

Methodology of Performing Test

Test Type: Positive Material Identification (PMI)

Subject: PMI Methodology for valve testing

Project: Standard Policy

PMI - Positive Material Identification

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1) Introduction

This procedure is developed to ensure that Positive Material Identification (PMI) requirements of the clients and carried out by proper inspection.

This procedure specifies the requirement of Quality Assurance for Identification of materials during the project order processing.

2) Scope

To carry out Positive Material identification, using X-Ray Fluorescent (XRF) Technology. It is to measure the concentration of elements without causing any damage to the component being examined.

Equipment used for PMI is the INNOV-X DELTA DS-2000 SN 500185 or Equivalent.

3) Equipment

The equipment used is INNOV-X DELTA DS-2000 SN 500185 or equivalent for verification of elements composition in various types of materials. The instrument is a fully portable analyzer with an integrated PDA (Personal Digital Assistance) computer, within the INNOV-X DELTA DS-2000 SN 500185 analysis program for display / view spectra and save data.

General Metals Analysis can measure different elements regardless of concentration basing on the testing scheme 1 hit x heat.

Calibrated measurement of customized element ranges.

4) Surface Preparations

The surface shall be free from oil, dirt, paint, scale etc. which can affect the result. Usually, a light grinding or power brush is sufficient in probe seating area if not bare metal.

Suitable for all weather conditions: -15 to +50 degrees centigrade.

5) Testing Procedure

Instrument Calibration

Instrument should have valid calibration certificate. Prior to analysis, the Instrument shall be calibrated to a known standard reference and representative to the alloy type to be tested and confirmed. The standard reference alloy composition is provided by the equipment manufacturer.

A system check is performed once every working day, as part of your normal start-up procedure, after allowing a minute or so for the analyzer to warm up.

6) Measurements

Place probe on the material / sample to be tested and press the trigger keeping the probe on the sample / material during the entire measurement.

The measurement on the test / sample will indicate with the time and the elapsed measurement time on completion of the analyzing of the test item.

The display will indicate the composition on each element in percentage with deviation and also the common alloy detected, i.e. 316/ 304/ etc. Measurements will be stored in the Instrument memory. Stored measurement data can be printed for evaluation and reporting.

7) Traceability

Spot or area tested could be identified by reference pictures or as per applicable specification.

8) Acceptance Criteria

The minimum elements to be tested for each type of alloy shall be as per material reference specification.

S/S Stainless Steel Ni, Cr, Mo, Fe

The element shall meet the requirement of applicable material specification to determine acceptance. If any disposition required, Client's acceptance deemed to be final approval.

9) Reporting

All tests shall be provided according to the last revision of the company standard inspection report format (see point No. 10 below)



10) Reference Documents

a) valveIT - PMI Certificate Sample – Page 1

valveIT®		IDENTIFICAZIONE MATERIALE POSITIVE MATERIAL IDENTIFICATION				Rapporto N°		PMI		001BM-2019					
						DATE	Pag.	Di	OF						
		DATE		25.06.2019		1		1							
Cliente		Progetto		PO 130180865 PRJ 130171200		Costruttore		/							
Ordine		Commessa		1810301		Oggetto		VALVEI							
Disegno						Stadio fabbr.		-							
Tipo di prodotto		AISI				Identificazione		SEE PHOTO							
Condizione superficie		DECAPATA Pickled		Tratt. Termico		-		Apparecchiatura		INNOV-X DELTA DS-2000 SN 500185					
Procedura di controllo		PRC-STC-PMI 001 XRF Rev 1-2011_EN		Tecnica		XRF ANALYZER									
Norma di riferimento		ASTM		Criterio di accettabilità		IDENTIFICAZIONE QUALITATIVA MATERIALE Qualitative material identification									
Tipo Materiale		Gamma Valori - Contenuti in lega, WT%										NOTE			
		VALUES RANGE ALLOY CONTENT, WT %													
AISI 316		Min	0.00	16.0	10.0	0.00	/	/	/	0.00	0.00	0.00			
		Max	1.00	18.0	14.0	2.00	/	/	/	0.75	0.03	0.045			
AISI 304		Min	0.00	18.00	8.00	/	/	0.00	/	0.00	0.00	0.00			
		Max	2.00	20.00	11.00	/	/	1.00	/	1.00	0.03	0.045			
Rintracciabilità		Letture n°	Mn	Cr	Ni	Mo	Fe	Cu	V	Si	S	P	P	NP	Colata
		Traceability	Read Nr										PASS	FAL	HEAT
P2 1 316		2	1.40	16,77	10,83	2,00	67,99	0,51	0,12	0,27	ND	ND	X		17467
P2 3 316		5	1,84	16,63	10,73	2,02	67,56	0,49	0,11	0,63	ND	ND	X		252603
P2 4 316		6	1,77	16,88	11,25	2,06	67,51	0,30	ND	0,23	ND	ND	X		800204
P2 5 316		7	1,48	16,58	9,98	2,01	68,80	0,50	0,08	0,49	ND	ND	X		17463/19
P2 6 316		8	1,45	16,64	9,97	1,98	68,91	0,44	0,10	0,52	ND	ND	X		17248/19
P2 7 316		9	1,78	16,98	10,18	2,08	68,12	0,30	0,10	0,43	ND	ND	X		17406/19
P2 8 304		10	1,95	18,04	8,37	0,69	70,27	0,56	0,10	0,22	ND	ND	X		15332/16
P2 9 316		11	0,50	17,35	9,95	2,02	70,44	0,12	0,14	0,57	ND	ND	X		17417/19
P2 10 316		13	1,86	16,88	10,08	2,02	68,18	0,38	0,09	0,47	ND	ND	X		972273
P2 12 316		15	0,51	16,76	11,56	2,21	65,78	0,29	0,10	0,95	ND	ND	X		17432/19
P2 13 316		16	1,79	16,78	10,23	2,06	68,42	0,36	0,09	0,27	ND	ND	X		873377
P2 16 316		17	1,84	16,67	10,17	1,98	68,37	0,41	0,15	0,28	ND	ND	X		278492
P2 17 316		18	1,40	16,57	10,07	1,97	68,99	0,49	0,10	0,48	ND	ND	X		430024
P2 18 316		20	1,37	18,68	9,98	2,26	66,57	0,11	0,10	0,90	ND	ND	X		1090708
P2 19 316		22	0,37	18,15	10,20	2,48	69,01	0,12	0,15	0,75	ND	ND	X		1188
P2 20 316		23	1,35	18,45	10,28	2,08	68,10	0,42	0,27	0,55	ND	ND	X		180801 L
P2 21 316		24	0,98	17,15	10,35	2,00	69,45	0,35	0,09	0,85	ND	ND	X		C 18-26869
P2 22 316		25	0,87	17,75	11,05	2,05	69,05	0,41	0,10	0,88	ND	ND	X		C 19-09644
Risultato finale:		Conforme/Conforming													
FINAL RESULT															

b) valveIT - PMI Certificate Sample – Page 2

valveIT®		IDENTIFICAZIONE MATERIALE POSITIVE MATERIAL IDENTIFICATION		Rapporto N°	
				REPORT NR.	PMI
		DATE		Pag.	Di
		DATE		SHEET	OF
		25.06.2019		1	1