

ASSE International

Professional Qualifications Standard for **Medical Gas Systems Personnel**

- Medical Gas Systems Generalists
- Medical Gas Systems Installers
- Bulk Medical Gas Systems Installers
- Medical Gas Systems Inspectors
- Medical Gas Systems Verifiers
- Bulk Medical Gas Systems Verifiers
- Medical Gas Systems Maintenance Personnel
- Medical Gas Systems Instructors
- Bulk Medical Gas Systems Instructors

TABLE OF CONTENTS

Professional Qualifications Standards for Medical Gas Systems Personnel

Copyright Information	v	10-2.1	General Knowledge	9
Foreword	vi	10-2.2	Product Performance Knowledge	10
ASSE Professional Qualifications Standards Committee	viii	10-2.3	Product Installation Knowledge	10
Series 6000 Working Group	ix	10-2.4	System and System Component Testing Knowledge	10
Standard #6001	1	10-2.5	Documenting and Recording	11
<i>Listed Standards and Terminology in ASSE/IAPMO/ANSI Series 6000 Professional Qualifications Standard</i>		10-3.1	Terminology	11
1-1.1 Reference and Industry Standards	1	10-3.2	Certification of Medical Gas Systems Installers	11
1-1.2 Terminology	2	10-3.3	Recertification	11
1-1.3 Third-Party Certification Agencies	3	Standard #6015	13	
Standard #6005	5	<i>Bulk Medical Gas Systems Installers</i>		
<i>Medical Gas Systems Generalists</i>		15-1.1	Scope	13
5-1.1 Scope	5	15-1.2	Purpose	13
5-1.2 Purpose	5	15-1.3	Limitations for a Bulk Medical Gas Systems Installer	13
5-1.3 Limitations	5	15-1.4	Reference and Industry Standards	13
5-1.4 Reference and Industry Standards	5	15-2.1	General Knowledge	13
5-2.1 General Knowledge	5	15-2.2	Product Performance Knowledge	14
5-2.2 Product Performance Knowledge	6	15-2.3	Product Installation Knowledge	14
5-2.3 Product Installation Knowledge	6	15-2.4	System and System Component Testing Knowledge	14
5-2.4 System and System Component Testing Knowledge	6	15-2.5	Documenting and Recording	15
5-2.5 Documenting and Recording of Inspections and Tests Knowledge	6	15-3.1	Terminology	15
5-3.1 Terminology	6	15-3.2	Certification of Bulk Medical Gas Systems Installers	15
5-4. 1 Certification of Medical Gas Systems Generalists	6	15-3.3	Recertification	15
5-4. 2 Recertification	7	Standard #6020	17	
Standard #6010	9	<i>Medical Gas Systems Inspectors</i>		
<i>Medical Gas Systems Installers</i>		20-1.1	Scope	17
10-1.1 Scope	9	20-1.2	Purpose	17
10-1.2 Purpose	9	20-1.3	Limitations for a Medical Gas Systems Inspector	17
10-1.3 Limitations for a Medical Gas Systems Installer	9	20-1.4	Reference and Industry Standards	17
10-1.4 Reference and Industry Standards	9	20-2.1	General Knowledge	17
10-2.1 General Knowledge	9	20-2.2	Product Performance Knowledge	17
10-2.2 Product Performance Knowledge	10	20-2.3	Product Installation Knowledge	18
10-2.3 Product Installation Knowledge	10	20-2.4	System and System Component Testing Knowledge	18
10-2.4 System and System Component Testing Knowledge	10	20-2.5	Documenting and Recording of Inspections and Tests Knowledge	18
10-2.5 Documenting and Recording	11			
10-3.1 Terminology	11			
10-3.2 Certification of Medical Gas Systems Installers	11			
10-3.3 Recertification	11			

20-3.1	Terminology	18	40-3.2	Certification of Medical Gas Systems Maintenance Personnel	31
20-4.1	Certification of Medical Gas Inspectors	18	40-3.3	Recertification	31
20-4.2	Recertification	19			
Standard #6030		21	Standard #6050		33
<i>Medical Gas Systems Verifiers</i>			<i>Medical Gas Systems Instructors</i>		
30-1.1	Scope	21	50-1.1	Scope	33
30-1.2	Purpose	21	50-1.2	Purpose	33
30-1.3	Limitations for a Medical Gas Systems Verifier	21	50-1.3	Limitations for a Medical Gas Systems Instructor	33
30-1.4	Reference Standards	21	50-1.4	Reference and Industry Standards	33
30-2.1	General Knowledge	21	50-2.1	General Knowledge	33
30-2.2	Product Performance Knowledge	22	50-2.2	Product Performance Knowledge	34
30-2.3	Product Installation Knowledge	22	50-2.3	Product Installation Knowledge	34
30-2.4	System and System Component Testing Knowledge	22	50-2.4	System and System Component Testing Knowledge	34
30-2.5	Documenting and Recording of Inspections and Tests	22	50-2.5	Documenting and Recording	35
30-3.1	Terminology	23	50-3.1	Terminology	35
30-3.2	Certification of Medical Gas Systems Verifiers	23	50-3.2	Certification of Medical Gas Systems Instructors	35
30-3.3	Recertification	23	50-3.3	Recertification	35
Standard #6035		25	Standard #6055		37
<i>Bulk Medical Gas Systems Verifiers</i>			<i>Bulk Medical Gas Systems Instructor</i>		
35-1.1	Scope	25	55-1.1	Scope	37
35-1.2	Purpose	25	55-1.2	Purpose	37
35-1.3	Limitations for a Bulk Medical Gas Systems Verifier	25	55-1.3	Limitations for a Medical Gas Systems Instructor	37
35-1.4	Reference Standards	25	55-1.4	Limitations for a Bulk Medical Gas Systems Instructor	37
35-2.1	General Knowledge	25	55-2.1	General Knowledge	37
35-2.2	Product Performance Knowledge	26	55-2.2	Product Installation Knowledge	37
35-2.3	Product Installation Knowledge	26	55-3.1	Certification of Bulk Medical Gas Systems Instructors	38
35-2.4	System and System Component Testing Knowledge	26	55-3.2	Recertification	38
35-2.5	Documenting and Recording of Inspections and Tests	27			
35-3.1	Terminology	28	Annex A		39
35-3.2	Certification of Bulk Medical Gas Systems Verifiers	28	<i>Field Installation Procedures for Medical Gas Systems by Installers Qualified Under ASSE Standard 6010</i>		
35-3.3	Recertification	28	A.1	Preparation	39
Standard #6040		29	A.2	Equipment	39
<i>Medical Gas Systems Maintenance Personnel</i>			A.3	Materials	39
40-1.1	Scope	29	A.4	Supports and Penetrations	40
40-1.2	Purpose	29	A.5	Work Area	40
40-1.3	Limitations for the Medical Gas Systems Maintenance Personnel	29	A.6	Cutting and Deburring	40
40-1.4	Reference Standards	29	A.7	Assembly for Brazing	41
40-2.1	General Knowledge	29	A.8	Continuous Purge for Brazing	41
40-2.2	Product Performance Knowledge	30	A.9	Brazing of Medical Gas and Vacuum Systems	41
40-2.3	Product Maintenance Knowledge	30	A.10	Visual Examination of Brazed Joints	42
40-2.4	System and System Component Testing Knowledge	30	A.11	Welding of Medical Gas and Vacuum Piping Systems	42
40-2.5	Documenting and Recording	31	A.12	Special Fittings	42
40-3.1	Terminology	31	A.13	Tests by the Installer	43
			A.14	Initial Blow-down	43
			A.15	Initial Pressure Tests	43

A.16	Cross-Connection Test (Initial)	44	D.5	Test Procedures	62
A.17	Initial Piping Purge Test	44	D.6	Labeling	64
A.18	Standing Pressure/Vacuum Tests	44	D.7	Base Performance	64
A.19	Category 1 Piped Medical Gas and Vacuum Systems	45	D.8	Tools	64
A.20	Category 2 Piped Medical Gas and Vacuum Systems	45	D.9	Spare Parts List	64
A.21	Category 3 Piped Medical Gas and Vacuum Systems	45			
Annex B			Annex E		
<i>Performance Requirements for Medical Gas Systems Inspectors Qualified Under ASSE Standard 6020</i>			<i>Training Outlines</i>		
B.1	Administration	46	<i>Medical Gas Systems Training Outline for Instructors to Become Qualified Under ASSE Standard 6050</i>		
B.2	Documents and Recording of Inspections and Tests	46	E.1	Forty (40) Hour Medical Gas Systems Instructors Training Outline	67
Annex C			<i>Medical Gas Systems Instructors Training Outline for 6050 Instructors to Become Qualified to Instruct ASSE 6035 Candidates</i>		
<i>Field Verification / Testing Procedures for Medical Gas Systems by Verifiers Qualified under ASSE Standard 6030</i>			E.2	Training Outline for Instructors of Bulk Medical Gas Systems Verifiers	69
C.1	Preparation	48	<i>Bulk Medical Gas Systems Verifiers Training Outline for ASSE 6030 Verifiers to Become Qualified Under ASSE Standard 6035</i>		
C.2	Test Equipment	48	E.3	Bulk Medical Gas Systems Verifiers Training Outline	72
C.3	General Requirements for Verification Tests	49	Annex F		
C.4	Verification of Standing Pressure Test for Positive Pressure Gases	50	<i>Medical Air Compressor Inspection Check List</i>		
C.5	Verification of Standing Vacuum Test for Vacuum Systems	50	F.1	Medical Air Compressor Inspection Check List	75
C.6	Verification Tests for Cross-Connections	50	Annex G		
C.7	Verification of Shut-off Valves	51	<i>Vacuum Pump Inspection Check List</i>		
C.8	Verification of Master, Area and Local Alarms	51	G.1	Vacuum Pump Inspection Check List	77
C.9	Verification of Pressure/Vacuum Alarms	52	Annex H		
C.10	Piping Purge	52	<i>Manifold Inspection Check List</i>		
C.11	Piping Particulate Verification	53	H.1	Manifold Inspection Check List	79
C.12	Verification of Piping Purity	53	Annex I		
C.13	Verification of Final Tie-ins to Existing Systems	54	<i>Bulk Medical Gas Supply Inspection Check List</i>		
C.14	Verification of System Operational Pressure and Vacuum	54	I.1	Bulk Medical Gas Supply Inspection Check List	81
Table 1	Required Concentrations of Medical Gases	55	Annex J		
C.15	Verification of Medical Gas Concentration	55	<i>Recommended Guidelines for Conducting Planned Medical Gas Systems Shutdown and Temporary Backfeed</i>		
C.16	Verification of Medical Air Compressor Source Systems	56	J.1	Scope	83
C.17	Labeling of System Components	56	J.2	Before Shutdown Date	83
C.18	Verification of Medical Compressed Air Purity	57	J.3	During Shutdown and System Backfeeding	84
C.19	Verification of Medical Gas Manifold Sources	57	J.4	After Shutdown and Backfeed	85
C.20	Verification of Bulk Medical Gas Supply Systems	58	J.5	Recommended Equipment List	85
C.21	Verification of Medical Vacuum Source Equipment	59	J.6	Suggested Shutdown Notification Form	86
Annex D			Annex K		
<i>Maintenance Procedures for Personnel Qualified Under ASSE Standard 6040</i>			<i>Organizations Responsible for the Reference and Industry Standards Listed in ASSE Standard 6001</i>		
D.1	Scope	61			
D.2	Background	61			
D.3	Minimum Maintenance Schedule	61			
D.4	General Work Requirements	62			

Annex L 88
Sample Shutdown Notification Form

Annex M 90
Sample Installer Performance Testing Record Form

Annex N 94
Guidelines for Third Party Certification Agencies

COPYRIGHT INFORMATION

Professional Qualifications Standards for Medical Gas Systems Personnel

Neither this standard, nor any portion thereof, may be reproduced without the written consent of ASSE International.

Organizations wishing to adopt or list any ASSE standard should print the ASSE standard number on the cover page first and in equal or larger type to that of the adopting or listing organization.

ASSE International
Mokena, Illinois
Copyright © 2015, 2012, 2006, 2004, 2001, 1997
All rights reserved.