



UNIVERSAL

COATING INC.

The logo features a central globe with latitude and longitude lines, flanked by two sets of horizontal lines that radiate outwards, creating a sense of global reach or expansion.

**QUALITY
ASSURANCE
PROGRAM**





UNIVERSAL COATING INC.

QUALITY ASSURANCE PROGRAM OVERVIEW

UNIVERSAL COATING INC. has established the following policies and objectives to ensure quality is maintained with all Coating services. This Quality Assurance Program sets forth the responsibilities of all personnel in complying with this plan. Quality Assurance will regularly audit the services and program to determine its status and adequacy.

It is the basic management policy of UNIVERSAL COATING INC. that those in charge of the QUALITY ASSURANCE PROGRAM have independent authority of those performing the activity or service, when possible. Therefore, the Quality Assurance Manager is vested with the responsibility to determine that materials are in accordance with Universal Coating Inc. standards, owner specifications and other governing codes and standards. The Quality Assurance Manager will act with Corporate authority to enforce this criteria.

It is UNIVERSAL COATING INC. intent to continue to maintain its leading role in offering quality services through continuing development of equipment, people, procedures, and our quality system.

UNIVERSAL COATING INC.
QUALITY ASSURANCE PROGRAM
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SECTION 1: Management Organization and Responsibility

OBJECTIVE

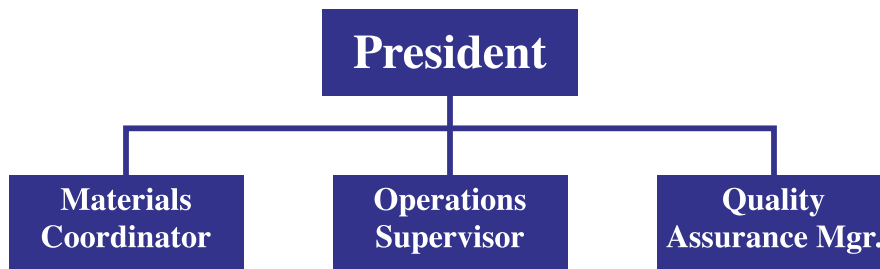
To provide an established structure of responsibility for UNIVERSAL COATING INC. employees to ensure continued performance of quality service.

SCOPE

Management commitment to UNIVERSAL COATING INC. Technicians and Material Coordinator's documentation of services.

RESPONSIBILITY

Responsibility of this Quality programs effectiveness lies with every employee. Delegation of organization and responsibility within the program is reviewed by management annually.



The final inspection and test for service is the satisfaction of the customer. It is the responsibility of every employee to ensure customer satisfaction. Each employee has the authority to provide the quality of service required by the customer. The above people are available to all employees to ensure that quality of service.

PRESIDENT

The President provides effective management direction and the administrative and functional guidance to all operating entities. He has responsibility to ensure support and implementation of this Quality program and responsibility to ensure all entities performing activities affecting quality are furnished with appropriate resources and suitable environmental conditions for accomplishing their activity.



SECTION 1: Management Organization and Responsibility ...continued

Quality Assurance Manager

The Quality Assurance Manager deals with all quality concerns at every level and reviews and is responsible to ensure proper employee training, equipment operation, job documentation, and customer satisfaction. The Quality Assurance Manager generally works with every entity within UNIVERSAL COATING INC. and has authority to implement immediate changes deemed necessary to enhance the quality of service.

Operations Support

The Materials Coordinator's responsibility lies in ensuring proper operation of equipment, equipment repairs, maintenance, calibration, and purchasing.

The Operations Manager is responsible to assign the proper Technician and equipment to each job with the proper procedures, safe work practices, job reports, data sheets, and other documentation required to maintain quality service.

UNIVERSAL COATING INC. management will review annually the Quality system is performing the requirements of Quality Assurance. Any changes to the system will be included in all Quality Assurance Manuals, to be implemented by the Quality Assurance Manager. The names of those responsible for the positions described will be noted in all annual and necessary reviews of the Quality Assurance Program.

SECTION 2: Personal Training Requirements

OBJECTIVE

To describe a system for establishing and documenting the procedures and requirements for UNIVERSAL COATING INC. technicians.

SCOPE

Personnel training requirements for UNIVERSAL COATING INC. technicians.

RESPONSIBILITY

It is the responsibility of the Quality Assurance Manager to verify the qualifications of a technician.

TRAINING AND QUALIFICATION

All UNIVERSAL COATING INC. employees will receive training to perform the services provided to our customers. Training requirements are monitored and implemented on a regular basis in order that the company may have sufficient personnel training to the appropriate level to provide our customers with quality service.

UNIVERSAL COATING INC.'S "CONTROLLED HVOF METAL SPRAYING TRAINING MANUAL" is covered by all new employees in a two day seminar. Acceptable understanding and completion of this training is documented in three exams, covering course material. These exams are filed in the employee files.

Complete hands on training by a senior technician is provided along with Quality Assurance procedures and their responsibility for correct and timely documentation.

The Operations Manager is responsible to evaluate the level of understanding and experience of each technician.



SECTION 3: Records and Services

OBJECTIVE

To describe the control of records which furnish objective evidence that contract requirements were met.

SCOPE

The data to which the quality of service is traceable and its review.

RESPONSIBILITY

The Quality Assurance Manager or his designate shall be responsible for the control and implementation of this procedure. UNIVERSAL COATING INC. technicians shall be responsible for submitting the required documents at the completion of each job.

UNIVERSAL COATING INC. provides the service of HVOF Coatings along with other alternative coatings. The quality system requires that the customer is satisfied with the service provided.

QUALITY SYSTEM

The quality assurance system for UNIVERSAL COATING INC. includes, but is not limited to, bids sent out, daily/shift job reports, customer drawings, written specifications and invoice.

Quality starts with knowing the customer's needs and continues with the proper handling of the service request from the customer. Requests are reviewed prior to work commencing and any questions about the job answered in writing.

The work order (exhibit I) is used to detail all tasks and procedures used to do the work. This report is not complete without all information recorded that could be used to confirm that the job was done correctly. The quality includes the assurance that the job was done correctly - a properly completed report gives that assurance.

As a measure of our customer's satisfaction of quality, UNIVERSAL COATING INC. sends out a Quality Assurance follow-up report (exhibit II) at the completion of a project at the customer's request.

SECTION 3: Records and Services...continued

Upon return, this evaluation report is reviewed by the Quality Assurance Manager and the Operation Manager and filed in the QA Report File. Dissatisfaction in customer remarks on the follow-up report is considered nonconformance. All jobs containing nonconformance with have a quality assessment review generated by the Quality Assurance Manager or designate. Copies of the work order, work procedure, and follow-up report are provided in the file as back-up documentation. A copy of this file is supplied to the Operations Manager, who reviews the nonconformance and takes the appropriate action to prevent a reoccurrence of the nonconformance. The Quality Assurance Manager will review the nonconformance, the action taken, appropriate procedures, and file in the job file under the customer name. Corrective action taken will be detailed on the procedure for reference by technicians.

DOCUMENT CONTROL

Records shall be maintained which provide objective evidence that contractual requirements are met. The records shall be maintained in the Administration Office in the Job Folder, and shall be identified with the name of the customer and the job number. The Quality records shall include:

- (a) The customer's tender or contract, drawings and specifications.
- (b) The sales order or purchase order number.
- (c) Work order.
- (d) Internal drawings, calculations and documentation generated through the duration of the job.
- (e) Nonconformance reports.
- (f) UNIVERSAL COATING INC. Invoices.
- (g) Original quote or bid documents.

REVIEW OF RECORDS

Records shall be made available for review by quality representatives of the customer and regulatory authority as applicable.

RETENTION OF QUALITY RECORDS

Records shall be retained for a minimum period of 5 years.

SECTION 3: Records and Services...continued

EXHIBIT I

Work Order



4815 - 68 Avenue
Edmonton, Alberta, Canada T6B 2N2
Phone: (780) 989 - 0448
Fax: (780) 989 - 0447
eMail: unvcoating@shaw.ca

UNV# PO

Customer: Date Received:

Date Required: Date Shipped:

Item	Description	Start Fit Size OD	Prep Fit Size OD	Spray Fit Size OD	Finish Fit Size OD	Fit Size Length

Special Instructions:

Item	Coating Type	Coating Thickness	Surface Finish	Blast Profile	Substrate Temp

Powder Mill certs number:

Procedure Times	Start:	Finish:	Total:	Technician:
Prep Grind				
Blast and Mask				
Spray				
Finish Grind				
Hone/Polish				

Universal Coating Inc. Quality Assurance approved by: _____

SECTION 3: Records and Services...continued

EXHIBIT II



8103 - 43 Street
Edmonton, Alberta T6B 2M3
Phone: (780) 989 - 0448
Fax: (780) 989 - 0447
Cell: (780) 984 - 4523
eMail: unvcoating@shaw.ca

Quality Assurance Report

Customer:

Parts Description:

Parts Number: P. O. Number:

Pre-Grind Size: Blast Profile:

Blast Media: **Alumia Oxide** Surface temperature window during application:

RMS:

Coating Thickness P/S: Coating Applied:
(composition available upon request)

Our work order number:

QA Inspector:

Universal Coating, Inc.



SECTION 4: Equipment Calibration

OBJECTIVE

To describe the control of measuring and testing equipment by means of a calibration program.

SCOPE

The calibration of measuring and test equipment used in determining whether parts conform to applicable requirements.

RESPONSIBILITY

The application and control of this procedure is the responsibility of the Quality Control Manager or delegate.

IMPLEMENTATION

The Quality Assurance Manager shall ensure that the company owned measuring and testing equipment used in determining product acceptability are maintained in an accurate state of calibration. Procedures shall be written for the calibration of measuring and testing equipment. Where a third party is contracted to perform equipment calibrations, their written procedures will be reviewed by the Quality Assurance Manager before using their services.

The physical standards used in calibration shall be traceable to nationally recognized standards, such as ASTM, ANSI or equivalent.

SOURCES OF CALIBRATION

Calibrations performed within the company shall be carried out by the Quality Assurance Manager or Technician, who has been trained and approved.

Calibrations performed by qualified outside agencies, shall be based on procedures and standards traceable to nationally recognized standards.

CALIBRATION RECORDS

Records shall be kept of calibrations done internally and by outside sources by entering the results of each calibration in a file pertaining to all equipment requiring calibration.

SECTION 4: Equipment Calibration...continued

The calibration file shall be maintained for all essential data including the identification, acceptance criteria, dates of completed calibration, and calibration source.

EQUIPMENT LABELLING

The Quality Assurance Manager shall verify that each piece of equipment is identified with a manufacturer's serial number. Alternatively, a control number shall be affixed to the equipment.

After calibration, the Quality Assurance Manager shall attach a calibration label to the equipment showing the control number and date of calibration.

FREQUENCY OF CALIBRATION

The frequency of calibration schedule for testing and measuring equipment shall be found in the manufacturer's recommendations. Calibration frequency shall be subject to review depending on changes in the frequency of equipment usage.

EXAMPLES OF EQUIPMENT TO BE CALIBRATED

- (a) Blast Profile Micrometer.
- (b) Micrometer (dimensional measurements).
- (c) Raytek Infrared Temperature Measurement.
- (d) Surftest 212 (surface roughness tester).
- (e) Coating Thickness Micrometer.

SECTION 5: Written Procedures

OBJECTIVE

To describe the system for establishing and documenting the procedures, activities, and services associated with the product and services provided by UNIVERSAL COATING INC.

SCOPE

The preparation, review and approval of the procedures used in the course of providing coating to UNIVERSAL COATING INC.'s customers.

RESPONSIBILITY

It is the responsibility of every UNIVERSAL COATING INC. employee to provide an accurate and timely written record of job progress. It is the responsibility of the Quality Control Manager to be sure all employees are trained in the proper documentation of job progress.

WRITTEN PROCEDURES FOR HVOF COATING

- (a) Ensure all parts are clean of oil or grease before commencing work.
- (b) Mask off areas to prohibit overspray to unwanted areas.
- (c) Blast area to be coated.
- (d) Take blast profile measurement, ensuring proper anchor profile.
- (e) Transfer piece into spraybooth. Pre-heat piece to 100F before applying first pass of coating. Apply coating no thicker than .001 per pass.
- (f) Monitor surface temperature, keeping a 100F-220F window to ensure no metalurgical damage to substrate and coating.

WRITTEN PROCEDURES FOR GRINDING OF HVOF COATINGS

- (a) Visual inspection of centers and ensure piece is straight, etc.
- (b) Select method of set-up, then dial work piece in as close as possible to .000 on the dial indicator.
- (c) Check work piece for concentricity to the repairable fit. Initiate reference point of dialled in area at the start to ensure the piece will be running concentric when finished.
- (d) Select desired wheel and traverse speed. (Never grind more than .001 per side of tungsten carbide per pass).
- (e) Grind opposite ends of fit to set taper of bed to work piece.
- (f) Use cutting fluid while grinding.

SECTION 5: Written Procedures...continued

WRITTEN PROCEDURES FOR HONING AND POLISHING

- (a) Most work materials can be finished using surface speeds of 300 to 400 inches per minute. To determine proper R.P.M., use the formula:

$$\text{RPM} = (400/\text{OD} \times 3.14). \text{D} = \text{the work piece diameter.}$$

Use slower work speeds for more aggressive cutting action and speed up the work for a smoother finish. A traverse feed of .125 per revolution is a good general starting point. For roughing, a coarser feed may be used although moving too quickly may make the surface uneven. Traverse evenly and continuously. Do not let the unit dwell excessively unless an undercut area is desired.

FINAL INSPECTION OF COATING

- (a) All pieces are checked for coating thickness with a minimum .005 per side on new parts and recorded on the Quality Assurance Report.
- (b) Using an instrument to measure surface smoothness, take RMS reading of piece and record on the Quality Assurance Report.
- (c) Do a ring test on piece where applicable to ensure no cracking may have occurred. Also a dye penetrant can be used to ensure that the coating substrate is free of cracking.
- (d) Parts are cleaned and coating surface is then wrapped for shipping.



SECTION 6: Purchasing Controls

OBJECTIVE

To describe the control of purchasing products or services which will inherently affect the quality of UNIVERSAL COATING INC.

SCOPE

The purchasing of products or services.

RESPONSIBILITY

The Quality Assurance Manager will be responsible to pre-approve all vendors. The Materials Coordinator will be responsible for ordering, receiving, documenting, and handling products and services.

VENDOR APPROVAL

The Quality Assurance Manager will be responsible to pre-approve all vendors with respect to quality of product, written procedures, economy of product or service, delivery, business stability and past performance. Only after being satisfied with the potential vendor's responses will the Quality Assurance Manager add the vendor name to UNIVERSAL COATING INC.'s vendor list.

PURCHASING CONTROLS

To initiate the purchase of a product or service from an approved vendor, a purchase order is issued providing itemized cost, shipping instructions, etc.

RECEIVING, HANDLING AND STORAGE

When receiving orders from a vendor, a complete inspection of the contents shall be performed to confirm the compliance to the purchase order. Defective parts are marked on the packing slip. These parts are set aside in an isolated area until they can be returned to the vendor.

SECTION 7: Audits and Program Changes

OBJECTIVE

To define the system for conducting Quality Assurance audits to verify compliance with governing procedures, documents, policies, and standards which determine the effectiveness of the Quality Assurance Program, as well as to establish a method of updating it.

SCOPE

Audits and up-dates to UNIVERSAL COATING INC.

RESPONSIBILITY

The Quality Assurance Manager will be responsible for planning, scheduling, and conducting internal and external audits with input and authority coming from the General Manager. Updates to the Quality Assurance Program are the responsibility of the Quality Assurance Manager.

AUDITS

The audit program will be planned to include elements of the Quality Assurance Program on a regular basis. Internal audits will be scheduled at the discretion of Quality Assurance when performance of an activity indicates the need; when the previous corrective actions have proven ineffective; or when a supplier's history data indicates the need.

External audits will be scheduled at least every three years.

Audits will be performed in accordance with written procedures or checklist by appointed personnel not having direct responsibility in the area being audited.

Results of quality audits, their findings, and associated corrective actions will be documented and filed.

Results of quality audits, will be distributed, when deemed necessary, to the appropriate personnel for review and action. All levels of management may have input into the method or degree of corrective action required.



SECTION 7: Audits and Program Changes

UPDATES

Updates will be provided by Quality Assurance to improve and correct any deficiencies in the program. It will be the responsibility of the Quality Assurance Manager to coordinate changes and improvements in a timely manner.




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