

SWS INTERNATIONAL COATINGS APPROVAL SCHEME

REQUIREMENTS DOCUMENT, APRIL 2008

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SCHEME MANAGEMENT

The SWS ICAS Requirements Document is jointly owned and developed by the Singapore Welding Society and Waugh Technical Services of the United Kingdom.

The Requirements Document and other text will hereafter refer to the above as SWS and WTS.

SWS will act as the Certification Body for the scheme titled SWS ICAS and be responsible for all matters appertaining to that duty. SWS will also be responsible for employing and allocating examiners following course delivery by an approved training provider. These examiners will be selected from the SWS approved examiner panel. WTS in collaboration with the Coatings Technical Training Committee titled CTTC will have responsibility for the development and periodic updating of course notes and examination papers, and for the training and validating of course Lecturers and Examiners.

Course notes and associated course material will be developed by WTS and solely owned by WTS. These notes and materials will be used exclusively for SWS ICAS courses and are the only approved course material for use with SWS ICAS courses. This will be reviewed as and when proposed changes need to be considered.

AIMS AND OBJECTIVES OF THE SCHEME

SWS ICAS approval is designed to qualify Coating inspectors and Coatings industry operatives in the industrial and marine coatings field to a standard which is recognised and accepted by all national and international oil, gas and civil engineering companies throughout the world.

The aim of the approval is to train and then test by examination candidates who can carry out inspection procedures competently, who can keep records in accordance with client requirements, and can demonstrate a sound theoretical background knowledge of the subject at the various levels.

To allow client companies to plan future workforce requirements in terms of numbers and levels.

To standardise the working practices of approved Inspectors and Operatives to a high technical and practical level.

To provide a seamless progression route from blaster / sprayer through to senior inspector level where required by a company or individual.

For clients in the Oil, Gas and Civil Engineering fields around the world to accept and specify the use of SWS ICAS approval holders on their projects, knowing the approval trains and certifies Coating Inspectors and Operatives to the highest level of knowledge, skills and awareness of and adherence to Health and Safety Legislation and practice.

COATING INSPECTOR LEVELS.

SWS ICAS Approved Level 1 Inspector, (Junior Inspector)

SWS ICAS Approved Level 2 Inspector (Supervisory Inspector)

SWS ICAS Approved Level 3 Inspector (Senior Inspector)

SWS ICAS Approved Pipeline Coatings Inspector

ADDITIONAL MODULES,

SWS ICAS Approved Corrosion / Coatings Surveyor (For min level 3 holders)

SWS ICAS Approved Critical Coatings Inspector (for min level 2 holders)

SWS ICAS Approved Fireproofing Coatings Inspector (for min level 1 holders)

SWS ICAS Approved Insulation Inspector (for min level 1 holders)

COATING OPERATIVE LEVELS

SWS ICAS Approved Blaster / Preparation Operative (no entry restriction)

SWS ICAS Approved Painter / Sprayer Operative (no entry restriction)

SWS ICAS Approved Coatings Supervisor (no entry restriction)

CLASS CONTACT HOURS (Other delivery formats can be considered upon request)

Inspector Level 1 course only – 30 hours, (class contact time 24 hours and homework time 6 hours) Plus examination time.

Inspector Level 2 course only – 30 hours, (class contact time 24 hours and homework time 6 hours) Plus examination time.

Inspector Levels 1/2 combined course – 45 hours – (class contact time 35 hours and homework time 10 hours) Plus examination time.

Inspector Levels 3 and Pipeline Coatings - 45 hours, (class contact time 35 hours and homework time 10 hours). Plus examination time.

Module Levels, 21 hours plus examination time

Operative Levels, 28 hours including assessment time (Four full days continuous)

COURSE / EXAMINATION CRITERIA

Candidates who attend a Level 1 course only may attend a Level 1 examination only,

Candidates who attend a Level 2 course/examination must already hold Level 1 approval,

Candidates who can provide evidence of having attended a first or second level course conducted under BGAS, NACE, ICorr or Frosio will qualify to enter for either a level 1 or level 2 Examination as appropriate, at their or their employers discretion.

The level 3 examination can only be taken upon successful completion of an SWS ICAS level 3 course.

Levels must be taken in sequence.

Pipeline inspector, Modules and Operative disciplines are based on a single level.

Candidates for Inspector or Module levels may take their relevant examinations following the end of the course or at a later time at their or their companies discretion. All candidates must attend the relevant course level before attempting an examination, except for transition candidates and those exempted as described above.

Candidates for Operative levels will be assessed both theoretically and practically on the fourth day of the course. This approval course and examinations are designed to be carried out on client premises, or any premises meeting the criteria for conducting the courses and examinations. All three operative approval courses / examinations are designed to run concurrently.

EXAMINATION LEVELS

Level 1 Inspector,

1 x 40 question MC paper carrying 2.5 marks per correct answer 100 marks possible

Practical examination specified to a maximum of 100 marks possible

Level 2 and 3 Inspector, Pipeline Inspector and Modules

1 x 20 question MC paper carrying 1 mark per correct answer 20 marks possible

1 x 16 question Narrative question paper carrying 0 to 5 marks 80 marks possible

Total 100 marks possible

Practical examination specified to a maximum of 100 marks possible

Blaster / Preparation, Painter / Sprayer Operatives

1 x 40 question MC paper carrying 2.5 marks per correct answer 100 marks possible

Practical examination specified to a maximum of 100 marks possible

Coating Supervisor, As above plus

1 x 25 question MC paper carrying 4 marks per correct answer 100 marks possible

EXAMINATION TIME ALLOWANCES

MC 20 question papers – one hour

MC 25 question papers – one hour 15 minutes

MC 40 question papers – two hours

16 narrative question papers – three hours

Practical Assessments for Inspector levels – one hour

Practical Assessments for Operatives – seven hours

A small degree of flexibility should be exercised by the examiner as to examination time allowances but this should not exceed an extra 30 minutes. It is important that the best qualities of the candidate can be ascertained and not necessarily how quickly the examination can be completed. This is particularly important where a candidate is being examined under a second language situation.

ELIGIBILITY FOR CERTIFICATION

Each examination consists of a practical and theory element, these are standardised at 100 marks for each.

An examination is graded as a pass if both elements attain a minimum of 70 marks out of 100

If one element is passed and one failed, a resit will be offered on the failed element. The resit element must be retaken within one year of the original examination date, and the candidate should show evidence of further study. If the resit is successful an overall pass will be awarded. If the resit element is failed the candidate will return to initial examination status.

The certification awarded to successful candidates will consist of a Certificate giving details of the approval gained, and a wallet type ticket which can be used for identification purposes on site and which will give details showing – Approval Body, Candidate Name, Candidate Photograph, Grade of Approval, Date of expiry, Unique Identification Number.

This approval is personal certification and is the property of the holder regardless of who pays the relevant examination fees.

Prior to initial examination all candidates must submit – Completed examination application and information forms, Vision certificate, Two signed passport size photographs, Fee payable.

REVALIDATION ON EXPIRY

Certification of SWS ICAS approvals are valid for an initial 5 years. Following that approved candidates can renew as follows.

5 year renewal without examination - A candidate can renew their expiring approval without examination by following the correct procedure as follows -

Apply in writing for five year renewal without examination, prior to the expiry date,
Present an up to date copy of CV,
Present any letters of testimony from clients for project work carried out during the 5 year period,
Provide a vision certificate not more than one year old,
Submit expiring approval ticket,
Pay current revalidation fee.

10 year renewal – It is not possible to renew by application an SWS ICAS approval following 10 years validity. An abridged renewal examination must be taken to check that the candidate is up to date with the latest coatings technology, modern working practices and the latest Health and Safety information.

Candidates will not be notified regarding their expiring approvals. It is the candidates duty to apply for renewal within the time allowed.

TRANSITION INTO SWS ICAS

Current holders of Coating Inspector approvals awarded by BGAS / CSWIP, NACE, ICorr or Frosio can transition into SWS ICAS Levels 1 and 2 by a one day seminar which includes an abbreviated examination.

Level 1 – 40 MC questions and a basic Practical examination

Level 2 – 20 MC questions plus reporting on three coating samples

A

candidate can only transition into the equivalent level as that they hold with other bodies.

The transition will be valid for a period of five years from the date of issue, and will then follow the normal route of revalidation for SWS ICAS approvals.

DUTIES AND RESPONSIBILITIES OF COATING INSPECTORS AND OPERATIVES

General - All personnel involved in the preparation of surfaces, application of coatings, intermediate and final inspections, keeping of records, reporting procedures and final signing off of project work should follow good and safe practices and adopt the policy of getting it right first time, this for quality and economic advantage considerations.

Plan for safe working and safe working practices

Follow all Health and safety legislation

Faithfully follow the project specification

Respect all colleagues

Have good and effective channels of communication with others

LEVEL 1 DUTIES

Be able to take and understand verbal and written instructions from a level 2 or level 3 Inspector and report back when required

Appreciate the need for inspecting pre prepared surfaces

Appreciate the need for surface preparation to be of the specified standard

Appreciate the need for protective coating systems of the correct type to be used for different surfaces and conditions

Be able to calibrate and use paint inspection instruments correctly, and take accurate readings.

Be able to determine the finished quality of a coating

Report anomalies and paint faults to a more senior inspector

Provide equipment and records for level 2 and level 3 inspections

Keep and provide accurate and up to date records of all preparation and painting operations

LEVEL 2 DUTIES

Those for Level 1 plus - Liaise with Level 1, and where applicable level 3 inspectors

Be conversant with the project specification and codes and practices for any particular project

Attend site meetings with other disciplines to ensure smooth running of projects by good teamwork building

Ensure quality assurance, quality control and inspection procedures are coordinated, and that Inspectors carry relevant approvals, and build good teamwork

Ensure all coating practices conform to coating manufacturers recommendations

Carry out visual and investigative inspection to completed coatings projects

Compile all records in readiness for a Level 3 or client inspection

LEVEL 3 DUTIES

Those for level 1 and level 2 plus

Plan and implement a quality control plan over all coating project preparation and coating procedures

Interpret project drawings and specifications for clarification for colleagues

Take overall charge of safety and planning of site meetings

Supervise the activities of level 1 and level 2 inspectors

Check visually that all equipment used on projects is in good working condition, complies with current safety legislation and carries up to date maintenance, safety and calibration certificates

Be in a position to identify major preparation and coating faults, and be able to advise on rectification and future prevention measures

Judge that the overall finish of completed work meets the commercial requirements of the project specification

Be responsible for checking all records for correctness and clarity and ensure they are filed for future reference, including log books and handover notes

Ensure all certificates of completion are attached to the records

Take overall responsibility for all client liaison and communication

Lead the inspection and operative teams with encouragement and respect for all

OPERATIVE LEVELS DUTIES

Take instructions from relevant inspectors

Ensure appropriate work permits are obtained and returned when work is completed

Ensure work permit requirements are complied with

Check all equipment for safety and good working condition

Ensure all working areas are isolated from other activities and the public by barriers and signs

Ensure all pressures and limits of use for all equipment are fully observed

Ensure all appropriate personal protective clothing is worn

Ensure all equipment is properly cleaned and stored safely, following use

Ensure safe working to the benefit of themselves and others

Report all anomalies and work failures to the relevant authority

Maintain good communication between working teams

SYLLABUS FOR LEVEL 1 THEORY

CORROSION THEORY

Identification of ferrous and non ferrous metals

Why corrosion occurs in ferrous metals

Detail for the electrolytic cell

Factors which influence the rate of corrosion

Millscale and its effects on steel

The galvanic series

Methods of arresting corrosion

Use of barrier and sacrificial coating systems

SURFACE PREPARATION

Need for surface preparation

Preparation for long and short term systems

Rust grades to SS-05-59-00 (ISO 8501-1)

Blast cleaning grades to SS-05-59-00 (ISO 8501-1)

Wire brushing grades to SS-05-59-00 (ISO 8501-1)

Site and enclosed blast cleaning systems

Needle gunning, Abrasive discs, Grinding, Abrasive paper

Hydroblasting

Pressure washing

Safety measures required during surface preparation

Removal of surface contamination

Effects of abrasives (expendable, reusable)

Effects of different types of blast nozzle

PAINT TECHNOLOGY

Functions of binder, pigment and solvent in coatings

Additives in coatings

Types and uses of solvents

Anti corrosion pigments

Laminar pigments

Drying and curing mechanisms

Functions of primers, midcoats and finish coats

COATING MANUFACTURE AND TESTING OF COATINGS

Manufacture of coatings, Direct charge mill, Pre mix mill

Testing used for –

Adhesion

Opacity

Fineness of grind

Drying and curing

Flashpoint

Holidays and Pinholes

Calculations for –

Volume solids %

WFT

DFT, Destructive and non destructive

COATING APPLICATION

Brush

Roller

Spray – Conventional

Airless

Preparation of coatings for use

Influences on drying times

Common problems with application equipment

Safety for coating application

COATING FAULTS

Identification of common coating faults –

In the can

From contaminated surfaces

Due to inadequate preparation

Due to faulty application

Interference by weather

Bleeding

Blistering

Chalking

Cissing

Flocculation

Grinning

Runs and sags

RELEVANT STANDARDS / COLOUR STANDARDS / DATA SHEETS

Relevant BS and ISO standards for the industry

BS 5252 (Framework for colour co-ordination for building purposes)

BS 4800 (Specification for paint colours for building purposes) (origin, structure and use)

Coating manufacturers data sheets

HEALTH AND SAFETY LEGISLATION

Permit to work systems

Waste disposal procedures

Accident book requirements

Health and Safety at Work Act 1974

COSHH Regulations 2002

Blast cleaning safety documents

INSPECTION DUTIES

Site duties for Level 1 inspectors
Reporting
Documentation
Contractor malpractices

SYLLABUS FOR LEVEL 1 PRACTICAL

Elements from which candidates should demonstrate practical ability and working knowledge

ENVIRONMENTAL TESTING

Whirling Hygrometer – Checks for condition of Hygrometer
Use of Hygrometer for WB and DB readings
DP and RH calculation by – DP calculator or Digital gauge or Slide rule
Metal temperatures by – Magnetic steel thermometer or Digital thermometer
Environmental limits for coating application

IDENTIFICATION AND USE OF ABRASIVES

Identification of Expendable abrasives, Reusable abrasives, Contaminated abrasive
Situations for use of various types
Disposal of spent abrasive
Amplitude control
Effects of incorrect amplitudes

SURFACE PREPARATION

Identify to SS-05-59-00 – Rust grades, Blast cleaning grades, Wire brushing grades
Identify means to remove surface contamination
Recognise limits of various surface replica tapes
Measure Amplitude – Surface profile needle gauge, Dial micrometer and surface replica tape
Rejection of work
Rectification of rejected work

WET FILM THICKNESS MEASUREMENT

Identify – Steel comb gauge, Disposal plastic comb gauge, Eccentric wheel, Suitability for use
Relate to Metric and Imperial readings
Selection of a comb gauge
Readings taken with a comb gauge
Visual inspection of wet films
Rectification of WFT faults
Prevention of WFT faults

DRY FILM THICKNESS MEASUREMENT

Identify - Electronic DFT gauge, Magnetic film thickness gauge
Principals for use of gauges
Calibration of gauges
Shim thickness requirements Readings taken with DFT gauges
Tolerance of readings taken

SYLLABUS FOR LEVEL 2 THEORY

CORROSION THEORY

Galvanic corrosion reaction
Establishing the extent of corrosion

SURFACE PREPARATION

Selecting methods of preparation
Different methods for preparation of ferrous and non ferrous metals
Types and use of etch primers
Testing for surface contamination
Effects of inadequate preparation
Problems with too high/low amplitudes and their rectification

PAINT TECHNOLOGY

Generic types of coating systems and their properties
Critical pigment volume concentration
Suitability of generic coating systems for –
Industrial environments
Hot duty services
Damp ferrous surfaces
Non ferrous surfaces
Hot dip galvanizing to BS EN / ISO 1461

COATING MANUFACTURE AND TESTING OF COATINGS

Testing for coatings register approval
Artificial Weathering tests for –
Marine environments
Paint film permeability
High humidity environments
Paint film flexibility.
Density testing (One and two pack coatings)
Viscosity testing (Ford flow cup No 4)

MAINTENANCE PAINTING

Selection of coating systems
Compatibility between coating systems
Use of tie coats
Identification and removal of surface contamination
Repairs to damaged areas exposing the substrate
Repairs to damaged areas not exposing the substrate
Intermediate inspections for the design life of coating systems

SYLLABUS FOR LEVEL 3 THEORY

SAFETY REQUIREMENTS OFFSHORE

Statutory document SI 1019
Other statutory legislation
Medical requirements
Safety survival training
Offshore induction training
Escape routes
Permit to work systems
Vessel entry permits
Over the side working
Scaffolding
Breathing apparatus
Electrical grounding

INSPECTION AND REPORTING PROCEDURES

Quality assurance and QC procedures
Risk assessments
Emergency decision making
Client / Senior inspector relations
Factors which govern drying and curing rates
Monitoring of drying and curing rates
Contamination of surfaces
Encapsulated areas and masking out
Anomalies / Coatings applied out of sequence
Communication – log book, handover notes

OFFSHORE WORKING PRACTICES

Inspection of contractors plant and equipment
Contractor malpractices
Local environmental problems
Problems with access to working areas
Operational working restrictions
Restricted timescales
Storage of materials
Housekeeping

SPECIALISED COATING SYSTEMS

Fireproof coatings – Flame spread classification, Fire ratings, Fireproof coating systems
Selection of suitable fireproof coating and thickness
Coating systems suitable for – Topsides, Atmospheric zone, Splash zone, Submerged zone, Deck coatings, Helideck markings and colours, Escape route identification, Elevated temperatures, Potable water tanks, galvanised surfaces, Insulation - Accoustic and Thermal.

PAINT FILM TESTING

Preparation of test panels – Dry grit blasted, Wet grit blasted, Hand / Mechanically cleaned, Wet salt contaminated panels.
Performance testing for – Topside, Atmospheric, Splash and Submerged zones systems.

SYLLABUS FOR LEVEL 3 PRACTICAL

Elements from which candidates should demonstrate practical ability and knowledge

IDENTIFICATION OF SPECIALIST COATING SYSTEMS AND THEIR CHARACTERISTICS

Acrylic urethane finish
Coal tar epoxy
Coats containing MIO
Deck coatings
Epoxy high build coatings
Fireproof coatings
Glass flake epoxy
Polysiloxane
Reflective coatings
Tank lining coatings
Zinc silicate heat resistant primer

IDENTIFICATION OF PROBLEMS WHEN WORKING

Access to working areas
Elevated safety factors
High wind
Salt spray
Tidal changes
Marine salt deposits
UV light
Rapid change in weather conditions

COLOUR SCHEDULES

BS 5252 Framework for colour co-ordination for building purposes
BS 4800 Specification for paint colours for building purposes
BS 381C Specification for colours for identification, coding and special purposes
BS 5499-2 Graphic symbols and signs. Safety signs, including fire safety signs. Signs with a specific meaning
BS 1710 Specification for identification of pipelines and services

SYLLABUS FOR BLAST CLEANING / PREPARATION OPERATIVE, PAINTER SPRAYER OPERATIVE, COATING SUPERVISOR

THEORY

CORROSION THEORY

Why corrosion occurs in carbon steel, Process of corrosion, Millscale, Galvanic series, Methods of arresting corrosion.

PRECAUTIONS DURING OPERATIONS

Precautions when blast cleaning and using hand and power tool equipment, Precautions when airless spraying, Identification of hazardous areas, Health and safety legislation.

PLANNING OF WORK

Disturbance and dangers to the public, Access to working areas, The need for warning signs tapes and barriers, Suitability of equipment and processes, Availability of suitable equipment and PPE, Consideration of difficult working conditions, The need for work permits, Safe removal of waste materials.

SURFACE PREPARATION

Degreasing and cleaning of surfaces, Blast cleaning standards, Wire brushing standards, Equipment for site blast cleaning including safety features, Nozzle types, Abrasive and human factors, Enclosed blast cleaning, Wet blast cleaning.

APPLICATION OF COATINGS

Application of coatings by brush, roller, conventional spray, airless spray and electrostatic spray, Comparison of each in terms of quality and cost effectiveness.

COATINGS

Basic constituents of coatings, Additives.

WET FILM THICKNESS

Use of eccentric wheel and wet film combs for taking WFT readings.

DRY FILM THICKNESS

Use of non destructive, destructive, test panels and calculation for establishing DFT readings.

CONTRACTOR MALPRACTICES / COATING FAULTS

Intended and unintended malpractices, Coating faults, cause, cure, prevention.

GLOSSARY OF PAINT TERMS

Common terms used in the coatings industry.

SYLLABUS FOR BLAST CLEANING / PREPARATION OPERATIVE, PAINTER / SPRAYER OPERATIVE, COATINGS SUPERVISOR

PRACTICAL

SAFETY FACTORS ADOPTED AND THE IMPLEMENTATION OF EFFICIENT PRACTICES IN THE WORKPLACE

Plan and organise working teams for various practical activities, Demonstrate ability to accept responsibility within a team situation, Carry out work safely for the benefit of themselves and others, Fully record working activities, Safely dispose of waste materials, Clean, check and store equipment and materials properly following use.

SELECTION, ERECTION, DISMANTLING AND STORAGE OF WORKING PLATFORMS

Possess a working safety knowledge of timber ladders, steps, trestles, lightweight staging and metal tower scaffolding for industrial use, Inspect chosen scaffold for defects before assembling, Erect scaffold as a team in a safe manner, Scaffold dismantled and safely stored, Mount and dismount scaffold in a safe manner. Wear appropriate PPE.

PREPARATION OF WORKING AREAS FOR SITE AND WORKSHOP

Show knowledge of site drawings and coating specifications, Identify items to be protected and masked out, Demonstrate knowledge for the use of warning signs, warning tapes, barriers and hazardous area signs, Apply masking correctly, remove masking from surface without damage, dispose of safely.

PREPARATION OF SURFACES BY HAND AND MECHANICAL MEANS

Possess a working knowledge of specifications for preparation, Demonstrate practical knowledge of various types of preparation on coated and non coated ferrous and non ferrous substrates, Carry out safety checks to preparation equipment, Prepare work to set standards, Work safely using appropriate PPE, Provide a safe working environment for others on site and the public, Store equipment safely following use.

PRODUCTION OF SURFACE FINISHES BY BRUSH, ROLLER AND AIRLESS SPRAY

Show a working knowledge of health and safety regulations in relation to HASWA 1974 and COSHH 2002 and relate these to volatile coatings, Demonstrate a working knowledge of different types of generic coatings, Show knowledge of different coatings being required for different climatic conditions and

substrates, Recognise suitable methods of coating application according to the size and shape of an area, Mix one and two pack coatings correctly, Apply coatings to a given standard by various methods of application, Determine WFT and DFT thicknesses of coatings, State the use of a stripe coat and a tie coat, Identify drying and curing times, Wash out and store all coating equipment properly, Store all coating materials to manufacturers instructions and health and safety regulations.

Note – The theory elements will be based in the classroom, the practical elements will be based on site or in a purpose built coating examination centre.

TRAINING CENTRE REQUIREMENTS

The term training centre can mean an approved companies own premises, or other premises they may use for conducting courses and examinations. An individual who carries out course lecturing or acts as an examiner in outpost situations can be described as an approved training centre provided they comply with the criteria set out below.

Wherever situated an approved training centre should meet minimum standards of comfort, have minimum quantities of equipment for candidate use during the course, and have an effective communication system.

COMMUNICATION

Brochures or literature showing proposed course and examination dates at the various levels -
Address, tel no, fax no, EMail address.
Contact person
Course enrolment and information forms
Examination application forms

CLASSROOM FACILITIES

Course notes and handouts as applicable
U shape layout with sufficient space for candidate comfort
Chairs with fabric seats
Head table and chair for lecturer use
Separate table for instruments
Selection as required from –
Video player
CD player
OHP
Flip chart with pens
Whiteboard / Blackboard

Candidate notepaper with pen and pencil
Water available all day
Tea / Coffee facilities for break times
Lunch or access to lunch facilities (Halal food where appropriate)
Toilet and hand washing facilities

EXAMINATIONS

Two rooms to be available
Room 1 for Theory examinations under invigilation
Room 2 for practical examinations conducted on a one to one basis

TRAINING / EXAMINATION EQUIPMENT REQUIRED

WEATHER CONDITIONS

Magnetic steel thermometer
Whirling hygrometer
Dew point calculator
DP and RH calculation tables
Digital thermometer
Digital DP meter

ABRASIVE SAMPLES

Iron or steel shot / grit mix to 75% shot and 25% grit
Garnet
Copper slag
Crushed glass
Contaminated abrasive

PREPARATION OF SUBSTRATES

Swedish standard SS- 05- 59- 00
Rust grade samples, A, B, C, D
Blast cleaning grade samples, SA 1, SA 2, SA 2.5, SA 3
Wire brushing grade samples A, B, C, D
Surface profile needle gauge, scale 0.002mm
Dial micrometer, scale 0.002mm
Surface replica tape, grades coarse and X coarse
Rubbing tool for use on tape
Blast cleaned calibration plate (specified to 30min and 75max microns profile)

WET FILM THICKNESS

Full set of steel WFT combs
Plastic disposable combs
Eccentric wheel

DRY FILM THICKNESS

Electronic DFT gauge with calibration set (Elcometer 456)
Magnetic film thickness gauge (Elcometer 111 or 211)
Set of shims for calibration
Dry blasted steel sample plates for calibration (30 to 75µm)
Dry film thickness sample plates for measurement (2 in number)

DENSITY AND VISCOSITY

Ford flow cup number 4
Density cup

PAINT FAULTS IDENTIFICATION

Samples showing –
Bleeding
Bittiness
Chalking
Cissing
Grinning
Runs and sagging
These can be photographs

IDENTIFICATION OF COATING SYSTEMS FOR LEVEL 3 ONLY

Those identified on page 12 of this document. No samples will be used, verbal identification only to be used as to the suitability of use under certain conditions.

ANCILLIARY ITEMS

Holiday detection unit (can be photograph)
Pinhole detector unit (can be photograph)
Pull off dolly tester (can be photograph)
Coating manufacturers data sheets
Daily report sheets
BS 4800

A full set of equipment should be available for practice on the course at the ratio of one set per 10 course members.

Note – No wet paint films will be used either on the course or in the examination. If a real holiday detector is used it must be disabled from being switched on.

Note – The equipment used for the examinations must be the same as that used for training on the course.

EXAMINER / INVIGILATOR DUTIES

EXAMINER DUTIES

Advise invigilator of their duties
Carry out and grade the practical examinations
Mark and grade the written examination papers
Return all paperwork to SWS for ratification
Dismiss candidates if caught cheating and file report (no exceptions)
Interpret wording of any questions if required

Note – It is usual that an examiner conducts 5 examinations per day

INVIGILATOR DUTIES

An invigilator will be locally appointed and take instructions from the appointed examiner. Their duties will be to -

Read the examination rules
Check candidate identity
Ensure candidate paperwork is complete
Ensure mobile phones are handed in
Observe time limits for completion of written papers –
Level 1, MC paper 40 questions – two hours
Levels 2, 3 and Modules MC paper 20 questions – one hour
Levels 2, 3 and Modules Narrative paper 16 questions – three hours
Operative levels, MC paper 40 questions – two hours
Operative, Coating Supervisor extra MC paper 25 questions – One hour fifteen minutes
Collect completed papers and make secure
Observe fair play during the written examination
Report any cheating to the examiner (With evidence if possible)

EXAMINATION RULES

Only a black or blue pen may be used for written answers (no pencil)
No scrap paper may be used (use blank side of question paper if needed)
No correction fluid to be used (cross out and rewrite if necessary)
Mobile phones must be switched off and handed to the invigilator
A calculator may be used but not one with an electronic memory
No communication with other candidates during the examination
No breaks to be taken during the course of writing an examination paper

COMPLAINTS / APPEAL PROCEDURES

Any candidate believing they have been given a wrong result, or who have a complaint against the way their examination was conducted must lodge a written complaint / appeal to SWS within three months of the date of their examination result. They must state their reasons for the complaint / appeal whereupon their papers will be reviewed by SWS and a member of the CTTC. The result of this review will be made known to the complainant within two months of being received.

IMPARTIALITY RULES

A person may be approved as both lecturer and examiner but cannot act as both for any single course.

TRAINING AND VALIDATION FOR SWS ICAS APPROVED LECTURERS AND EXAMINERS

RATIONALE

To provide a training scheme through which potential Lecturers and Examiners can be approved, and successfully carry out their duties under the SWS ICAS scheme, this to meet high standards of delivery and client expectations

To empower suitably pre qualified individuals to carry out the teaching and examination processes as required by the SWS ICAS scheme.

To develop procedures which will standardise the delivery of syllabus / course material and examination processes, thus ensuring equal opportunity for successful outcomes throughout the world.

For Lecturers and Examiners to undergo seamless updating of new syllabus / course and examination material as it occurs, due to technical advances and the updating of Health and Safety legislation.

GENERAL STATEMENT

Different criteria must be employed for the training and validation of lecturers and examiners as their role is diverse.

Any assessment used to verify a potential lecturer or examiner will not be based on formal examination but will rely on respect for their already pre established qualifications and experience. This together with practical training, peer encouragement and discussion.

A candidate may be approved to both lecturer and examiner standards but whose work will fall directly under the impartiality rule laid down in the SWS ICAS Requirements Document.

An audit system will be in place in order to continuously monitor quality aspects at the point of delivery, and for paperwork administration.

The SWS ICAS / CTTC management committee has sole arbitration as to the suitability of a person to carry out the duties of lecturer and examiner and, at their discretion may withdraw their validation at any time.

Organisations can nominate individuals to be considered for lecturer and examiner status based on their qualifications and experience. This also applies to self nominated individuals.

Training and assessment required will initially be carried out by WTS.

LECTURER TRAINING AND VALIDATION

BACKGROUND

All coating subject specialists may not necessarily be able to become teachers as teaching itself can be partly a gift but is mostly a competence achieved by training, together with deep subject knowledge, confidence, and the ability to communicate and interact clearly with students. Practical experience of the subject is essential in order to make reply to student questions with clarity and correctness.

TRAINING

Due to diverse geographical locations more than one proposed lecturer can attend training at one time, excepting for the third element which must be carried out on a one to one basis. This for assessment purposes.

Validation for all levels and modules must be undertaken separately under three elements

Element 1, – Candidate to study course material for relevant level.

Element 2, – Prospective lecturer to share course teaching with WTS

Element 3, – Prospective lecturer to teach course alone with WTS in attendance to monitor and evaluate performance.

WTS will hold tutorials throughout the training process both in person and by Email, and will make a final decision as to the suitability of the proposed lecturer to carry out their duties. If not deemed to be suitable at that time further unspecified training will be undertaken.

EXAMINER TRAINING AND VALIDATION

BACKGROUND

Examiners to be appointed will already be well qualified, can demonstrate full experience, and be current holders of SWS ICAS level 3. The training should recognise the strengths already held by the proposed examiner and should pay respect to those strengths whilst at the same time preparing the proposed examiner for their devised work.

TRAINING

Practical examinations – WTS will observe the practical examinations being carried out without comment, but will make observation notes. The marks awarded will then be discussed and advice given as necessary to guide the proposed examiner towards a standardised approach.

Theory examinations – WTS will not be present at the examinations but will join the proposed examiner for the marking procedure. The proposed examiner will mark the papers in accordance with the marking scheme (both MC and narrative) under the scrutiny of WTS. The MC papers will be marked twice to ensure correctness, and the Narrative paper marked according to the 0-5 marks scale specified.

Following this WTS will recommend whether or not the proposed examiner is ready to take up their duties, or whether or not the process needs to be repeated, or whether further unspecified training needs to take place before the proposed examiner attains the required standard.