



INSTITUTE OF CORROSION (ICorr)

Classroom REQ-DOC

Requirements for the Training and Certification of personnel engaged in Painting, Coating and Lining Inspection and related fields undertaken in Onshore, Offshore and the Marine Industries

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ICorr Surface Treatment Inspection Scheme Manager
Institute of Corrosion
Corrosion House, 5 St. Peters Gardens
Marefair
Northampton
NN1 1SX
Tel: 01604 438222
Email: admin@icorr.org
Website: icorr.org

Correspondence regarding the delivery of courses and the examinations for the Institute of Corrosion Surface Treatment Inspector courses should be addressed to:

ICorr Training and Test Centre
IMechE Argyll Ruane
4 Europa view
Sheffield
S9 1XH
Tel: 0114 3995720
Email: argyllruane@imeche.org

The ICorr Certification Scheme is administered by the Institute of Corrosion (UK)

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Section 1 Scope:

- 1.1 The ICorr Certification Scheme is an international scheme for the training and certification of industrial protective coatings inspectors, and personnel performing inspection or testing in related fields. The scheme is administered by the Professional Development Training and Certification Committee (PDTC) on behalf of ICorr and is in line with the requirements of BS EN ISO IEC 17024 – criteria for certification bodies and is designed to recognise the developing specific international standards.
- 1.2 This document establishes a system for the training and certification of personnel who perform industrial painting, coating and lining inspection, and related activities and sets out the requirements common to all parts of the scheme.
- 1.3 The following certification is available and applicable in the modules or sectors identified in syllabi which form appendices to this document.
- | | | |
|---|-----------------|------------|
| a. Protective Coating Inspector | Levels 1, 2 & 3 | Appendix A |
| b. Painting Inspection IMO Compliant Module for holders of existing Painting Inspection ICorr Level 2 Certification | Level 2 | Appendix B |
| c. Pipeline Coatings Inspector | Level 2 | Appendix C |
| d. Hot Dip Galvanizing Inspector | Level 2 | Appendix D |
| e. Insulation Inspector | Level 2 | Appendix E |
| f. Fire Proofing Inspector (Withdrawn July 2020) | Level 2 | Appendix F |
- 1.4 The syllabi identify subject areas which are applicable to both training and examination.
- 1.5 ICorr appoint a surface treatment scheme manager from time to time, whose main role is to act as a single point of contact with ICorr for the scheme providers, and to provide support and interpretation of this document for candidates when required. A full job description for this role is available from ICorr on request.

Section 2 Definitions - See Annex A.

Section 3 Levels of Certification:

There are 3 levels of ICorr Painting, Protective Coating and Lining Inspection Certification:

- 3.1 Level 1
Level 1 personnel are qualified to carry out operations according to written instructions. ICorr Level 1 certified personnel have demonstrated the competence to:
- set up, adjust and verify specific inspection or test equipment.
 - carry out tests and perform inspections against written criteria in the agreed paint specification. All tests shall be performed according to the relevant national or international standards, or the agreed proprietary test methods.
 - record and classify the results of tests and inspections against written criteria.
 - report the results.

Level 1 personnel have **not** demonstrated competence in selecting the extent of inspection or testing required, appropriate inspection or test methods to be used, nor for the interpretation of specification requirements.

- 3.2 Level 2
Level 2 personnel are qualified to perform and direct inspection or testing operations according to established or recognised procedures including IMO PSPC MSC.215 (82 requirements) and they have demonstrated competence to:



- a. define the extent of inspection or testing to be used (where agreed procedures allow)
- b. define and select the inspection and test methods to be used (where agreed procedures allow)
- c. set up, adjust and verify inspection or test equipment.
- d. perform and supervise inspection or testing tasks defined in the painting specification or work instructions.
- e. interpret and evaluate results according to applicable normative documents.
- f. define the limitations of application for common test methods.
- g. understand and transform normative document requirements into practical instructions adapted to the actual working conditions.
- h. prepare written test instructions (this is specific to Protective Coating inspection)
- i. organise and report the results of inspections or tests.

3.3 Level 3

Level 3 personnel are qualified to:

- a. undertake all Level 1 and Level 2 tasks
- b. direct any inspection or test operation for which they are certified.
- c. assume full responsibility for an inspection or test facility and staff.
- d. establish and/or validate work instructions or procedures.
- e. interpret normative documents.
- f. designate the extent of inspection and the particular test methods and procedures to be used.

Level 3 personnel have demonstrated

- g. competence to interpret and evaluate inspection or test results to existing normative documents.
- h. possession of a scope and level of knowledge sufficient to enable the individual to select inspection methods and tests, and to assist in the establishment of inspection and test criteria where none are otherwise available.
- i. a general familiarity with coating materials and fabrics and structures protected by painting.
- j. A broad knowledge of coating and lining, protective layer application methods and associated activities.
- k. the ability to guide personnel below Level 3.

Where the duties of a Level 3 painting, protective coating and lining inspector regularly require the inspector to apply inspection or testing to any of the other modules or sectors see clause 1.3 above, the personnel shall hold and maintain a minimum of Level 2 certification in the relevant modules, see Table 1.

Section 4. Training Courses and Eligibility for Examination

4.1 Training Requirements

- 4.1.1 To be eligible for a certificate to be issued, unless there are any mitigating circumstances, candidates shall have successfully completed relevant training, examination and any necessary re-sit examinations, within 90 days of the end of the ICorr recognised course of structured training to the appropriate ICorr syllabus and to have their experience assessed by ICorr.
- 4.1.2 ICorr, through PDTTC develop ICorr protective coating, painting and surface treatment inspector training courses intended to provide candidates with the appropriate mentored experience and knowledge as detailed in this document, with knowledge and skills defined in the appendices.
- 4.1.3 ICorr and its delegated bodies deliver these courses Internationally.
- 4.1.4 These courses are delivered only by ICorr approved tutors who are themselves certificated to Painting Inspector Level 3, or the Protective Coating Inspector Level 3, and who shall have sat the relevant course and passed the examination in the module or sector that they are to deliver. Tutor approvals are issued by the PDTTC Committee. All such tutors shall be bound by and must sign the tutor code of practice, see Annex B. Any proposed new tutor shall deliver their first course under the supervision of an experienced tutor who shall report to PDTTC on the technical and procedural competence of the proposed tutor and the effectiveness of the delivery. This report must include evidence collated from course feedback forms where relevant. The courses shall only be delivered in locations and with



equipment that are able to effectively represent real field conditions for inspection in that module or sector that are approved by ICorr.

- 4.1.5 In non UK situations and where the examinations may be held immediately following the course, the tutor may be permitted to assist in the set up and maintenance of the practical examination equipment. However, the entire examination process shall be subject to independent invigilation and meet all the requirements of section 7 of this document.
- 4.1.6 All examinations, including those that may be sat in non UK locations, are marked by ICorr appointed examiner (typically in the UK), independently of the tutor. The administration of the examinations may be delegated to a delegated body (e.g. IMechE A R) but the appointment of examiner and the ownership of the examinations shall be retained by ICorr.
- 4.1.7 All assessments of competence for certification are undertaken in the UK, by ICorr independently of any delegated body.
- 4.1.8 The training period, method and syllabus shall be sufficient in order to deliver the knowledge and skills as detailed in clause 3 and the Appendices.
- 4.1.9 The minimum duration of training that shall be undertaken is as detailed in Table 1.
- 4.1.10 At all levels, classroom training days shall include both practical and theory components.
- 4.1.11 Examinations shall be carried out separately from the courses but may be immediately following the course. Examinations shall be sufficient to enable the assessment of the Candidate to be qualified in the execution and documentation of the tasks and skills detailed in the relevant syllabus for the Level and Sector detailed in the Appendices.
- 4.1.12 Note: ICorr is under no obligation to assess or approve any additional courses, it shall also be the sole arbiter as to the need for additional course providers and delivery formats in different countries, regions or areas. The sole basis for acceptance or rejection of additional courses shall be whether they deliver benefit to the ICorr scheme for the training, assessment of competence and certification of protective coatings, painting and surface treatment inspection personnel and to prospective candidates. PDTC may consider applications for assessment and, if considered in the best interest of the scheme, such applications may be passed to STGB for review. If PDTC determines that there is merit in the additional course it shall advise the costs of assessment to the proposer of the new course, along with any other requirements to ensure equivalence to the existing courses and objectivity in their delivery. They may then request the ICorr Course Approval Board to assess the course and advise PDTC on its recommendation for inclusion into the scheme or schemes. Final decisions on additional courses and course providers shall be made collectively by the chair of PDTC and the Council of the Institute of Corrosion, based on the recommendation of PDTC members.

Table 1: Minimum Documented Training Hours

Sector	Training Hours		
	Level 1	Level 2	Level 3
Protective Coating Inspector (including coating and lining)	40	40	32
Painting Inspection IMO Compliant Module for holders of existing Painting Inspection ICorr Level 2 Certification	N/A	8	N/A
Pipeline Coatings Inspector	N/A	40 (24)*	N/A
Hot Dip Galvanizing Inspector	N/A	16	N/A
Insulation Inspector	N/A	24 (16)*	N/A
Fire Proofing Inspector	N/A	N/A (withdrawn)	N/A

Table 1 Minimum Duration of Training

- 4.1.13 The minimum duration of any training in order to satisfy the ICorr rules for examination eligibility is shown in Table 1, which includes both theoretical and practical training. Up to 25% of these training hours shall be practical sessions covering the use of test and inspection equipment and the



assessment of defects or deficiencies in examples of blasting media, blast cleaned surfaces and coated samples.

4.1.14 Additional course material shall be provided on-line and shall be designated as pre-learning or blended learning. This material shall include on-line testing associated with each learning module and may be up to 20% of the time given in table 1. Any blended learning associated with the specific courses and undertaken before the classroom learning starts shall be additional to these minimum durations it is expected that the material shall be studied prior to joining the classroom part of the course and the learning material contained in the blended learning modules shall also be included in the course studies and the examination.

*Personnel wishing to be examined to the asterisked qualification modules who are already certificated to ICorr Painting Inspector or the Protective Coating Inspector (at any level) may elect to receive training over the reduced periods shown, instead of the longer training periods, which are compulsory for personnel who do not hold ICorr any of these certificates.

4.1.15 Direct access to level 2 requires the total number of training hours shown in table 1 for level 1 and level 2. Candidates with evidence of the appropriate experience may opt not to sit the level 1 examination and proceed directly to level 2 training and examination. This experience must be assessed by the ICorr Scheme Manager before training starts. See section 8.

4.1.16 There is no direct access to level 3. Candidates wishing to take the level 3 course shall hold level 2 in the same method at the time of examination application and must provide evidence of level 3 training to meet the above requirements.

4.1.17 Certain concessions are available for experienced inspectors and those who already hold painting/coating inspector certification under the rules of other schemes to join the ICorr Scheme. See section 8.

4.2 Industrial Experience Requirements

4.2.1 Industrial practical experience in inspection in the relevant sector shall be acquired and shall be subject to assessment by ICorr prior to certification.

4.2.2 Documentary evidence of industrial experience, using approved forms, may be required and shall be confirmed by the employer and/or independent referees and submitted to the Institute of Corrosion.

4.2.3 The Institute of Corrosion anticipates that the industrial experience will be documented by the candidates and by his or her employer(s), where applicable, to detail that the experience was moderated, directed and supervised by inspection personnel having certification in the same Sector to a higher Level than the candidate is seeking and that this supervision was detailed and frequent. Those directing and supervising ICorr certificated inspection personnel are anticipated to deliver “on the job” training and guidance to the candidates and to referee their industrial experience record.

4.2.4 The minimum requirements for the duration of experience to be gained prior to certification shall not be less than that indicated in table 2 which requires that the candidates/applicants have been fully dedicated in the specific sector of coating and inspection for the minimum number of years stated therein.

4.2.5 For level 1 the prior experience required, may be solely in the specific sector of coating application.

Table 2: Minimum Industrial experience requirement for each Level of Examination and certification

Target Level	Minimum Experience (years)
1	1 year which may be in coating application or supervision in the sector
2	2 years of coating inspection in the sector after Level 1
3	3 years of coating inspection in the sector after Level 2

Table 2 Experience Requirements



Section 5. Procedure for Training and Examination Applications

- 5.1 Initial application enquiries for training and examinations at any level may be made by any means to the appropriate ICorr Test Centre. Formal applications must be made on a standard application form available from the ICorr test centre or on-line on the ICorr Training Centre website. No examination appointment can be considered confirmed until a correctly completed application form has been received and acknowledged by the ICorr Test Centre, and the date and time confirmed back to the Candidate.
- 5.2 Application forms ask for specific details on experience and training to the published syllabus in the Sector and must be signed to the effect that these details are correct. In the event of a false statement being discovered, any examination pass notification or possible certification and wallet I.D. card awarded by ICorr as a result of the examination shall be made invalid.
- 5.3 Applications which require approval which is dependent upon the individual holding appropriate certification must be supported by acceptable evidence of such certification, for example a scanned copy of the certificate or wallet card, see also section 8.
- 5.4 The application form shall require two recent passport sized photographs of the examination applicant to be enclosed with the application form. An electronic image is a suitable alternative.
- 5.5 ICorr gives consideration to candidates who suffer from disabilities that may affect learning or their performance under examination conditions. Candidates should make the disability or disabilities known to the test centre when booking examination arrangements. The facts should be entered in the appropriate space on the application form. Consideration may take the form of extra time to complete the examination and this cannot be granted after the examination has been booked.
- 5.6 Where examinations are booked separately to the training, training documentation is required to be issued prior to the booking of Examinations in order to advise candidates if their training is adequate for their chosen examination. This pre-examination review shall be by the Examination Centre based upon the requirements in Tables 1 above.

Section 6. Examination Equipment and Documentation

- 6.1 All necessary equipment and reference standards, where applicable, shall be provided by the ICorr test centre for the examination. No reference documentation other than that provided by the ICorr test centre shall be allowed. See also section 12 Ethical Conduct.
- 6.2 The use of a pocket calculator is permissible for the examination provided that it is of a type which does not permanently store programs, formulae or data relevant to the examination. Mobile telephones with calculators and access to the internet are not permitted and will be removed and securely stored at the Test Centre for the duration of the examination.

Section 7. Examination

- 7.1 All examinations conducted to the requirements of this document shall consist of a general, specific/Sector and practical examination. Definitions for these three examination parts are given in paragraphs 7.5, 7.6 and 7.7 below.
- 7.2 The general and specific/Sector examinations consist of both multi-choice and essay type questions all of which are validated and approved by ICorr. For examinations translated in to the local language, multiple-choice examinations are the preferred format for ease and accuracy of marking and translation of the answer sheets.
- 7.3 The Maximum time duration for attempting the general or specific/Sector parts of the examination shall be identified on the question papers issued but shall be calculated at average times of 1.5 minutes per multi-choice question and 15 minutes per essay.
- 7.4 Level 1 and level 2 examinations must each be completed within 1 working day, except for candidates entering the scheme under dispensation at level 2 who shall be allowed the option of extending into the next



working day (see 8.1.1 why this may be necessary). Level 3 examinations must be completed within 1 working day.

7.5 General, theory or core examination

The general, theory or core part of the examination deals with the theoretical aspects of the subject and shall include technology, principles, physics, chemistry and mathematics which is associated with the subject as listed in the relevant syllabus. The required number of questions shall be defined in table 3.

Method	Level 1	Level 2	Level 3
Protective Coating Inspector (including coating and lining)	40 (5)	40 (5)	40 (10)
Pipeline coatings Inspector	N/A	40 (5)	N/A
Hot Dip Galvanizing Inspector	N/A	20 (3)	N/A
Insulation Inspector	N/A	20 (3)	N/A
Fire Proofing Inspector	N/A	20 (3)	N/A
Note: Numbers in parentheses are the number of essay type questions additional to the identified number of multi-choice questions			

Table 3 Number of General/theory/Core Examination Questions

7.6 Specific or Sector examinations

The specific part of the examination deals with the application of inspection in the relevant subject area and also deals with procedures applicable and the interpretation and understanding of normative documents. The specific examination also covers the equipment, calibration confirmation, adjustment operating procedures and test techniques that the candidate may encounter on specific assignments. The required number of questions shall be as defined in table 4.

Method	Level 1	Level 2	Level 3
Protective Coating Inspector (including coating and lining)	30 (4)	30 (4)	30 (5)
Pipeline coatings Inspector	N/A	30 (4)	N/A
Hot Dip Galvanizing Inspector	N/A	15 (2)	N/A
Insulation Inspector	N/A	15 (2)	N/A
Fire Proofing Inspector	N/A	15 (2))	N/A
Note: Numbers in parentheses are the number of essay type questions additional to the identified number of multi-choice questions			

Table 4 Number of Specific of Sector Examination Questions

7.7 Practical examination

- 7.7.1 The Practical examination shall be of sufficient duration, complexity and scope adequate to verify the candidate's ability to correctly use relevant test instruments, inspect surface preparations (where applicable) and inspect coatings in real work situations.
- 7.7.2 The Practical examination for level 2 and level 3 of the painting, protective coating and lining courses consists of 2 parts (part 1 and part 2). There is no part 2 practical for other Level 2 modular examinations. Only part 1 of the practical examination applies at Level 1.
- 7.7.3 Part 1 of the practical examination shall consist of tasks to verify each candidate's ability to carry out the following:
- identify types of inspection or test equipment and application related equipment.
 - identify application materials used.



- c. set up adjust and verify test equipment.
- d. operate test equipment properly.
- e. perform inspection and testing on prescribed samples relating to the subject concerned.
- f. Record and analyse the information from inspections to the degree required according to written instructions for Level 1 or specifications for Level 2 and Level 3.

There is no single specified time limit for part 1 of the practical examination, the time is dependent on which tests or exercises are issued. The examiner shall allocate the time allowed for each aspect of the examination but the total time shall not exceed 3 hours.

7.7.4 Level 2 protective coating inspector candidates – practical part 2

Candidates shall demonstrate ability to prepare written instructions for level 1 personnel. Time allowed: 1 hour.

7.7.5 Level 3 protective coating inspector candidates – practical part 2

Candidates shall demonstrate ability to prepare a procedure involving inspection and testing for a work situation which shall be described in the examination. Time allowed: 1 hour.

7.8 Conduct of examinations

7.8.1 Examinations level 1 and 2

The written and practical examinations shall be prepared, issued and graded by a least 1 independent examiner. The examiner shall mark examinations using formal procedures which identify the methods for allocating marks. The examiner shall be approved by ICorr and not have been the tutor for the course. The examinations shall be invigilated by independent invigilators.

7.8.2 Examination level 3

Level 3 examinations shall be prepared, issued and graded by at least 1 independent examiner. If the grading of the examination is borderline the grading shall be carried out by at least 2 independent examiners. The examiner shall be approved by ICorr and not have been the tutor for the course. The examinations shall be invigilated by independent invigilators.

7.9 Grading of examinations

To be awarded an Examination Pass Notification, a candidate shall obtain at least 70% in both the general/core/theory and specific/Sector parts of the examination and shall achieve at least 80% in part 1 of the practical and, where applicable, 70% in part 2 of the practical. There shall be composite grading.

7.10 Re-examination

7.10.1 A candidate who fails an examination part should wait at least 10 days or provide evidence of further training, for example from a mentor, in the areas of weakness before reapplying to sit the examination. Refresher sessions may be offered if mentor support is not available.

Note: part 1 and part 2 of the practical examination for Protective Coating inspectors are graded separately and constitute separate examination parts, i.e., if a candidate fails only part 2 then only this part shall be issued in a re-examination.

7.10.2 A candidate whose examination results have not been accepted because of cheating or fraud shall wait a minimum of 36 calendar months before re-applying. PDTC may determine to ban the Candidate from the ICorr Scheme for an extended period up to life.

7.10.3 Any failed examination part must be successfully completed by a candidate within 90 days of the end of the training course otherwise, unless the specific circumstances justify a dispensation being granted by the ICorr surface treatment scheme manager, the candidate shall be required to attempt the full examination again.

7.10.4 Any candidate who fails the same examination part a total of 3 times shall be required to take approved mentoring support or an additional period of formal training and then sit the full examination again according to the procedure for new candidates.



Section 8. Concessions

- 8.1 Experienced painting, protective coating or lining inspection personnel may be eligible for dispensation within the scheme, permitting them to enter the Scheme at Level 2. It must be recognised and advised to the Candidate in writing that omitting level 1 training and examination does increase the risk that the candidate may fail when sitting the level 2 examinations directly.
- 8.1.1 The ICorr PDTC committee have recognised that, in certain circumstances, it would be fair and reasonable to allow personnel who are very experienced in painting inspection processes and methods to bypass the requirement for level 1 training and examination in the corresponding subject. This concession does not lead directly to certification, but it does enable individuals to attend a level 2 course and sit the level 2 examination without having to first take and pass the level 1 examination. Candidates taking this route shall sit an augmented level 2 practical paper as, in addition to the level 2 practical tests, the candidate shall be tested in relation to all the practical tests performed by level 1 candidates.
- 8.1.2 An individual may apply for such a concession by sending their resume covering at least 5 years' experience related to painting or coating inspection as appropriate to the ICorr test centre or ICorr Scheme Manager directly. The training centre shall apply prior to the course booking for the dispensation to be approved by ICorr, normally via the Scheme Manager. The names and contact details of at least 2 referees who can verify at least 2 years of the related experience shall be provided with the resume. Applicants shall be contacted when the ICorr PDTC committee decision regarding the concession has been made.
- 8.2 Personnel wishing to be examined at level 2 or level 3 must always comply with the minimum training requirements of this document unless section 8.1 applies.

Section 9. Notification of Examinations pass/fail

- 9.1 All examination candidates shall be issued either with a standard examination pass notification or a failure notice by the Examination Centre, normally within 21 days of completion of the examination, the results have been notified by the ICorr test centre and the examination results have been advised to the candidate. This timeline may be affected by the examination marking carried out by the ICorr test centre and is subject to all examination fees having been paid or credit terms having been agreed. A copy of the examination pass notification or failure notice shall also be sent to the sponsor, if applicable.
- 9.2 Successful candidates shall be issued with an ICorr Examination Pass Notice detailing the specifics of the course.
- 9.3 Failure notices include test results and brief reasons for failure. These reasons should be sufficient to inform the candidate what area of continued study or mentoring is required for a successful re-sit.
- 9.4 Examination Pass Notice shall contain at least the following information:
- a. full name of the individual
 - b. date of examination
 - c. title of the subject
 - d. level of examination
 - e. a unique identification number for the candidate
 - f. a unique examination pass number
 - g. reference to the certification body (ICorr)
 - h. ICorr logo
 - i. Examination Centre logo
 - j. Examination results
 - k. Signature of the examiner
- 9.5 The ICorr Examination Pass Notice shall be in a format approved in writing by PDTC.



9.6 Certification documents shall contain at least the following information:

- a. full name of the certificated individual
- b. date of certification
- c. date upon which certification expires
- d. title of the subject
- e. level of certification
- f. a unique certificate number
- g. reference to the certification body (ICorr)
- h. space for the signature of the certified individual
- i. ICorr crest
- j. Signature of the issuing officer on behalf of the certification body (ICorr)
- k. The scope of qualification is to be printed on the reverse side of the ICorr certificate.

Note: By issuing certification, the certification body (ICorr) verifies the qualification of the individual based on the requirements of this document. The certification does not give any authority for the certificated individual to operate. It is the responsibility of the employer to determine whether the certificated individual is competent to carry out the duties the employer wishes the certificated individual to perform, safely and efficiently.

9.7 Candidates who receive a certificate will also receive a wallet card. Wallet cards shall contain the following information.

- a. full name of the certificated individual
- b. date upon which certification expires
- c. title of the subject
- d. level of certification
- e. a unique identification number for the candidate
- f. reference to the certification body (ICorr)
- g. photograph of the certificated individual
- h. ICorr crest

9.8 The period of validity of the certification is 5 years from the date of successful completion of an examination.

9.9 Certification may be made invalid at the option of the certification body (ICorr) if solid evidence is produced of unethical behaviour.

9.10 Lost or damaged certificates and/or wallet cards can be replaced on application to ICorr, but it must be noted that a fee for the production of such duplicates may be charged depending on the circumstances.

Section 10. Re-Certification

Holders of certification which expires at the end of each 5 year period of validity may apply for re-certification for a further 5 years using the on-line renewal procedure, up to 90 days before the expiry date of the certificate. Earlier renewal may be allowed by dispensation and on application to the Scheme Manager, depending on the circumstances.

Note: Personnel applying for re-certification after their certification has expired shall only be recertified by full examination unless there are exceptional mitigating circumstances.

10.1 Personnel seeking re-certification after each 5 years for a modular or sector qualification, (see section 1.3) shall complete the distance re-certification option on-line to extend the painting, coating and lining inspector certification held and the modular certification for a further 5 years. The extensions shall apply from the expiry date of each relevant certificate.

10.2 it is strongly recommended that the certificate holder maintains a “log of work” activity appropriate to the scope of the certification. This may be required by employers or third parties in determining overall satisfactory qualification for the work to be performed. This log, or a copy of it, can be submitted to demonstrate experience as part of the certification or re-certification process and may be requested by ICorr.



- 10.3 Recertification should be sought within the expiry date of the current certificate but consideration for a late renewal may be given by ICorr if there is a valid reason for the delay. Such delays must be no longer than 180 days.

Section 11. Transition Arrangement

- 11.1 Personnel certificated under another scheme's requirements to painting, coating and lining inspector may gain qualification under the ICorr scheme by either electing to attend a combined 1 day course and assessment at an ICorr test centre, or, if based overseas or otherwise unable to attend the UK ICorr test centre may take the distant transition option by taking a "open book" examination on-line.

Note: The following schemes are deemed by the certificating body to be equivalent to the ICorr painting and/or coating inspection courses but this list is not exhaustive:

- Corrodere (on-line ICorr coating inspection courses levels 1, 2 and 3)
- NACE CIP courses
- FROSIO
- BGas
- SSPC

Section 12. Ethical Conduct

- 12.1 Each candidate attempting an ICorr examination shall be required, on the day of the examination at the ICorr test centre, to sign the code of ethics document for personnel certificated under the ICorr certification scheme. See Annex C. The signature is to confirm that the candidate has read, understood and agrees to abide by the code. A copy of the code of ethics is available from ICorr approved training organisations, ICorr test centres and the ICorr Corrosion House Office.
- 12.2 Once an examination has commenced, candidates found in possession of materials or documents which, if used during an ICorr examination, would be deemed to constitute cheating, must be considered to have cheated and the examination shall be terminated. Examinations are monitored by CCTV and by invigilators or by a computer video camera with appropriate monitoring software.
- 12.3 Candidates proved to have cheated in an ICorr examination shall not be accepted as a candidate for any ICorr examination for a minimum period of 36 calendar months from the date of the examination in which cheating was established to have taken place. Exclusion may be for a period of up to life as determined by PDTCC. A letter shall be sent from either ICorr or the ICorr test centre, as determined by PDTCC, to the candidate concerned and to the sponsor, if applicable, explaining why the examination was terminated.

Section 13. Complaints and Appeals

- 13.1 Complaints relating to the conduct of examinations or appeals against examination failure, certificate cancellation or failure to recertify may be made by the candidate or the sponsor upon application in writing to the ICorr test centre in respect of examinations and to ICorr Corrosion House in respect of Certification. All such correspondence received by the ICorr test centre shall be copied by them to ICorr Corrosion House (Attention Chair of PDTCC) within 7 days of receipt. In respect of examinations, if the matter is not resolved to the satisfaction of the candidate or sponsor, all related correspondence and facts shall be made available to the ICorr PDTCC committee by the ICorr test centre. The decision of the ICorr PDTCC committee shall be deemed final.
- 13.2 An aggrieved party which considers itself to have reasonable grounds for questioning the training or suitability of an ICorr certified individual may petition the ICorr PDTCC Committee for cancellation of certification. Such a petition must be accompanied by all relevant facts. If the petition is substantiated to the satisfaction of the ICorr PDTCC committee, in conjunction with the PAC Surface Treatment subcommittee, the certification may be cancelled, or an attempt at re-certification may be refused, for such period as the ICorr PDTCC and PAC committees may deem to be appropriate.
- 13.3 The ICorr PDTCC committee may delegate the process of dealing with complaints and appeals to a properly constituted sub-committee, as defined in the Institute of Corrosion complaints procedure.



Section 14. Course Attendance and Examination Records

- 14.1 Records of course attendance and examination results, pass and fail, shall be passed from the ICorr test centre to the ICorr office at a maximum of 1 month intervals. These shall be retained for a minimum period of 11 years from the date of the examination (or in the case of those not sitting examinations, 10 years from the course date).
- 14.2 ICorr retains records of certification for each certified individual for a minimum period of 11 years following the last certification issued.
- 14.3 An updated list of certificated personnel, which includes the name, ICorr identification number and certification held by each individual, is maintained by ICorr to enable specific verification enquiries to be confirmed.
- 14.4 ICorr test centres shall retain examination records of successful and unsuccessful candidates for a period of 11 years from the date of the examination. Access to these records shall only be available to the ICorr test centre and ICorr staff.

Section 15. Use and Misuse of Certificates

- 15.1 The issue of ICorr Certification indicates that the holder has demonstrated an acceptable level competence in accordance with the prescribed requirements of the scheme on the date indicated. Holders or employers shall not imply any further degree of competence on the basis of the certification.
- 15.2 ICorr certificated personnel or their employers shall not use certificates, nor allow others to use certificates, in a manner which may be considered fraudulent.
- 15.3 The Institute of Corrosion (ICorr) logo shall not be used in advertising, correspondence or reproduced in any form without the written approval of the Institute of Corrosion.
- 15.4 The Institute of Corrosion crest shall not be used in advertising, correspondence or reproduced in any form without the written approval of the Institute of Corrosion.
- 15.5 The misuse of ICorr certification shall result in the certification and associated wallet card being made invalid. Any misuse of certification which is interpreted as being an infringement of the law shall result in the matter being reported to the police and, if the responsibility of the Certificated personnel, cancellation of Certification.

Section 16. Course Review and Update

- 16.1 The review and update of the courses described in this document are the purview of ICorr (PDTC) and shall be undertaken as and when required.
- 16.2 Course tutors and the ICorr training centre are encouraged to make recommendations to the scheme manager regarding improvements, updates and student feedback in the interest of maintaining these courses as world-class training.
- 16.3 Courses and their delivery by tutors shall be the subject of both procedural audit and technical content and quality of delivery on a regular basis as determined by the STGB.
- 16.4 Training and Examination Centres shall comply with the ICorr Training and Examination Centre Requirements Document.



Annex A – Definitions

For the purpose of this document, the following definitions apply:

Certification

Procedure used by ICorr which gives written assurance that personnel issued with certification within the requirements of this document and its appendices are adequately trained to perform the specified duties within the scope of the certification.

Certification Body

The body that administers procedures of certification of personnel and fulfils the requirements of BS EN ISO 17024. Within the scope of this document the certification body is the Institute of Corrosion (ICorr).

Examiner

An individual authorised by ICorr to conduct, supervise and grade examinations to the requirements of this document.

ICorr PDTC

The Professional Development, Training and Certification Committee of ICorr. A body appointed by ICorr that controls and manages the ICorr training and examination scheme as detailed in this document. The ICorr PDTC committee consists of members who are independent of the ICorr test centre and ICorr approved training centres or providers. The PDTC procedures are set up in accordance with the scope of BS EN ISO 17024.

ICorr PAC

The Professional Assessment Committee of ICorr. A body appointed by ICorr that manages all certification processes within the scope of this document and whose independence and impartiality meet the requirements of BS EN ISO 17024.

ICorr Test Centre

An organisation approved by ICorr to conduct and administer examinations strictly in accordance with published requirements.

ICorr Training Centre

An organisation approved by ICorr to administer and deliver classroom training strictly in accordance with published requirements. This may be the same site as the ICorr Test Centre, but this is not essential.

Inspection

Systematic examination of the extent to which a product, process or service fulfils specified requirements by measuring, observing, testing or gauging the relevant characteristics and therefore confirming that it is fit for purpose.

Normative Document

Document that provides rules, guidelines or characteristics for activities of their results. The term is a generic term that covers documents such as national or international standards, technical specifications, inspection test plans (ITP), product data sheets, material safety data sheets (MSDS) codes of practice, regulations and procedures.

Procedure

A Written description of all essential parameters and precautions to be observed when applying inspection or a test method to a specific item or quantity of items, following an established standard, code of practice or specification.

Qualification

Evidence of training, professional knowledge, skill and experience as well as physical capabilities to enable personnel to properly perform tasks

Examination

An examination administered by an approved ICorr test centre which demonstrates the general, specific and practical knowledge and skill of the candidate.



Re-Certification

The procedure for renewing certification prior to the expiry date of existing certification.

Sponsor

The person or organisation paying for certification if not paid by the candidate.

Surface Treatment Training Scheme Manager

The person appointed by ICorr who provides support for the training and examination provider in matters relating to this document.

Test Method

Specified technical procedure for performing a technical operation that consists of the determination of one or more characteristics of a given product, process or service according to a specified procedure.

Written Instructions

A detailed written description of the inspection(s) or test(s) to be performed.



Annex B - Tutor Code of Practice

1. Definitions

All words and meanings used herein shall have the same meanings as are assigned to them in the memorandum of association, the articles of association and the byelaws of the Institute of Corrosion.

In addition, the following shall apply:

Improper Conduct - shall mean any breach of the byelaws of this ICorr course tutor code of conduct or any other act or conduct which may be deemed pursuant to clause 2 of this code to be unbecoming of a course tutor representing ICorr.

Complainant - shall mean the person(s) bringing a formal complaint of improper conduct against a course tutor.

Respondent - shall mean the person who is the subject of a formal complaint brought under this code of conduct.

2. Course Tutor Code of Conduct

- 2.1 ICorr course tutors shall recognise and acknowledge that when preparing for or delivering ICorr training courses they are representing the Institute of Corrosion.
- 2.2 All ICorr course tutors shall make their best endeavours to ensure that all course preparation including the provision of test equipment and samples is completed before the students arrive for the first session of the course.
- 2.3 All ICorr course tutors shall uphold the dignity and good standing of the Institute and the profession and observe the highest standards of ethical behaviour and follow local laws.
- 2.4 All course tutors shall use their best endeavours to recognise the Institute and to take cognisance of its code of conduct in all matters touching or concerning the delivery of ICorr training courses.
- 2.5 In the performance of any course tutor activity touching or concerning the course candidates or students all course tutors shall have an obligation to:
 - a. exercise such standards of skill, care and diligence and with proper regard for professional standards as befits a representative of the Institute of Corrosion.
 - b. ensure that the delivery of the training course does not expose any person to risk to health, safety or welfare, or property to damage or destruction or damage to the environment.
 - c. act in accordance with the principles of sustainability and prevent avoidable adverse impact on the environment and society.
 - d. accept responsibility for training carried out under their supervision.
 - e. treat all persons fairly and with respect.
 - f. encourage others to advance their learning and competence.
 - g. seek advice from the Institute in matters of potential or actual conflict relating to ICorr course training content or other training issues.
 - h. observe the proper duties of confidentiality owed to appropriate parties.
 - i. reject all forms of corrupt behaviour and make every effort to ensure others do likewise.
 - j. assess and manage risks and communicate these to others as appropriate.
 - k. protest formally to any party giving any direction or instruction which in their belief inhibits or adversely affects the delivery of the ICorr training courses or which effectively requires them to breach clause 2.5 b above.
- 2.6 No course tutor shall directly or indirectly seek to injure the professional reputation of another course tutor.
- 2.7 All course tutors shall have an obligation to keep up to date with developments with continuing professional development in their particular area of expertise and conform to their professional ethics.



2.8 Security

The ICorr Training Centre, Test Centre and Course tutors shall be conscious of the importance of security in preserving the value, longevity and on-going operation or function of the course deliverer’s assets, whether tangible or intangible, and the handling of privacy issues such as the protection of personally identifiable information.

Appropriate and proportionate security should be an integral part of the design and operation of an asset and encompasses its whole lifecycle. It must recognise that threats and vulnerabilities change and evolve over time.

Good security can enable business benefits and competitive advantage by protecting key assets and services and engendering trust.

The 6 principles for security are listed below:

- a. adopting a security minded approach to their professional and personal life.
- b. applying a reasonable judgement and taking a leadership role in the application of security.
- c. complying with relevant legislation and codes, understanding their intent and seeking further improvements.
- d. ensuring good security minded communications.
- e. understanding, complying with and seeking to improve lasting systems for security governance.
- f. contributing to public and professional awareness of security.

2.9 Whistleblowing

“Whistleblowing” may be defined as “publicly raising concerns about misconduct within an organisation where internal reporting systems do not exist or are ineffective”

Course tutors shall take positive action when they encounter a material and unmanaged risk, danger, malpractice or wrongdoing which materially affects others, subject to compliance with the laws of the country in which they operate including:

- a. notify the Institute of any significant breach of the rules for professional conduct by another member and should seriously consider reporting another professional with whom they may be professionally connected to their professional body if they appear to be breaching the general principles of ethical practice and who is likely to bring the profession into disrepute.
- b. take all appropriate measures to assess and limit risk in all aspects of their work for others to whom they owe a duty of care.
- c. not undertake, condone or authorise any work that contravenes the legislation or regulations applicable in the country in which they are working, even by an act of omission.

Signed:

Name (Printed):

ICorr Training Centre:

Date:



Annex C – Code of Ethics

Code of ethics for personnel certificated under the ICorr certification scheme

This code must be upheld by all personnel certificated under the Institute of Corrosion ICorr certification scheme for personnel engaged in painting and coating inspection, cathodic protection, pipe coating, insulation, fire proofing and metallic coating.

Before ICorr certification can be recognised, participants in the scheme must sign the code of ethics to acknowledge agreement with the following:

1. I will not use ICorr certification to mislead any individual, employer or authority by presenting it as testimony that applies to any task outside the scope of my qualification. I recognise that my scope of qualification is printed on the reverse side of my ICorr certificate.
2. I shall always endeavour to become fully familiar with my duties and understand the scope of my authority prior to performing work
3. I recognise that it is my duty to perform tasks as I have been contracted to do safely and effectively and I shall not allow deviations from specified requirements unless given permission (in writing) to do so by a higher authority.
4. I will report (preferably in writing) to a higher authority if I am aware of any specified requirements which may lead to adverse work or conditions which were not intended.
5. I will endeavour to perform inspection, tests and any other work for which I have been contracted safely and to the best of my ability and will inform my superiors (in writing) if I am unable to do so.
6. I undertake to act in a manner that will not have an adverse effect on the professional image of the Institute of Corrosion or the ICorr certification scheme.
7. I agree that I will not accept gratuities of any kind which may affect my judgement in the work I am performing as an ICorr certificated individual.
8. I will endeavour to be fair, reasonable and objective towards the requirements for which I perform at all times.
9. I will not allow my work to be influenced by personalities or other individual considerations

I hereby agree to uphold and abide by this code and I acknowledge that I may be subject to a disciplinary procedure this could result in loss of certification if it can be proven that I have failed to comply or have provided false information associated with my participation in the scheme.

Signed:

Name (Printed):

ICorr Training Course and Level:

Date:



INSTITUTE OF CORROSION (ICorr)

Classroom REQ-DOC

Appendices to ICorr classroom REQ-DOC for the Training and Certification of personnel engaged in Surface Coating and Lining Inspection and related fields undertaken in Onshore, Offshore and the Marine Industries 6th Edition August 2019

Appendix A

Syllabus for Training and Examinations

Protective Coating Inspector

This syllabus has three levels, Level 1, Level 2 and Level 3 and each level is divided into pre-learning (Blended Learning on-line), classroom learning (Theory) and practical sessions.

It is required that each of the candidate's knowledge of the pre-learning topics be assessed online during the on-line study and by the Tutor at the start of the classroom session.

Good Health and Safety practice is of paramount importance and the relevant issues must be stressed for each topic.

Level 1

Pre-learning

1 Quality assurance philosophy

2 Ethics

3 Inspection

3.1 Philosophy

4 Normative documents

4.1 Awareness of types of normative document

5 Corrosion (iron & steel)

5.1 Nature of corrosion

5.2 Factors influencing corrosion

5.3 Effects of scale and contamination

5.4 Methods of corrosion prevention

5.5 Assessment of corroded substrates

6 Surface preparation of non-ferrous surfaces (awareness)

6.1 Methods used

6.2 Precautions

6.3 Weathering for adhesion purposes

6.4 Concrete

6.5 Galvanised steel

7 Coating categories/types

7.1 Paints containing solvent (including water)

7.2 Solvent free paints



- 7.3 Powder coatings
- 7.4 Metallic coatings
- 7.5 Tapes and wrappings
- 7.6 Compatibility issues

8 Basic paint

- 8.1 Binders
- 8.2 Types
- 8.3 Polymers/polymerisation
- 8.4 Resins and oils
- 8.5 Pigments
- 8.6 Resins
- 8.7 Rust inhibitive pigments
- 8.8 Solvents
- 8.9 Other main constituents
- 8.10 Solutions and dispersions

9 Imperfections on surfaces to be coated

- 9.1 Types (awareness)
- 9.2 Hot rolled products
- 9.3 Wrought products
- 9.4 Welds
- 9.5 Significance
- 9.6 Action to take
- 9.7 Surface preparation standards

10 Corrosion protection methods

- 10.1 Barrier principle
- 10.2 Passivation
- 10.3 Cathodic protection

11 Paint/paint film testing

- 11.1 Sampling
- 11.2 Flashpoint
- 11.3 Viscosity
- 11.4 Density and specific gravity

12 Environmental considerations (introduction)

- 12.1 Waste disposal
- 12.2 Environmental protection act
- 12.3 VOC
- 12.4 Spillages
- 12.5 Hazardous materials

Classroom learning (Theory)

13 Inspection

- 13.1 Duties and authority including reporting on non-conformances
- 13.2 Procedures and written instructions
- 13.3 Specifications
- 13.4 Painting inspection planning
- 13.5 Meetings including pre-project meetings
- 13.6 Typical contractor malpractice
- 13.7 Normative documents
- 13.8 Information contained within normative documents
- 13.9 Specific standards, including ISO 12944 and NORSOK 501

14 Surface preparation (ferrous)

- 14.1 Reasons for surface preparation
- 14.2 Characteristics of prepared surfaces
- 14.3 Hazard awareness
- 14.4 Weathering for scale removal
- 14.5 Assessment of surfaces prior to cleaning
- 14.6 Methods of surface preparation
 - 14.6.1 Degreasing
 - 14.6.2 Dry abrasive blast cleaning
 - a. Abrasive types including classroom examples
 - b. Effect of abrasives
 - c. Surface profiles
 - d. Measurement and assessment of profiles
 - e. Assessment of cleanliness, rust, dust, soluble salts, oils and grease
 - f. Assessment of blast cleaning grades
 - g. Blast cleaning equipment
 - i. Pressure blast cleaning



- ii. Wheel abrators
- iii. Vacuum/suction blast cleaning
- h. Safety of blast cleaning operations
- I. Pressure measurement during air blast cleaning
- 14.6.3 Wet blast cleaning
 - a. Methods
 - b. Use of inhibitors
- 14.6.4. Hand and power tool cleaning
 - a. Chipping
 - b. Scraping
 - c. Sanding
 - d. Grinding
 - e. Wire brushing
 - f. Needle gunning
- 14.6.5 Flame cleaning
- 14.6.6 Chemical cleaning
- 14.6.7 Assessment of prepared surfaces
- 15 Tests to detect surface contamination (qualitative)**
 - 15.1 Dust
 - 15.2 Oil/grease
 - 15.3 Soluble iron salts
 - 15.4 Mill scale
 - 15.5 Use of magnifiers
- 16 Paint drying and curing**
 - 16.1 Solvent evaporation
 - 16.2 Oxidation
 - 16.3 Chemical curing
 - 16.4 Coalescence
- 17 Layers of a paint system**
 - 17.1 Etch primers (coupled to surface preparation)
 - 17.2 Primer
 - 17.3 Intermediate coats
 - 17.4 Finish
- 18 Types of protective paint systems**
 - 18.1 Sacrificial systems
 - 18.2 Powder coatings
 - 18.3 Moisture tolerant
 - 18.4 Moisture curing
 - 18.5 Water borne coatings
- 19 Introduction to coating systems**
 - 19.1 Powder coatings
 - 19.2 Liquid solvent borne coatings
 - 19.3 Water borne coatings
 - 19.4 Fireproof coatings
 - 19.5 Anti-foulants
 - 19.6 Plastic coatings
 - 19.7 IMO ballast tank requirements
- 20 Metal coatings**
 - 20.1 Common types
 - 20.2 Terminology
- 21 Paint data sheets**
- 22 Paint milling (awareness)**
- 23 Paint/paint film testing**
 - 23.1 Wet film thickness
 - 23.2 Dry film thickness
 - 23.2.1 Non-destructive gauges (Ferrous steel substrates and NF non-ferrous metal substrates – mechanical and electronic)
 - 23.2.2 Adjustment and verification
 - 23.2.3 Awareness of destructive test gauges
 - 23.2.4 Calculation
 - 23.2.5 Test panels
 - 23.3 Hardness tests
 - 23.3.1 Awareness of test methods
 - 23.3.2 Pencil scratch test
 - 23.4 Adhesion/cohesion
 - 23.4.1 V Cut test
 - 23.4.2. X cut tape test
 - 23.4.3 Cross cut test
 - 23.4.4 Pull-off test using dollies



- 23.5 Pinhole detection
 - 23.5.1 High voltage
 - 23.5.2 Low voltage
- 24 Weather conditions and environment**
 - 24.1 Types of environment
 - 24.2 Effects on operations
 - 24.3 Relative humidity determination dew point
 - 24.4 Temperature effects and measurement
 - 24.5 Whirling hygrometer
 - 23.5.1 RH/dew point calculator
 - 23.5.2 RH/dew point charts
 - 24.6 Electronic dew point meter
 - 24.7 Electronic data collection
- 25 Storage of materials**
- 26 Paint application**
 - 26.1 Paint data sheets
 - 26.2 Materials safety data sheets (MSDS)
 - 26.3 Mixing and stirring
 - 26.4 Overcoating times
 - 26.5 Intercoat preparation
 - 26.6 Brush application
 - 26.7 Roller application
 - 26.8 Conventional spray
 - 26.9 Airless spray
 - 26.10 Electrostatic spray
 - 26.11 Other methods
- 27 Application coating faults (Defects)**
 - 26.1 Recognition
 - 26.2 Causes
 - 26.3 Rectification (awareness)
 - 26.4 Standards
- 28 IMO Coating technical file**
 - 27.1 Coating technical file requirements
 - 27.2 Working records
- 29 Health & Safety**
 - 29.1 Health & safety at work etc. Act 1974
 - 29.2 Toxicity
 - 29.2.1 COSHH regulations
 - 29.2.2 Risk assessment
 - 29.2.3 Occupational exposure limits
 - 29.2.4 Monitoring methods
- 29.3 Explosive limits
- 29.4 Flammability
- 29.5 Labelling and packaging
- 29.6 Confined spaces
- 29.7 Working at height
- 30 Reporting**
 - 30.1 Observations and test results
 - 30.2 Basic statistics
 - 30.3 Daily record
 - 30.4 Electronic data management
- 31 Conflict resolution (basics)**
- 32 Relevant information**
- 33 Standards applicable**
- 34 Practical Learning**

(All these topics are covered in the classroom theory topics but also require either demonstration of hands-on training)

 - 34.1 Blast pressure measurement
 - 34.2 Profile height
 - 34.3 Profile cleanliness
 - 34.3.1 Dust
 - 34.3.2 Oil/grease
 - 34.3.3 Soluble iron salts
 - 34.3.4 Mill scale
 - 34.4 Relative humidity
 - 34.4.1 Whirling and sling hygrometers
 - 34.4.2 Electronic dew point meters
 - 34.4.3 Mechanical thermometers
 - 34.4.4 Electronic thermometers
 - 34.5 Wet film thickness measurement (wet film wheel, wet film comb)
 - 34.6 Dry film thickness measurement
 - 34.6.1 Non-destructive gauges (Ferrous steel substrates and



- NF non-ferrous metal substrates
 - mechanical and electronic
- 34.6.2 Adjustment and verification
- 34.7 Destructive test gauges (PIG)
- 34.8 Hardness tests (Demonstration)
 - 34.8.1 Awareness of test methods
 - 34.8.2 Pencil scratch test
- 34.9 Adhesion/cohesion
 - 34.9.1 V cut test
 - 34.9.2 X cut test
 - 34.9.3 Cross cut test
 - 34.9.4 Pull-off test using dollies
- 34.10 Pinhole detection
 - 34.10.1 Low voltage
 - 34.10.2 High voltage

Level 2

The level 2 training syllabus shall review the subject areas for level 1 and include new subject areas as listed. The examination for level 2 shall include questions relating to subjects for level 1 in addition to the subjects listed for level 2. Any subjects that are repeated indicate a greater depth of knowledge is required compared to Level 1.

Pre-learning

35 Corrosion

- 35.1 Nature of corrosion
- 35.2 Anodic and cathodic reactions
- 35.3 Factors influencing corrosion
- 35.4 Types of corrosion

36 Basic chemistry

37 Design

- 37.1 Design for corrosion resistance
- 37.2 Good, poor design examples

38 Paint manufacture

39 Paint/paint film testing

- 39.1 Viscosity
- 39.2 Density
- 39.3 Weathering and artificial weathering

40 Cathodic protection

- 40.1 Basic principles and methods
- 40.2 Buried pipeline
- 40.3 Immersed marine
- 40.4 Ballast tank
- 40.5 Determination of adequate protection

41 Health & Safety

- 41.1 COSHH regulations
- 41.2 Workplace exposure limits
- 41.3 Health and safety data sheets

42 Glossary of terms

Classroom learning

43 Surface preparation

- 43.1 Importance of surface preparation
- 43.2 Weathering for scale removal
- 43.3 Methods of surface preparation
 - 43.3.1 Degreasing
 - 43.3.2 Dry abrasive blast cleaning
 - 43.3.3 Wet blast cleaning
 - 43.3.4 Waterjetting
 - 43.3.5 Hand and power tool preparation
- 43.4 Flame cleaning
- 43.5 Chemical cleaning
- 43.6 Surface preparation of non-ferrous surfaces
- 43.7 Profile measurement

44 Dehumidification

45 Tests to detect surface contamination

- 45.1 Soluble salts
- 45.2 Soluble salts in abrasives and water
- 45.3 Millscale
- 45.4 Oil/grease
- 45.5 Dust

46 Paint constituents

- 46.1 Binders
- 46.2 Pigments



- 46.3 Pigment volume concentration
- 46.4 Solvents
- 46.5 Other main constituents
- 47 Painting drying and curing**
 - 47.1 Solvent evaporation
 - 47.2 Oxidation
 - 47.3 Chemical curing
 - 47.4 Coalescence
- 48 Corrosion protection methods using protective coatings**
- 49 Coating systems**
 - 49.1 Powder coatings
 - 49.2 Liquid solvent borne coatings
 - 49.3 Water borne coatings
 - 49.4 Fireproofing coatings
 - 49.5 Anti-foulants
 - 49.6 Plastic coatings
 - 49.7 IMO Ballast tank coating requirements
- 50 IMO Coating technical file**
 - 50.1 Coating technical file requirements
 - 50.2 Coating selection, specifications
 - 50.3 Working records
- 51 Paint/paint film testing**
 - 51.1 Wet film thickness
 - 51.2 Dry film thickness
 - 51.3 Mechanical testing
 - 51.4 Adhesion
 - 51.5 Porosity detection
- 52 Weather conditions and environment**
 - 52.1 Relative humidity
 - 52.2 Dew point
 - 52.3 Temperature effects and measurements
- 53 Application of metal coatings**
 - 53.1 Common Types
 - 53.2 Terminology
- 54 Paint data sheets**
- 55 Paint application**
 - 55.1 Brush application
 - 55.2 Roller application
 - 55.3 Conventional spray
 - 55.4 Airless spray
 - 55.5 Electrostatic spray
 - 55.6 Other methods
- 56 Paint colours**
- 57 Coatings faults**
 - 57.1 Recognition
 - 57.2 Causes
 - 57.3 Recertification
 - 57.4 Degrees of coating failure
- 58 Inspection**
 - 58.1 Duties of a painting inspector
 - 58.2 Knowledge required to perform painting inspection
 - 58.3 Inspection planning
 - 58.4 Site meetings
 - 58.5 Reports and records
 - 58.6 Typical contractor malpractice
- 59 Written instructions**
- 60 Quality assurance**
 - 60.1 Scope of quality assurance
 - 60.2 QA, QC and inspection compared
 - 60.3 Normative documents
 - 60.4 Conflict resolution
- 61 IMO specifications**
 - 61.1 IMO PSPC MSC.215 (82)
 - 61.2 IACS PR34
- 62 Practical learning**
 - 62.1 Blast pressure measurement
 - 62.2 Profile height
 - 62.3 Profile cleanliness
 - 62.5.1 Dust
 - 62.5.2 Oil/grease
 - 62.5.3 Soluble iron salts
 - 62.5.4 Mill scale



- 62.6 Relative humidity
 - 62.6.1 Whirling and sling hygrometers
 - 62.6.2 Electronic dew point meters
 - 62.6.3 Mechanical thermometers
 - 62.6.4 Electronic thermometers
- 62.7 Wet film thickness measurement (wet file wheel, wet film comb)
- 62.8 Dry film thickness measurement
 - 62.8.1 Non-destructive gauges (F steel substrates and NF non-ferrous metal substrates – mechanical and electronic)
 - 62.8.2 Adjustment and verification
- 62.9 Destructive test gauges (PIG)
- 62.10 Hardness tests (demonstration)
 - 62.10.1 Awareness of test methods
 - 62.10.2 Pencil scratch test
- 62.11 Adhesion/cohesion
 - 62.11.1 V cut test
 - 62.11.2 X cut tape test
 - 62.11.3 Cross cut test
 - 60.11.4 Pull-off test using dollies
- 62.12 Pinhole detection
 - 62.12.1 Low voltage
 - 62.12.2 High voltage

Level 3

The level 3 training syllabus shall review the subject areas for level 1 and level 2 and include new subject areas as listed. The examination for level 3 shall include questions relating to subjects for level 1 and level 2 in addition to the subjects listed for level 3. Any subjects that are repeated indicate a greater depth of knowledge is required compared to level 2.

Pre-learning

63 Quality assurance

- 63.1 Systems
- 63.2 Auditing
- 63.3 Standards

64 Supervision

- 64.1 Leadership requirements
- 64.2 Technical skills
- 64.3 Teamwork

65 Planning

- 65.1 Methods
- 65.2 Pre-work meetings

66 Basic metallurgy and materials

- 66.1 Conditions
- 66.2 Properties
- 66.3 Effect on corrosion behaviour

67 Paint constituents and basic chemistry

- 67.1 Binders
- 67.2 Types
- 67.3 Polymers/polymerisation
- 67.4 Resins and oils
- 67.5 Pigments
- 67.6 Resins
- 67.7 Rust inhibitive pigments
- 67.7 Solvents
- 67.8 Other main constituents
- 67.9 Solutions and dispersions

68 Paint technology

- 68.1 Polymers
- 68.2 Corrosion protection mechanisms
- 68.3 Recent developments
- 68.4 Compatibility issues

69 Environmental considerations

- 69.1 Waste disposal
- 69.2 Environmental protection act
- 69.3 VOC

70 Standards applicable

Classroom learning (Theory)

71 Standardisation

72 Production of procedures

- 72.1 Aims



- 72.2 Format
- 72.3 Content
- 73 Corrosion (awareness)**
 - 73.1 Corrosion mechanisms
 - 73.2 Interpretation of chemical symbols and chemical formulae
- 74 Structural design**
 - 74.1 Surface preparation and coating considerations
 - 74.2 Corrosion considerations
 - 74.3 Enclosure systems
- 75 Imperfections on surfaces to be coated**
 - 75.1 Types (awareness)
 - 75.2 Hot rolled products
 - 75.3 Wrought products
 - 75.4 Welds
 - 75.5 Significance
 - 75.6 Action to take
- 76 Optical aids for inspection**
 - 76.1 Magnifiers
 - 76.2 Fibrescopes
 - 76.3 Lighting considerations
- 77 Protection of materials other than steelwork**
 - 77.1 Passive fire proofing
 - 77.2 Timber
 - 77.3 Reinforced concrete
 - 77.4 Glass reinforced plastics
- 78 Health and Safety**
 - 78.1 Scope
 - 78.2 Statutory regulations
 - 78.3 Responsibilities
- 79 Assessment of inspection reports**
- 80 Records**
- 81 Dispute resolution**
- 82 Practical learning**
 - 82.1 Blast pressure measurement
 - 82.2 Profile height
 - 83.3 Profile cleanliness
 - 83.3.1 Dust
 - 83.3.2 Oil/grease
 - 83.3.3 Soluble iron salts
 - 83.3.4 Mill scale
 - 83.4 Relative humidity
 - 83.4.1 Whirling and sling hygrometers
 - 83.4.2 Electronic dew point meters
 - 83.4.3 Mechanical thermometers
 - 83.4.4 Electronic thermometers
 - 83.5 Wet film thickness measurement (wet film wheel, wet film comb)
 - 83.6 Dry film thickness measurement
 - 83.6.1 Non-destructive gauges (Ferrous steel substrates and NF non-ferrous metal substrates – mechanical and electronic)
 - 83.6.2 Adjustment and verification
 - 83.7 Destructive test gauges (PIG)
 - 83.8 Hardness tests (Demonstration)
 - 83.8.1 Awareness of test methods
 - 83.8.2 Pencil scratch test
 - 83.9 Adhesion/cohesion
 - 83.9.1 V cut test
 - 83.9.2 X cut test
 - 83.9.3 Cross cut test
 - 83.9.4 Pull-off test using dollies
 - 83.10 Pinhole detection
 - 83.10.1 Low voltage
 - 83.10.2 High voltage



Appendix B

Syllabus for Training and Examinations

Painting Inspection IMO compliant module for holders of existing ICorr Painting Inspection level 2

Level 2

- | | |
|--|--|
| <p>1 Quality assurance philosophy</p> <p>2 Normative documents</p> <p>2.1 Awareness of type of normative document</p> <p>2.2 Information contained within normative documents</p> <p>2.3 Procedures and instructions</p> <p>3 Corrosion (iron and steel)</p> <p>3.1 Nature of corrosion</p> <p>3.2 Factors influencing corrosion</p> <p>3.3 Anodic and cathodic reactions</p> <p>4 Corrosion protection methods</p> <p>4.1 Barrier principle</p> <p>4.2 Passivation</p> <p>4.3 Cathodic protection</p> <p>5 Surface preparation (ferrous)</p> <p>5.1 Reasons for surface preparation</p> <p>5.2 Outline of methods</p> <p>5.3 Wet blast cleaning water jetting</p> <p>6 Dehumidification</p> <p>7 Coating systems</p> | <p>7.1 Antifoulants</p> <p>7.2 Plastic coatings</p> <p>7.3 IMO Ballast tank coatings requirement</p> <p>7.4 Fireproofing coatings</p> <p>8 General principles of cathodic protection</p> <p>8.1 Theory of operation</p> <p>8.2 Impressed current systems</p> <p>8.3 Galvanic anodes</p> <p>8.4 Sacrificial coatings</p> <p>8.5 Ballast Tank</p> <p>9 Inspection</p> <p>9.1 Duties of a painting Inspector</p> <p>9.2 Written instructions</p> <p>9.3 Coating technical file requirements</p> <p>9.4 Coating selection</p> <p>9.5 Specifications</p> <p>9.6 Job start meetings</p> <p>9.7 Working records</p> <p>10 IMO Specifications</p> <p>10.1 IMO PSPC MSC.215</p> <p>10.2 IACS PR34</p> <p>11 Glossary of terms</p> |
|--|--|



Appendix C

Syllabus for Training and Examinations

Pipelines Coatings Inspector

Level 2 - only level 2 applicable to Pipeline coatings inspector

1 Quality assurance

- 1.1 Definition
- 1.2 Document control
- 1.3 Equipment control and calibration

2 Ethics

3 Inspection and quality control

- 3.1 Definitions
- 3.2 Duties and authority
- 3.3 Procedures and written instructions
- 3.4 Meetings

4 Normative documents

- 4.1 Types of normative document
- 4.2 Information contained within normative documents
- 4.3 Interpretation of normative documents

5 Corrosion (iron and Steel)

- 5.1 Nature of corrosion
- 5.2 Types of corrosion
- 5.3 Anodic and cathodic reactions
- 5.4 Factors influencing corrosion
- 5.5 Effects of scale and contamination
- 5.6 Methods of corrosion prevention
- 5.7 Assessment of corroded substrates
- 5.8 Graphitisation

6 Imperfections

- 6.1 Types (awareness)
 - 6.1.1 Castings
 - 6.1.2 Pipes and other wrought products
 - 6.1.3 Welds

6.2 Significance

6.3 Action to take

7 Surface preparation (ferrous)

7.1 Reasons for surface preparation

7.2 Characteristics of prepared surfaces

7.3 Weathering for scale removal

7.4 Methods of surface preparation

7.4.1 Degreasing

7.4.2 Dry abrasive blasting

- a. Abrasive types
- b. Properties of abrasives
- c. Effect of abrasives
- d. Sizing of abrasives
- e. Checking for contamination of abrasives
- f. Surface profiles
- g. Measurement and assessment of profiles
- h. Assessment of blasting grades
- i. Blasting equipment
 - i. Pressure blasting
 - ii. Wheel abrators
 - iii. Vacuum/suction blasting
- j. Safety of blast operations
- k. Pressure measurement during air blasting

7.4.3 Hand and power tool cleaning

- a. Chipping
- b. Scraping
- c. Sanding
- d. Grinding



- e. Wire Brushing
 - f. Needle gunning
 - 7.4.4 Chemical cleaning
- 7.5 Compressors
- 7.6 Assessment of prepared surfaces
- 8 Tests to detect surface contamination**
 - 8.1 Dust
 - 8.2 Oil/grease
 - 8.3 Soluble iron salts
 - 8.4 Mill scale
 - 8.5 Qualitative tests vs quantitative tests
- 9 Coating/wrapping systems**
 - 9.1 Fusion bonded epoxy
 - 9.2 Enamel coatings
 - 9.3 Multi-component liquids
 - 9.4 Wrapping tapes
 - 9.5 Elastomeric coatings
 - 9.6 Polyolefins and other plastic coatings
 - 9.7 Insulation applied
 - 9.8 Internal pipe coatings
 - 9.9 Advantages and limitations of systems
- 10 Application methods**
 - 10.1 Factory applications
 - 10.2 On-site application
- 11 Coating/wrapping repair methods**
- 12 Weather conditions and environment**
 - 12.1 Types of environment
 - 12.2 Contaminants
 - 12.3 Effects on operations
 - 12.4 Relative humidity
 - 12.5 Dew point
 - 12.6 Temperature effects and measurement
 - 12.7 Hydrometers (types and usage)
- 13 Testing of coatings/wrappings and materials**
 - 13.1 Viscosity
 - 13.2 Gel time (epoxy powder)
 - 13.3 Differential scanning calorimetry
 - 13.4 Penetration
 - 13.5 Water soak (absorption)
 - 13.6 Softening point
 - 13.7 Elongation
 - 13.8 Tensile
 - 13.9 Impact resistance
 - 13.10 Thickness
 - 13.11 Adhesion
 - 13.12 Holiday detection
 - 13.13 Cathodic disbondment test
 - 13.14 Strain polarisation test
 - 13.15 Peel creep
 - 13.16 Dry/curing
 - 13.17 Awareness of other tests
- 14 Coating/wrapping faults**
 - 14.1 Types
 - 14.2 Recognition
 - 14.3 Causes
 - 14.4 Locating and recording
- 15 Ditching and backfill**
- 16 Pearson Survey (theory)**
- 17 Cathodic protection (theory)**
 - 17.1 Importance of correct coating
 - 17.2 Sacrificial anodes
 - 17.3 Impressed current
 - 17.4 Determination of adequate protection
 - 17.5 Cathodic disbondment
- 18 Health & Safety**
 - 18.1 Health & safety at work etc., Act 1974
 - 18.2 Toxicity
 - 18.2.1 COSHH regulations
 - 18.2.2 Risk assessment
 - 18.2.3 Occupational exposure limits
 - 18.2.4 Monitoring methods
 - 18.3 Explosive limits
 - 18.4 Flammability
 - 18.5 Labelling and packaging



19 Environmental Considerations (introduction)

19.1 Waste disposal

19.2 Environmental Protection act

19.3 VOC

20 Handling and storage

20.1 Pipes

20.2 Coating materials

21 Inspection reports

22 Records

23 Standards applicable



Appendix D

Syllabus for Training and Examinations

Hot Dip Galvanising Inspector

Level 2

ICorr certification is available which is specific to the inspection of hot dip galvanising. The hot dip galvanising inspector examination may be attempted by candidates who do not hold any certification providing the ICORR REQ DOC requirements are met. Only the 'general content' and the 'hot dip galvanising' content apply. Only level 2 applicable.

General Content

The following syllabus content is applicable to the inspection of coatings made by thermal spraying and hot dip galvanising. The content is therefore applicable to both the metallic coatings inspector syllabus and the hot dip galvanising inspector syllabus.

- | | |
|--|---|
| <p>1 Quality assurance</p> <ul style="list-style-type: none">1.1 Document control1.2 Equipment control and calibration <p>2 Inspection and quality control</p> <ul style="list-style-type: none">2.1 Definitions2.2 Duties pertaining to metallic coatings inspection<ul style="list-style-type: none">2.2.1 Scope2.2.2 Specification requirements2.2.3 Checklist <p>3 Normative documents</p> <ul style="list-style-type: none">3.1 Types of normative document3.2 Interpretation of normative documents <p>4 Corrosion</p> <ul style="list-style-type: none">4.1 Types of corrosion4.2 Anodic and cathodic reactions4.3 Corrosion control by using metal coatings | <p>5 Imperfections and contaminants on surfaces to be coated</p> <ul style="list-style-type: none">5.1 Types (awareness)<ul style="list-style-type: none">5.1.1 Castings5.1.2 Wrought products5.1.3 Welds5.2 Significance5.3 Action to take <p>6 Tests to detect surface</p> <ul style="list-style-type: none">6.1 Qualitative tests6.2 Quantitative tests <p>7 Methods of metal coating (awareness)</p> <ul style="list-style-type: none">7.1 Hot dip galvanising7.2 Thermally sprayed metal coatings7.3 Electroplating7.4 Diffusion coating7.5 Cladding |
|--|---|



8 Health and Safety

- 8.1 Scope
- 8.2 Statutory requirements
- 8.3 Responsibilities

Hot Dip Galvanising

9 Surface preparation

- 9.1 Degreasing
- 9.2 Pickling
- 9.3 Fluxing
- 9.4 Abrasive blast cleaning
- 9.5 Requirements

10 Processes

- 10.1 The batch process
- 10.2 The continuous process
- 10.3 Specialised processes

11 Design for galvanising

- 11.1 Size and weight
- 11.2 Handling
- 11.3 Venting
- 11.4 Draining
- 11.5 Distortion

12 Galvanising

- 12.1 Reaction kinetics
- 12.2 Effect of steel surface profile
- 12.3 Effect of steel chemistry

13 Post treatments

- 13.1 Quenching
- 13.2 Air drying
- 13.3 Passivation

14 Coating characteristics

- 14.1 Bonding
- 14.2 Hardness
- 14.3 Toughness
- 14.4 Appearance

15 Testing

- 15.1 Coating weight
- 15.2 Coating thickness
- 15.3 Coating cohesion
- 15.4 Surface smoothness
- 15.5 Flux staining
- 15.6 Sampling
- 15.7 Surveys

16 Coating faults

- 16.1 Types
- 16.2 Recognition
- 16.3 Causes
- 16.4 Locating and recording

17 Coating repair methods

18 Organic coatings on galvanising (specific considerations)

19 Health and safety (specific considerations)

20 Handling and storage

21 Inspection records

22 Records

23 Standards applicable



Appendix E

Syllabus for Training and Examinations

Insulation Inspector

Note: only level 2 applicable. Candidates must be certificated under the ICorr certification scheme to Painting Inspector level 1, 2 or 3 before attempting the Insulation inspector examination unless they opt to take the extended hours training as set out in table 1 in ICORR REQ DOC.

Level 2

1 Quality assurance

- 1.1 Definitions
- 1.2 Document control
- 1.3 Equipment control and calibration

2 Inspection and quality control

- 2.1 Definitions
- 2.2 Duties pertaining to insulation inspection
 - 2.2.1 Responsibilities
 - 2.2.2 Specification requirements
 - 2.2.3 Checklist

3 Normative documents

- 3.1 Types of normative documents
- 3.2 Interpretation of normative documents

4 Insulation systems

- 4.1 Thermal insulation
 - 4.1.1 Hot
 - 4.1.2 Cold
- 4.2 Acoustic insulation
- 4.3 Terminology
- 4.4 Coding

5 Insulating materials

- 5.1 Insulation
 - 5.1.1 Mineral wool
 - 5.1.2 Calcium silicate
 - 5.1.3 Rigid phenolic foams
 - 5.1.4 Cellular glass

5.1.5 Polyisocyanurate

5.1.6 Expanded perlite

5.1.7 Vermiculite

5.1.8 Awareness of other types

5.2 Protective coverings

5.2.1 Metal cladding

5.2.2 Vapour seals

5.2.3 Hard setting compositions

5.3 Fixings

6 Insulation design (basics)

6.1 Materials

6.2 Thickness

6.3 Layers

7 Application of insulation

7.1 Specification requirements

7.2 Weather conditions and environment

7.3 Applicator requirements (skilled vs unskilled)

7.4 Considerations prior to application

7.5 Application methods

7.6 Sequence of events

8 Scaffolding

9 Handling and storage of materials

10 Health and safety considerations

11 Common problems encountered

12 Reporting

13 Standards applicable



Appendix F

Syllabus for Training and Examinations

Fire Proofing Inspector

This syllabus has been withdrawn and replaced by the Passive Fire Protection Inspector syllabus, Appendix A to the Passive Fire Protection Inspector REQ-DOC.

Candidates who hold a valid Fire Proofing Inspector Level 2 certificate can seek to achieve the Passive Fire Protection Inspector certificate by sitting and passing the Passive Fire Protection Inspector examination in full.