



Medical Gas Piping and System Installer

Certification Guide



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Introduction

Purpose of this Guidebook

This guidebook provides information on the requirements to achieve and renew a Medical Gas Piping and Systems Installer personnel certification.

This personnel certification guide is provided for informational purposes only. The most current version of this manual, as published on the CSA Group's website, shall prevail in any case a discrepancy occurs between this version and the official released version of this guide.

About CSA Group

CSA Group is an independent, not-for-profit member-based association dedicated to advancing safety, sustainability and social good. We are an accredited standards development organization.

As technologies continue to grow and evolve, and as the labor force grows more mobile, so has the need for a method to consistently assess, certify and measure individual worker knowledge. In response to this growing need, CSA Group develops and manages personnel certification programs to the requirements of ANSI/ISO/IEC 17024:2012 General Requirements for Bodies Operating Certification Systems of Persons. Current operating programs include CNG (Compressed Natural Gas) Cylinder and Fuel System Inspector, P.I.P.E.S. Riggers, Medical Gas Piping and Systems Installer, Construction Electrician (NOC 7241) Solar Photovoltaic (PV) Systems Installation, and Certified Medical Device Reprocessing Technicians.

Certification Contact Information

CSA Group

Phone: (877) 235-9791

Email: training@csagroup.org www.csagroup.org

About this Certification

The Medical Gas Piping and Systems Installer occupational certification program has been developed by CSA Group in conjunction with industry stakeholders to provide assurance that an individual possesses the competencies deemed necessary to perform the job function of a Medical Gas Piping and Systems Installer.

Passing the Medical Gas Piping and System Installer examination will indicate that the candidate possesses the minimum performance criteria including all relevant knowledge, skills and abilities of personnel installing and maintaining medical gas piping and systems in hospitals and healthcare facilities projects. Certified Medical Gas Piping and Systems Installers will be periodically re-assessed to ensure they remain up-to-date on technical developments and industry changes.

The CSA Group website will contain a registry of Certified Medical Gas Piping and System Installers.

Qualifications of a Certified Medical Gas Piping and System Installer

The Medical Gas Piping and Systems Installer certification tests each candidate's knowledge to ensure the candidate possesses the knowledge and skills of the Medical Gas Piping and Systems Installer known as the minimally qualified candidate (MQC). CSA Group's expert committee defines the minimally qualified candidate as follows:

The Medical Gas Piping and Systems Installer understands the brazing and purging procedures, can perform medical gas procedures safely, have a working knowledge of the relevant regulatory codes and recognize if the plan is compliant with the codes. The installer can communicate effectively with the plant representatives to plan service interruptions; has a basic knowledge of how source systems function (vacuum pumps, sources of supply); can follow QA/QC procedures; performs cross connection and pressure testing and understands the importance of testing; can properly identify piping; and understands the third party medical gas inspection process.

The qualified candidate can perform medical gas piping and system Installer activities without assistance, including (but not limited to):

- Project planning/layout and routing / design intent – Verify the plan that is laid out as being appropriate and meeting code requirements.
- Determine Facility requirements
- Valve requirements and location
- Customer communications
- Communications with other trades/ job coordination
- Read, interpret drawings and specs
- Identification and selection of materials (correctness of all components)
- Documentation (CRNS for the materials)
- Meet all regulatory requirements, codes, rules that govern this activity
- Materials Storage and handling
- Gas sources storage and handling
- Cleaning (Pre, ojt, post)
- Fit up / Joining
- Brazing
- Identification
- Alarms
- Purging procedures
- Protection of piping (capping lines to protect from contamination)
- Quality control
- Testing
- Commissioning
- Document
- Troubleshoot
- Maintain / shutdown / alterations / backfeeding
- Knowledge of job hazards
- As built
- PR

Certification Prerequisites

To apply to take the Medical Gas Piping and Systems Installer exam for certification, candidates must satisfy the following prerequisites and submit documentation:

1. Certificate of Qualification (C of Q) Plumber or Steamfitter/Pipefitter; AND
2. Documented completion of a recognized medical gas training program that includes:
 - a. 32 hours classroom training, and
 - b. 4-hour practical/hands-on training (brazing / purging procedures); AND
3. Valid provincial brazing test (acceptable to the AHJ in province of residence).

Training Resources

Medical Gas Piping and Systems Installer courses are available through a number of community colleges throughout Canada. Courses are also available through professional associations such as National Association of Union Schools & Colleges and may be available through private colleges or other training providers.

For a list of training resources, please visit CSA Group's website at: www.csagroup.org. CSA Group does not endorse any organization and provides this list as a resource for individuals seeking additional information.

Certification Process

Application Process

To become a Certified Medical Gas Piping and Systems Installer an applicant must:

1. Submit all applicable fees through our website shop.csa.ca
2. Complete the online application
3. Meet all prerequisites of the certification
4. Provide copies of applicable documentation
5. Pass the CSA Medical Gas Piping and Systems Installer written exam

All fees are due prior to submitting the application

An e-mail address is mandatory and must be included as this will be the primary mode of communication regarding the steps in the certification process. Each candidate applying for certification must have their own unique, individual email address. One email address may not be used for multiple candidates.

CSA Group will process applications when received. If an application is incomplete, CSA Group will notify the applicant via e-mail of the deficiencies found in the application. Those deficiencies must be corrected before the candidate will be approved to take the certification exam.

All applicants will receive a confirmation e-mail with-in two (2) weeks of application regarding their registration and certification eligibility requirements.

Each new application has a life span of six (6) months from the time it is accepted. The applicant must fulfill all requirements of the certification process within that time period. If an applicant is unable to complete the certification process within that period of time, the application will expire and the applicant must restart the certification process including payment of any application or examination fees.

Program Fees

Program fees for the Medical Gas Piping and Systems Installer Certification, including application, examination, and re-examination fees, may be found on the CSA Group Store. Please visit store.csagroup.org for more information.

Payment and Refund Policy

Purchase of the certification and exam fees may be done online at store.csagroup.org. CSA Group accepts Visa, MasterCard and American Express as payment in US or Canadian dollars.

When the payment has been received, candidates will receive an email from training@csagroup.org with a log in and password to CSA's eLearning system to complete the online application. Once the application is submitted, CSA will review the application and notification will be sent to the candidate by email regarding the next step. This email may:

- Request additional information if necessary, or
- Notify the candidate the application has been selected for audit (if selected), or
- Notice of approval to exam, and information for scheduling the exam.

Exam fees may be refunded if a written request is submitted at least one month prior to a scheduled exam date and at least one month prior to the examination eligibility expiration date. CSA Group will retain a processing fee of \$95 US or Canadian Funds.

Audit Process

The submission of an application indicates the applicant's agreement to comply with the terms of CSA Group's audit process. All applications are subject to an audit and applications are randomly selected for audit. Please note that while the selection process for an audit is primarily random, CSA Group reserves the right to select any applicant to be audited at any time, including after the credential has been awarded. If the applicant fails to meet the audit requirements after attaining the credential, the applicant is not entitled to a refund.

If selected, an audit notification will be sent to the applicant electronically and will provide detailed information on how to comply with the terms of the audit. During an audit, the applicant may be asked to submit supporting documentation required by the certification, such request may include, but is not limited to, the following:

- Copies of diploma or a global equivalent;
- Employment verification letter from employer(s);
- Signatures from supervisor(s) or manager(s) for the skills, experience and/or responsibilities, if required, documented in the experience section of the application and on the performance checklist;
- Copies of certificates and/or letters from the training institution(s) for mandatory course;
- Copies of certificates and/or letters to demonstrate the required amount of professional development; and
- Other items required by the certification.

Once documentation is provided, the audit should take approximately two weeks to complete. The applicant may not continue with the certification process until the applicant has complied with the audit requirements.

Once the applicant has successfully completed the audit, the applicant will be permitted to continue the certification process and will be notified of his/her examination eligibility. If the applicant fails to meet the eligibility requirements, a refund may be given, dependent upon the stage of the certification process at the time of the audit. (Refer to the Payment and Refund Policy section of this guidebook for more details).

Examination Administration and Scheduling

The Medical Gas Piping and Systems Installer certification is administered through CSA Group's computer based testing network. Once a candidate has submitted all the required information and has been approved to take the certification exam, CSA Group will send the candidate approval to exam and scheduling information by email. Once the candidate receives their email notifications they will be able to register for the exam:

Testing may be scheduled for examination:

- At a proctored testing location (locations are typically a short drive for most candidates), or
- Via online proctoring, using the candidates own computer at home, work, or any location that meets the online requirements*.

Applicants should save all examination scheduling verifications for their records.

CSA Group uses computer-based testing (CBT) to deliver its certification examinations. However, in certain situations, paper-based tests may be offered following specific industry events or following selected training courses when an eligible exam proctor is available. Please contact CSA Group for paper-based test delivery. CSA Group reserves the right to cancel a scheduled paper-based test in the event that there are fewer than 10 candidates registered.

**Please contact CSA Group for a guide on computer and location requirements for online exam proctoring.*

Examination Eligibility

The examination eligibility period is six (6) months from the time an application is approved. Applicants may take the examination up to three times within the six-month period if they do not pass on the first attempt. (As noted below, re-examination fees apply to the second and third attempts to pass the examination.)

Re-examination

During the examination eligibility period, an applicant may take the examination up to three times.

Re-examination fees apply to the second and third attempts to pass the examination, and re-examination fees must be paid in full in order to schedule an exam. If the eligibility period expires without achieving a passing score, the applicant must reapply for the certification.

Examination Language

The CSA Group certification examination for Medical Gas Piping and Systems Installer is administered in English and French.

Examination Special Accommodation

CSA Group adheres to the principles of accessibility and will accommodate any special needs upon request.

Certificate Issuance

Upon confirmation of application requirements and passing the certification exam, each Medical Gas Piping Systems Installer will be issued a certificate indicating the valid Certification Period.

The certificate is owned by CSA Group and may not be reproduced or modified in any way. Verification of certification should be done using the qualified personnel listing at <https://www.csagroup.org/search-qualified-personnel/>.

Replacement of Certificates

CSA Group may issue a replacement certificate if a Medical Gas Piping and Systems Installer certificate has been lost or destroyed or if the Medical Gas Piping and Systems Installer's name has changed. If the original certificate is no longer valid it must be returned to CSA Group.

Certification Period

CSA Groups' Certified Medical Gas Piping and Systems Installer certification is valid for a period of 5 years from the date of issue.

Use and Requirements for Use of Certificates and Logos

Once an individual receives his/her certification letter and certificate the individual may represent themselves as a Certified Medical Gas Piping and Systems Installer under CSA Group's Certified Medical Gas Piping and Systems Installer Personnel Certification Program.

Certification under this program does not authorize the certified individual any rights to the use of CSA Group's name or logo. All requests for use of the name or logo must be made in writing and expressly authorized in writing by CSA Group. As part of the program monitoring, CSA Group routinely reviews advertisements, catalogs, websites and promotional material to confirm compliance. Unauthorized use of the CSA Group name or logo constitutes cause to initiate procedures for withdrawal of certification and in severe cases may constitute grounds for legal action.

Certification Terms and Conditions

By signing and submitting the electronic application candidates are agreeing to the following terms and conditions:

1. I agree to comply with the provisions of this certification as described in **PCP-07 Medical Gas Piping and Systems Installer Personnel Certification Guide**, to only make claims regarding my certification with respect to the scope for which the certification has been granted, and not to use the certificate in a misleading manner.
2. I agree to notify CSA Group in a timely manner of changes concerning the information I have provided, including my current address, telephone number, and e-mail.
3. I have reported, and will continue to report, to CSA Group, within sixty (60) days of occurrence, any matters, proceedings, lawsuits, settlements and/or other agreements, administrative agency actions, or organizational actions relating to my profession or occupation, including all complaints relating to my professional activities, and matters or proceedings involving, but not limited to certification, credentialing, malpractice, disciplinary ethics or similar matters. I also agree to promptly report, within sixty (60) days of occurrence, any felony criminal charges, convictions, or plea agreements or other criminal charges, convictions, or plea agreements relating to acts of dishonesty or unethical conduct.
4. I agree that CSA Group has the right to communicate with any person, government agency or organization to review or confirm the information in this application or any other information related to my application for CSA Group certification. Further, I agree to and authorize the release of any information requested by CSA Group for such review and confirmation.

5. I understand that the CSA Group credential status does not imply licensure, registration or government authorization to practice any specific job function or to engage in related activities
6. I agree that all materials submitted to CSA Group become the property of CSA Group, and that CSA Group is not required to return any of these materials to me.
7. I agree that upon achieving the CSA Group credential, my name may be posted on the CSA Group website as part of an Online Registry to be created and maintained by CSA Group.
8. I agree that all disputes relating in any way to my application for a CSA Group certification and/or my involvement generally in a CSA Group certification program, will be resolved solely and exclusively by means of CSA Group policies, procedures and rules, including the stated appeals process.
9. CSA Group reserves the right to suspend or revoke my credential if it is determined I have failed to uphold, or otherwise breached this Agreement, or committed a violation of the CSA Group Code of Ethics and Professional conduct.
10. I agree to refrain from use or promotion of this certification should my certification be suspended, until notified of the suspension being resolved.
11. I agree to refrain from all use and promotion of this certification should this certification be withdrawn.
12. I release and indemnify CSA Group from all liability and claims that may arise out of, or be related to, my certification and related activities. This certification agreement may be revised periodically. I understand that it is my responsibility to obtain the most current copy of this certification agreement in the certification guide online at store.csagroup.org

Professional Code of Ethics

This code of ethics sets forth the expectation that credential holders will commit to conducting themselves in a professional, honest and impartial manner.

This code of ethics applies to all CSA Group Personnel Certification credential holders regardless of the certification designation, and includes the following professional conduct:

- Provide equitable, honest and impartial treatment of customers;
- Provide customers with accurate, objective, timely and understandable information
- Perform all services in a safe and professional manner;
- Stay informed of and comply with all relevant laws, codes, regulations, standards and industry practices;
- Protect proprietary and confidential information gained during the course of work; and
- Promote positive activities which raise the level of professionalism of the industry.

By signing and submitting the electronic application candidates agree to conduct themselves in a professional and thorough manner as a CSA Group Personnel Certification holder. Furthermore, they agree to the Certification Agreement terms and conditions, including adherence to the Code of Ethics and Professional Conduct.

Non-Discrimination

Participation in CSA Groups' personnel certification programs are open on a non-discriminatory basis to all individuals and does not require membership in any association.

Impartiality

CSA Group and our employees, contractors and volunteers understand the importance of impartiality and the consideration of any potential conflict of interests in carrying out certification activities. CSA Group is committed to identifying and mitigating risks in every area of the certification process which may pose a threat to impartiality. Certification of individuals is based on objective evidence obtained by CSA Group through a fair, valid and reliable assessment process which is not influenced by other interests or parties.

Confidentiality

CSA Group is committed to protecting confidential and/or proprietary information related to applicants, candidates, certificates and examination development, maintenance, and administration process.

All information submitted and/or retained by CSA Group regarding each individual's program application, private information and communications, examination results and certification information are confidential and may not be disclosed, divulged or made accessible. Examination results will only be released to the candidate.

Information related to the design, development, administration and maintenance of the certification examination is confidential with confidential materials including, but not limited to, all examination development documentation, standard setting documentation, exam performance documents, individual examination items and exam forms, as well as examination scores and score reporting.

CSA Group maintains confidential information received from the individual and will not disclose such information to any third party without prior written approval by the individual, or as required by law. CSA Group will provide written notification to the individual at least five (5) business days prior to releasing such information.

Privacy Policy

CSA Group and its subsidiaries and affiliates (collectively CSA Group) are committed to respecting your privacy. Our Privacy Policy describes how we collect, use, disclose, store and otherwise process information through our website and its affiliated websites and other online products and services. In addition, this Policy states how you can control the collection, correction and/or deletion of information. We will not use or share your information with anyone except as described in this Privacy Policy.

We urge you to read our Privacy Policy so that you understand our commitment to you and your privacy, and how you can participate in that commitment by visiting <https://www.csagroup.org/legal/privacy-policy/>.

By providing your personal information to CSA Group in the ways described in this Privacy Policy, you agree that you are authorized to provide that information and are accepting this Privacy Policy and any supplementary privacy statement that may be relevant to you. You have the right at any point to revoke consent and CSA Group will stop using and processing your personal data. If you do not agree to our practices, please do not register, subscribe, create an account, or otherwise interact with our services, CSA Group's websites, or mobile-device applications.

Recertification

Medical Gas Piping and Systems Installer certificates expire every (5) five years. Generally, CSA Group will issue a recertification notice 6 months prior to the date when the certificate expires, but it is the responsibility of the applicant to ensure timely recertification. Certified Medical Gas Piping and Systems Installers who apply for recertification, meet the requirements, and pay the required fee will receive a new certificate containing the new expiry date upon successful completion.

Medical Gas Piping and Systems Installers may apply for recertification up to 6 months prior to their certificate expiration date and no later than 3 months after expiration. Medical Gas Piping and Systems Installers applying for certification more than 3 months after expiration of their certification must fulfill all requirements of the initial certification process.

Recertification Requirements

A Medical Gas Piping and Systems Installer may recertify by successfully completing the Medical Gas Piping and Systems Installer re-certification requirements:

1. Provide evidence of 2000 hours in the preceding 3 years of continuous satisfactory work activity in the piping trade during the certification period, signed off by a Supervisor; AND
2. Provide documentation of valid provincial brazing test within the preceding 2 years; AND
3. Successfully complete the CSA Group written examination.

Refusal to Issue or Renew a Certified Medical Gas Piping and Systems Installer Certification

CSA Group may refuse to issue or renew a Medical Gas Piping and Systems Installer certification:

- For any of the circumstances under which CSA Group can revoke or suspend a certification; or
- The certification to be renewed was revoked or suspended by CSA Group.

Revocation or Suspension of a Certified Medical Gas Piping and Systems Installer Certification

CSA Group reserves the right to withdraw the certification of any person found violating the Certification Terms and Conditions, Professional Code of Conduct or the policies and procedures of the certification.

CSA Group may revoke or suspend a Medical Gas Piping and Systems Installer certification for any of the following reasons including but not limited to:

- Violation of the Certification Terms and Conditions or Professional Code of Ethics;
- The application submitted was fraudulent or inaccurate;
- The person was discharged from his/her employment for incompetence, unless the person has not yet exhausted the rights of appeal available in his/her organization;
- The person has previously had a Certified Medical Gas Piping and Systems Installer Certification revoked; or
- The person has failed:
 - To exercise the level of care, diligence and skill that a reasonably prudent installer would be expected to exercise in a similar situation;
 - To act honestly, competently and with integrity; or
 - To meet or has contravened any condition that is set out in his or her certificate.

Upon a notice of termination of a Medical Gas Piping and Systems Installer certification, the individual will cease all use of or reference to the CSA Group certification and the Medical Gas Piping and Systems Installer designation. Individuals have the right to appeal as outlined in the appeals process below. The individual will be removed from the Qualified Personnel Listing on the CSA Group website.

Voluntary Withdrawal of Certification

Individuals wishing withdrawal from the Medical Gas Piping and Systems Installer Certification must submit a request in writing to CSA Group. Once approved, the individual will be removed from the Qualified Personnel Listing and must immediately cease any use of or reference to the CSA Group certification. Individuals wishing to reinstate their certification must apply for certification as outlined in the certification process.

Complaints and Disputes

CSA Group is committed to the value certification programs offers to industry, and the credibility that certification offers to individuals in their chosen field. It is the policy of CSA Group that all certification programs are of quality and that all applicants, certified persons, employers, and stakeholders, have a fair and impartial forum to bring forward complaints concerning the certification process, or to the conduct of individuals who are certified under this program.

CSA Group's policy is to provide a fair and impartial forum for complaints associated with the CSA Group Certification programs and the individuals certified under the programs. Anyone wishing to appeal a decision affecting their certified status, or having a complaint as to the performance of a certified person or candidate may file a complaint within thirty (30) calendar days of the occurrence which the complaint is about.

Information regarding the complaint process is available to the public on the CSA Group website and/or other published documents.

Actions taken under this policy do not constitute enforcement of the law, although referral to appropriate federal, state, or local government agencies may be made about the conduct of the certified person as warranted by the individual situation. Individuals bringing complaints are not entitled to any relief for damages by virtue of this process.

Complaints are to be submitted in writing and signed to the Manager, Product Development at CSA Group and include the full name, postal mailing address, and telephone number of the appellant/complainant and specifying the conditions and circumstances of the appeal/complaint, along with documentation supporting the complaint. All complaints will be reviewed by CSA Group within 30 days of receipt to determine merit. Written notice will be provided to the candidate/certified person if CSA Group determines the complaint is valid so they have opportunity to respond to the complaint.

Complaints under review by CSA Group will be completed in an appropriate amount of time, not to exceed 6 months, unless there are extenuating circumstances that require an extended period of time. The Manager, Product Development exercises general supervision over all inquiries. The Manager, Product Development and personnel certification staff may be assisted in the conduct of its review by other CSA Group staff or legal counsel. Both the individual submitting the complaint and the candidate/certificant who is the subject of the investigation (or his or her employer) may be contacted for additional information with respect to the complaint. CSA Group may at its discretion contact such other individuals who may have knowledge of the facts and circumstances surrounding the complaint.

All review inquiries and investigations are conducted in confidence and objectively, without any indication of prejudice. An investigation may be directed toward any aspect of a complaint which is relevant or potentially relevant. Formal hearings are not held and the parties are not expected to be represented by counsel, although CSA Group may consult its own counsel.

Outcome of the complaint review may be a determination by CSA Group:

- For dismissal of the complaint;
- That a violation has occurred and provide the candidate/certificant with an opportunity to correct the violation and provide written assurance that issues will not continue or recur;

- That a violation has occurred with suspension of the certification for a designated period of time, or suspension of a candidate's eligibility for a designated period of time;
- That a violation has occurred and termination or revocation of a certification; or
- That a violation has occurred and termination of a candidate's eligibility for a designated period.

For outcomes that include suspension or termination publication of the information will only occur after any appeal and decision has been completed, or an appeal period has passed.

Certificants who have their certification terminated are not to be considered for certification in the future. If certification is revoked, any and all certificates or other materials requested by the CSA Group must be returned promptly the Manager, Product Development.

If the individual disputes the decision made by CSA Group after the appeal meeting, the individual has the right to appeal to an independent and impartial Appeals Board as outlined below.

Appeals

CSA Group's certification programs are administered and supervised by Canadian Standards Association. Challenges to the certification program are governed by CSA Groups' Complaints and Disputes and Appeals Procedures outlined in this certification guide.

Any individual has the right to appeal all decisions relating to CSA Group's personnel certification program including, but not limited to: testing, suspension, denial or termination of certification within 30 days of the date of the result or notice. A written notice of intent to appeal must be sent to CSA Group within thirty (30) business days of the individual's receipt of the decision, which forms the basis for appeal.

Upon receipt of a written request by the individual to appeal, CSA Group shall convene an Appeals Board and notify the individual and responding parties. CSA Group will arrange an appeal meeting with the individual at CSA Group's headquarters or other mutually agreed to location, within forty-five (45) business days of the receipt of the written request, with the appeal decision complete and final decision notice given to the appellant within ninety (90) days of the receipt of the written request.

The individual and the Appeals Board will attend and participate in the meeting. The appeal will not include a hearing or any similar trial-type proceeding. Legal counsel is not expected to participate in the appeal process, unless requested by the appellant at least five (5) business days prior to the meeting and approved by the Appeal Board. CSA Group and the Appeal Committee may consult legal counsel. When the individual has had a full opportunity to submit their case, the Appeals Board may declare the hearing closed and provide the individual and CSA Group with a decision, including a brief description of its reasons, within ten (10) business days. Decisions of the Appeals Board are by majority vote.

The decision of the Appeals Board either affirms or overrules the determination of the CSA Group Reviewer(s). The Appeal Committee decision is binding upon CSA Group, the candidate/certificant who is subject to the decision, and all other persons involved in the complaint. The Appeals Board will provide notice to the appellant at the end of the appeals-handling process.

Appeals Board

The Appeals Board will consist of at least three (3), but not more than five (5) members. No current member of the Review committee, or individual or agent or any person with any interest in the individual, directly or indirectly, is eligible to serve on the Appeals Board.

The Appeals Board hearing will be informal and private. The Appeals Board may only review whether the determination by the CSA Group Reviewer(s) was inappropriate due to material errors of fact, or failure of the Reviewer(s) to conform to published criteria, policies or procedures. Only evidence of fact and conditions up to and including the time of the Reviewer's determination are considered during an appeal. The appellant will be given a full opportunity to present any material or proof relevant to the

issue. Formal rules of evidence are not applicable. The Appeals Board determines the relevance and materiality of any evidence presented.

All costs related to the Appeals Board are the responsibility of the individual and are due within thirty (30) business days of the billing, unless the Appeals Board sides with the individual's position, in which case CSA Group will be responsible for the costs.

Examination Preparation and Completion

General Description

The Medical Gas Piping and Systems Installer Certification exam consists of approximately 80 multiple-choice questions. Examination questions have only one correct answer. Each exam question is independent and does not rely on the correct answer to any other questions.

CSA Group may include an additional 10 questions in the exam for statistical evaluation of future examination questions. These additional questions are not included as part of the examination score. These questions will not be identified in the exam, so it is important that the candidate answer every question completely. The candidate's grade is based only on the number of scored items answered correctly, not the additional questions.

The candidate will have two hours (120 minutes) to complete the exam. Reference materials are not permitted in the examination room. The CSA Z7396 standard will be available for reference during the exam and will be viewable on-screen through the testing system.

Exam Content

The exam is based on categories of tasks and knowledge required by a Medical Gas Piping and Systems Installer. The table below outlines the examination content by category for the Medical Gas Piping and Systems Installer Certification.

Categories

- Alarms
- Distribution and Termination
- Materials
- General
- Source of Supply System
- Testing

Pass-Fail Standard

CSA Group's Medical Gas Piping and Systems Installer certification examination passing standard is established utilizing standard psychometric guidelines and is determined using a criterion-reference technique that evaluates a candidate based on a predetermined standard of knowledge or skill. This predetermined standard is defined as the minimum score that would be expected from candidates who have the level of knowledge and skills needed to competently conduct their work responsibilities.

Exam Delivery

The Medical Gas Piping and Systems Installer certification exam will be delivered electronically at our computer-based testing center locations on demand, or through remote on-line proctoring using your own computer.

Examination General Instructions

During the exam, the proctor will be responsible for supervising the exam in such a way as to ensure that exam security is maintained. As such, all candidates are expected to adhere to the following guidelines during the test sessions.

A candidate's participation in any irregularities occurring during the examination, such as giving or obtaining unauthorized information or aid, as evidenced by an observation or subsequent statistical analysis, may be sufficient cause to terminate participation, invalidate the results of the examination, or other appropriate remedy.

To be admitted to the examination the candidate must:

- Bring a copy of the confirmation email with the **Test Authorization Code**.
- The candidate will NOT be admitted without proper identification. If there are any questions concerning the type of picture ID, the candidate should contact CSA Group. Bring **two (2)** current forms of **non-expired photo** identification with **signature** from the following list that exactly match the first and last names on the certification application:
 - Driver's license
 - State/federal government ID card
 - Passport
 - Employee ID card
 - Military ID card
 - Student ID card
- Report on time.

During the Exam:

- Smoking is NOT permitted in the examination site.
- Food and beverages are NOT allowed in the examination area.
- All personal items including books, notebooks, papers, all electronic equipment (i.e. cell phones, cameras, etc.), book bags, coats, and other prohibited items listed below, will NOT be allowed in the exam room and must be left outside of the exam room **AT YOUR OWN RISK**.
- Friends and relatives, including children, will NOT be allowed in the examination building.
- Computer-based testing facilities offer exam services to multiple agencies. There may be other individuals in the testing room with the candidate who are sitting for exams from different organizations. The rules for their exam may be slightly different than the rules for the CSA candidate's exam in terms of exam time, and what is and is not allowed at their station.
- Computer-based tests are delivered via secure Internet connections. Internet connections are subject to the local Internet providers in the area. While it is not the norm, Internet connections

can, on occasion, be lost momentarily, requiring the proctor to log the candidate back into his/her examination. If this occurs, the candidate should inform the proctor that the connection has been lost and the proctor will assist the candidate in logging back into the exam. The exam time remaining will be exactly the same as it was when the Internet connection was lost.

Prohibited Items:

Candidates are expressly prohibited from bringing the following items into the exam room:

- Cameras, cell phones, optical readers, or other electronic devices that include the ability to photograph, photocopy or otherwise copy test materials
- Notes, books, dictionaries or language dictionaries
- Book bags, purses or any type of luggage
- Smart watches or other wearable devices with internet access
- Mobile devices such as phones and tablets, ipods, mp3 players, headphones, or pagers
- Calculators (except as expressly permitted by the test sponsor), computers, PDAs, or other electronic devices with one or more memories
- Personal writing utensils (i.e., pencils, pens, and highlighters)
 - There is an exception for paper based exams. A no.2 pencil is permitted.
- Food and beverage
- Hats, hoods, or other headgear

If the proctor determines that the candidate has brought any such items into the exam room, the test session will immediately be stopped and voided.

Environment

Examination room temperature can be unpredictable; therefore, we suggest that the candidate bring appropriate clothing (e.g. sweater or sweatshirt without pockets) to help to adapt to a cooler or warmer climate in the examination room. The candidate should bring ear plugs if he/she is sensitive to noise.

Exam Security

All CSA Group certification examination content and wording of examination questions constitute confidential information protected by copyright law. Any unauthorized recording, copying, reproduction, distribution, receipt, possession, or transmission, in whole or in part, in any form or by any means, of CSA Group examination questions, content, or materials, either before the examination, on-site, or in the future is strictly forbidden.

The use of CSA Group examination materials for the purpose of examination preparation or training is also forbidden.

CSA Group reserves the right to take whatever measures are necessary to protect the integrity of its examinations. Violation of the CSA Group examination agreement and/or non-disclosure agreement, or the giving or receiving of aid in any CSA Group examination as evidenced either by observation at the time of the examination, complaint received or by statistical analysis, or engaging in other conduct that subverts or attempts to subvert the examination or the CSA Group certification process, is sufficient cause for CSA Group and its agents to:

- Bar an individual from the examination

- Terminate participation in the examination
- Withhold and/or invalidate the results of the examination
- Withhold a certification
- Revoke a certification or
- Take appropriate other action

Exam Results Notification

Approximately two weeks after completion of the exam, the candidate will receive results through an official email notification from CSA Group. Candidates passing the exam and fulfilling all program requirements will also receive a certificate with the effective date of certification. In order to protect the candidate's confidentiality, under no circumstances will test scores be given by telephone.

Examination Body of Knowledge and Blueprint

Examination Knowledge Reference Documents

The following list of publications represents the body of knowledge used in the development of the Medical Gas Piping and Systems Installer Certification.

- CSA Z7396-17 Medical gas pipeline systems – Part 1: Pipelines for medical gases, medical vacuum, medical support gases, and anaesthetic gas scavenging systems.

Exam Objectives

The following exam objectives were developed by a group of industry experts. The weighting of each objective was determined through industry survey. The following table outlines the knowledge and skills required for each objective.

Section 1: Alarms (12.5% of Exam)

Objective 1.1 Identify the purposes and functional requirements of master alarms.

Objective 1.2 Identify the purposes and functional requirements of area alarms.

Section 2: Distribution and Termination (23% of the Exam)

Objective 2.1 Apply the standard requirements and best methods for installing pipes (location, pipe supports, bending, proper tools, labeling/color coding).

Objective 2.2 Given a configured plan, determine if standard compliance has been met.

Objective 2.3 Identify/Describe the piping requirements for additions, modifications or emergency repairs to existing systems.

Objective 2.4 Identify/Describe the CSA Z7396 standard requirements for brazing/purging.

Objective 2.5 Identify/Describe the common trade practices for brazing/purging.

Objective 2.6 Identify/Describe the CSA Z7396 standard requirements for valves/zone valves.

Objective 2.7 Given a situation, select the proper pipe size according to CSA Z7396.

Objective 2.8 Identify pipe size requirements by individual gas service.

Objective 2.9 Identify/Describe the requirements and purpose of gas fittings according to accepted trade practices

Objective 2.10 Identify/Describe the CSA Z7396 standard requirements and purpose of articulating arms.

Section 3: Materials (15.3% of Exam)

Objective 3.1 Describe CSA Z7396 standard requirements for material selection and identification.

Objective 3.2 Describe CSA Z7396 standard requirements for material handling and storage.

Section 4: General (19% of Exam)

Objective 4.1 Identify the scope of the CSA Z7396 standard.

Objective 4.2 Identify definitions of various terms specific to med gas.

Objective 4.3 Identify the relevant standards pertaining to med gas.

Objective 4.4 Identify situations where the AHJ has inspection requirements.

Objective 4.5 Determine installer document requirements.

Objective 4.6 Identify requirements and common trade practices for working in occupied spaces.

Objective 4.7 Identify protocol for hospital shut downs.

Section 5: Source of Supply System (15.2% of Exam)

Objective 5.1 Identify/Describe the CSA Z7396 standard requirements and purpose of scavenging pumps and vacuum pumps.

Objective 5.2 Identify/Describe the CSA Z7396 standard requirements and purpose of medical air compressors, instrument air.

Objective 5.3 Identify/Describe the CSA Z7396 standard requirements and purpose of bulk systems.

Objective 5.4 Identify/Describe the CSA Z7396 standard requirements and purpose of manifolds.

Section 6: Testing (15% of Exam)

Objective 6.1 Identify/Describe the CSA Z7396 standard requirements for installer testing.

Objective 6.2 Identify/Describe the CSA Z7396 standard requirements for accredited testing agency.

Objective 6.3 Identify/Describe the CSA Z7396 standard requirements for the healthcare facility.



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100%