Sfiati Vents	Atm.	65							



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2 - CLASSI TUBAZIONI

La presente Norma definisce le specifiche tecniche relative alle Classi tubazioni standard Danieli, come elencate al punto 1.

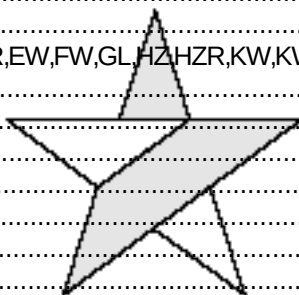
Ogni Classe tubazione è sviluppata in dettaglio nei suoi parametri di linea e nei suoi componenti, con i relativi riferimenti alle Norme aziendali specifiche.

2 - PIPING CLASSES

This Standard defines the technical specifications of Danieli Piping classes, as listed at point 1.

Each Piping class details the line characteristics and components, referred to the specific Danieli standards.

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