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National Occupational Analysis

Automotive Painter

2014

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Canada

National Occupational Analysis

Automotive Painter

2014

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FOREWORD

The Canadian Council of Directors of Apprenticeship (CCDA) recognizes this National Occupational Analysis (NOA) as the national standard for the occupation of Automotive Painter.

Background

The first National Conference on Apprenticeship in Trades and Industries, held in Ottawa in 1952, recommended that the federal government be requested to cooperate with provincial and territorial apprenticeship committees and officials in preparing analyses of a number of skilled occupations. Employment and Social Development Canada (ESDC) sponsors a program, under the guidance of the CCDA, to develop a series of NOAs.

The NOAs have the following objectives:

- to describe and group the tasks performed by skilled workers;
- to identify which tasks are performed in every province and territory;
- to develop instruments for use in the preparation of Interprovincial Red Seal Examinations and curricula for training leading to the certification of skilled workers;
- to facilitate the mobility of apprentices and skilled workers in Canada; and,
- to supply employers, employees, associations, industries, training institutions and governments with analyses of occupations.

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This analysis was prepared by the Labour Market Integration Directorate of ESDC. The coordinating, facilitating and processing of this analysis were undertaken by employees of the NOA development team of the Trades and Apprenticeship Division. The host jurisdiction of British Columbia also participated in the development of this NOA.

Comments or questions about National Occupational Analyses may be forwarded to:

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STRUCTURE OF ANALYSIS

To facilitate understanding of the occupation, the work performed by tradespersons is divided into the following categories:

Blocks	the largest division within the analysis that is comprised of a distinct set of trade activities
Tasks	distinct actions that describe the activities within a block
Sub-Tasks	distinct actions that describe the activities within a task
Key Competencies	activities that a person should be able to do in order to be called 'competent' in the trade

The analysis also provides the following information:

Trends	changes identified that impact or will impact the trade including work practices, technological advances, and new materials and equipment
Related Components	a list of products, items, materials and other elements relevant to the block
Tools and Equipment	categories of tools and equipment used to perform all tasks in the block; these tools and equipment are listed in Appendix A
Context	information to clarify the intent and meaning of tasks
Required Knowledge	the elements of knowledge that an individual must acquire to adequately perform a task

The appendices located at the end of the analysis are described as follows:

Appendix A — Tools and Equipment	a non-exhaustive list of tools and equipment used in this trade
Appendix B — Glossary	definitions or explanations of selected technical terms used in the analysis
Appendix C — Acronyms	a list of acronyms used in the analysis with their full name
Appendix D — Block and Task Weighting	the block and task percentages submitted by each jurisdiction, and the national averages of these percentages; these national averages determine the number of questions for each block and task in the Interprovincial exam
Appendix E — Pie Chart	a graph which depicts the national percentages of exam questions assigned to blocks
Appendix F — Task Profile Chart	a chart which outlines graphically the blocks, tasks and sub-tasks of this analysis

DEVELOPMENT AND VALIDATION OF ANALYSIS

Development of Analysis

A draft analysis is developed by a committee of industry experts in the field led by a team of facilitators from ESDC. This draft analysis breaks down all the tasks performed in the occupation and describes the knowledge and abilities required for a tradesperson to demonstrate competence in the trade.

Draft Review

The NOA development team then forwards a copy of the analysis and its translation to provincial and territorial authorities for a review of its content and structure. Their recommendations are assessed and incorporated into the analysis.

Validation and Weighting

The analysis is sent to all provinces and territories for validation and weighting. Participating jurisdictions consult with industry to validate and weight the document, examining the blocks, tasks and sub-tasks of the analysis as follows:

BLOCKS	Each jurisdiction assigns a percentage of questions to each block for an examination that would cover the entire trade.
TASKS	Each jurisdiction assigns a percentage of exam questions to each task within a block.
SUB-TASKS	Each jurisdiction indicates, with a YES or NO, whether or not each sub-task is performed by skilled workers within the occupation in its jurisdiction.

The results of this exercise are submitted to the NOA development team who then analyzes the data and incorporates it into the document. The NOA provides the individual jurisdictional validation results as well as the national averages of all responses. The national averages for block and task weighting guide the Interprovincial Red Seal Examination plan for the trade.

This method for the validation of the NOA also identifies common core sub-tasks across Canada for the occupation. If at least 70% of the responding jurisdictions perform a sub-task, it shall be considered common core. Interprovincial Red Seal Examinations are based on the common core sub-tasks identified through this validation process.

Definitions for Validation and Weighting

YES	sub-task performed by qualified workers in the occupation in a specific jurisdiction
NO	sub-task not performed by qualified workers in the occupation in a specific jurisdiction
NV	analysis Not Validated by a province/territory
ND	trade Not Designated in a province/territory
NOT COMMON CORE (NCC)	sub-task, task or block performed by less than 70% of responding jurisdictions; these will not be tested by the Interprovincial Red Seal Examination for the trade
NATIONAL AVERAGE %	average percentage of questions assigned to each block and task in Interprovincial Red Seal Examination for the trade

Provincial/Territorial Abbreviations

NL	Newfoundland and Labrador
NS	Nova Scotia
PE	Prince Edward Island
NB	New Brunswick
QC	Quebec
ON	Ontario
MB	Manitoba
SK	Saskatchewan
AB	Alberta
BC	British Columbia
NT	Northwest Territories
YT	Yukon Territory
NU	Nunavut

ANALYSIS

Safe working procedures and conditions, accident prevention, and the preservation of health are of primary importance to industry in Canada. These responsibilities are shared and require the joint efforts of government, employers and employees. It is imperative that all parties become aware of circumstances that may lead to injury or harm. Safe learning experiences and work environments can be created by controlling the variables and behaviours that may contribute to accidents or injury.

It is generally recognized that safety-conscious attitudes and work practices contribute to a healthy, safe and accident-free work environment.

It is imperative to apply and be familiar with the Occupational Health and Safety (OH&S) Acts and Workplace Hazardous Materials Information System (WHMIS) regulations. As well, it is essential to determine workplace hazards and take measures to protect oneself, co-workers, the public and the environment.

Safety education is an integral part of training in all jurisdictions. As safety is an imperative part of all trades, it is assumed and therefore it is not included as a qualifier of any activities. However, the technical safety tasks and sub-tasks specific to the trade are included in this analysis.

SCOPE OF THE AUTOMOTIVE PAINTER TRADE

"Automotive Painter" is this trade's official Red Seal occupational title approved by the Canadian Council of Directors of Apprenticeship (CCDA). This analysis covers tasks performed by an automotive painter whose occupational title has been identified by some provinces and territories of Canada under the following names:

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
Auto Body Technician - Auto Body Refinisher									✓				
Automotive Painter	✓	✓	✓	✓		✓	✓					✓	
Automotive Refinishing Technician										✓			
Motor Vehicle Body Refinisher Sub-Trade								✓					
Motor Vehicle Body Repairer - Auto Body Refinisher											✓		

Automotive painters work on the surfaces of motor vehicles, primarily in restoring vehicle finishes once body work has been completed. Some of the duties that an automotive painter completes include: removing exterior trim and hardware; removing layers of sub-coating; matching colours and mixing paints; preparing metal surfaces for painting by spot filling, sanding, and masking; applying primers, primer surfacers, enamels, clearcoats and urethanes; cleaning and polishing painted surfaces including removing and replacing decals; and applying rubberized undercoating treatments.

Automotive painters use hand and power tools in their work. Commonly used tools are sanders and spray guns. Computers and related software may be used in some workplaces for computerized paint colour reading, generating paint formulas and tinting recommendations.

Journeypersons in this trade usually work indoors and can expect a work environment that includes paint fumes, dust and noise. Health and safety are important issues for automotive painters, as they are exposed to chemical hazards such as paints and solvents, and physical hazards such as spray guns and sanders. Ongoing safety training and a good knowledge of government safety standards and regulations are important in providing a safer working environment.

Many automotive painters work in close contact with motor vehicle body repairers who tend to work in independent or dealership auto body shops. Automotive painting duties may overlap with motor vehicle body repairers' duties, particularly in small shops. In larger places of employment, automotive painters likely work as specialists, after body repairs have been

completed. While they may work as part of the repair team, automotive painters tend to work independently.

Key attributes for people entering this trade include: mechanical aptitude; manual dexterity; good colour vision; the ability to do precise work that requires attention to detail and problem solving skills. Good physical condition and agility are important because the work often requires considerable standing, bending, crouching, kneeling and reaching.

Being an automotive painter is very self-rewarding. With experience, journeypersons have a number of career options, including supervisory or teaching/training in the field, insurance adjuster, auto body estimator and manufacturers' representative.

The use of environmentally friendly materials is becoming more common in the trade. Regulations controlling their use and disposal are becoming stricter than in previous years. Computer software is playing a major role in colour formula retrieval and assists in colour matching. Manufacturers' systems involving spectrophotometers, internet-based ordering software and equipment are more involved in the day to day operations. While these high technology tools are helpful, they are only supplemental to the trained eye of an experienced professional automotive painter who is attuned to fine detail.

Hybrid and alternate fuel vehicles are becoming increasingly popular. Original equipment manufacturers (OEM) have specific recommendations for these types of vehicles to prevent vehicle damage and ensure worker safety.

Although new industry trends have slowed, innovation is still seen in areas such as nanotechnology and applications using a nitrogen spray system and curing technologies involving ultraviolet (UV) and broadband infrared curing. The introduction of high-solid contents and water-borne paints has decreased the level of solvent emissions, as well as the use and disposal of solvents. The return of volatile organic compound (VOC) compliant solvent-based products may reverse the trend of using water-borne products. Solvent recycling has in many cases dramatically decreased solvent waste and costs associated with this industry. The structure of day to day operations in workshops has changed with more specialization of personnel.

Essential skills are needed for work, learning and life. They provide the foundation for learning all other skills and enable people to evolve with their jobs and adapt to workplace change.

Through extensive research, the Government of Canada and other national and international agencies have identified and validated nine essential skills. These skills are used in nearly every occupation and throughout daily life in different ways.

A series of CCDA-endorsed tools have been developed to support apprentices in their training and to be better prepared for a career in the trades. The tools can be used independently or with the assistance of a tradesperson, trainer, employer, teacher or mentor to:

- understand how essential skills are used in the trades;
- learn about individual essential skills strengths and areas for improvement; and
- improve essential skills and increase success in an apprenticeship program.

Tools are available online or for order at: http://www.hrsdc.gc.ca/eng/jobs/les/tools/index.shtml.

The application of these skills may be described throughout this document within the competency statements which support each subtask of the trade. The following are summaries of the requirements in each of the essential skills, taken from the essential skills profile. A link to the complete essential skills profile can be found at www.red-seal.ca.

Reading
Automotive painters read work orders, labels, application or installation instructions, manufacturers' service bulletins and manuals for safe use and storage of paints, thinners and equipment. They also read trade publications to learn about new technologies, products and materials.

Document Use
Automotive painters reference safety or hazard icons to obtain information on a product's toxicity. They read forms and tables to determine product specifications such as temperatures, drying times and ratios. Automotive painters also use colour chips, wheels and charts to locate paint codes and determine tints to produce desired colour.

Writing
Automotive painters write notes on work orders and forms to describe what work was carried out and any irregularities. They may also write short statements on product defects. Automotive painters may write reports describing workplace accidents and incidents.

Numeracy
Automotive painters monitor temperatures, humidity and pressure levels. They also calculate quantities and mixed ratios of materials needed to produce an amount of refinishing product. Automotive painters may also estimate time required to complete painting tasks.

Oral Communication
Automotive painters communicate with colleagues and customers about the scope of work and work completed. They explain procedures to apprentices and estimators. Automotive painters need to communicate with suppliers and manufacturers.

Thinking Skills
Automotive painters use analytical and problem solving skills to determine appropriate solutions to refinishing issues such as surface imperfections, contamination and production problems. Automotive painters make decisions about which products to use to create the desired finish. They use organization skills to enhance production schedule and maintain work flow.

Digital Technology
Automotive painters may use digital tools and equipment to measure temperature and thickness of paint. They may also use these devices to determine paint colours and codes. Automotive painters may use computer software to retrieve paint formulas and access instructions for selecting and mixing appropriate refinishing materials.

Working with Others
Automotive painters spend most of their time working independently but they are required to coordinate activities with workers from body repair and vehicle preparation departments to maintain production schedule. They may also work directly with colleagues to help them with vehicle preparation duties.

Continuous Learning
Automotive painters are continuously learning to keep up with the changes in the industry. They may attend manufacturers' or suppliers' seminars to become a certified user of their products. Some jurisdictions require automotive painters to participate in mandatory courses yearly in order to maintain their credentials.

Trends

Safety and environmental regulations continue to increase and influence work practices. Safety and due diligence is becoming more and more the responsibility of the technician. The use of fresh air supplied respirators and sanders with dust extraction continue to grow in popularity.

Hybrid and alternate fuel vehicles are becoming increasingly popular. Because of safety considerations, OEM manufacturers have specific recommendations on bake cycles for these certain types of vehicles.

Related Components

All components apply.

Tools and Equipment

See Appendix A.

Task 1 Performs safety-related functions.

Context

Automotive painters protect themselves, co-workers and clients by maintaining a safe work environment. Automotive painters also protect themselves by using personal protective equipment (PPE) and safety equipment.

Required Knowledge

K 1	types of PPE such as hearing, eye, skin and respiratory protection
K 2	PPE operation
K 3	workplace safety and health regulations
K 4	WHMIS and location of material safety data sheet (MSDS)
K 5	workers' rights and responsibilities
K 6	location of safety equipment such as eye wash stations, fire extinguishers, spill kits and first aid kits
K 7	emergency procedures
K 8	disposal and recycling procedures in accordance with government regulations

K 9	basic first aid
K 10	types of vehicle propulsion such as electric, hybrid, hydrogen fuel cell and propane

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Sub-task

A-1.01 Uses personal protective equipment (PPE) and safety equipment.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	NV	ND	yes	yes	yes	yes	yes	NV	NV	ND

Key Competencies

A-1.01.01	select PPE such as paint suits, supplied air systems, fresh air/charcoal filter masks, gloves and ear protection according to job task
A-1.01.02	wear PPE for proper fit and perform fit test as needed
A-1.01.03	inspect and clean PPE prior to use
A-1.01.04	replace damaged or defective PPE according to manufacturers' specifications
A-1.01.05	store PPE in a safe and clean environment
A-1.01.06	operate safety equipment such as spill kits, eye wash stations, chemical showers and fire extinguishers
A-1.01.07	dispose of used spill kits according to environmental regulations

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Sub-task

A-1.02 Maintains safe work environment.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	NV	ND	yes	yes	yes	yes	yes	NV	NV	ND

Key Competencies

A-1.02.01	recognize worksite hazards such as spills, sources of ignition and sources of personal injury such as the improper use of razor blades or not removing trailer hitches
A-1.02.02	perform housekeeping duties such as clearing clutter and sweeping floors
A-1.02.03	store flammable products in explosion and spill proof cabinets
A-1.02.04	maintain clear path to exit ways and safety equipment
A-1.02.05	operate ventilation systems when moving vehicles, mixing products and spraying
A-1.02.06	locate safety equipment such as eye wash stations

A-1.02.07	dispose and recycle waste according to government regulations
A-1.02.08	check OEM specifications when dealing with hybrid and alternate fuel vehicles

Task 2 Maintains tools and equipment.

Context Regular maintenance of tools and equipment is important for proper operation and desired results.

Required Knowledge

K 1	types of hand tools such as sanding, cutting, scraping, and trim and accessory removal tools
K 2	hand tool limitations
K 3	types of power tools such as pneumatic and electric
K 4	operating procedures
K 5	types of measuring equipment such as scales, proportional sticks and containers
K 6	types of scales such as digital and computerized
K 7	viscosity
K 8	spray booth maintenance procedures
K 9	types of booth coatings
K 10	spray booth design
K 11	different lighting types
K 12	PPE and safety equipment requirements
K 13	types of spray equipment such as pressure pot and high volume low pressure (HVLP)
K 14	spray gun components such as air caps, packings, fluid needles and fluid tips
K 15	cleaning products and equipment
K 16	spray equipment cleaning and storage procedures
K 17	contaminants such as silicone and their possible negative effects
K 18	types of lubricants and their purpose

Sub-task

A-2.01 Maintains hand and power tools.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	NV	ND	yes	yes	yes	yes	yes	NV	NV	ND

Key Competencies

A-2.01.01	lubricate pneumatic tools according to manufacturers' specifications
A-2.01.02	replace consumables such as sanding pads and eraser wheels
A-2.01.03	clean tools such as polishing pads according to use
A-2.01.04	recognize unsafe, worn, broken and defective tools such as frayed cords and missing safety guards, and remove from service
A-2.01.05	store tools in designated area

Sub-task

A-2.02 Maintains spray booth.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	NV	ND	yes	yes	yes	yes	yes	NV	NV	ND

Key Competencies

A-2.02.01	replace components such as booth and inline filters, lights, seals and hoses
A-2.02.02	clean components such as glass, walls, floors and fan blades
A-2.02.03	re-apply booth coatings and sealants
A-2.02.04	adjust booth doors, latches and drive belts
A-2.02.05	verify air makeup system has been serviced according to maintenance schedule
A-2.02.06	perform maintenance according to maintenance schedule

Sub-task

A-2.03 Maintains spray equipment.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	NV	ND	yes	yes	yes	yes	yes	NV	NV	ND

Key Competencies

A-2.03.01	disassemble, clean, lubricate, re-assemble and store spray gun according to manufacturers' specifications
A-2.03.02	clean and verify operation of gun washers according to manufacturers' specifications
A-2.03.03	use gun washer coagulant as needed
A-2.03.04	replace worn or damaged parts
A-2.03.05	maintain compressors by draining water and changing oil, filters and belts
A-2.03.06	drain moisture traps
A-2.03.07	clean and verify operation of air dryers according to manufacturers' specifications

Trends	Increased specialization within the trade is making new planning techniques a necessity. There is an increased use of electronic means of communication within the shop and with suppliers and manufacturers. Internet-based ordering and networking facilitate work planning and production schedules.
Related Components (including, but not limited to)	Technical manuals and bulletins, safety and environmental regulations, repair estimates, WHMIS documents, work orders, vehicle documentation.
Tools and Equipment	See Appendix A.

Task 3 Uses documentation.

Context Automotive painters must use documentation throughout the refinishing process. They must be able to locate and interpret safety and environmental regulations. They will be required to interpret work orders prior to beginning work on any vehicle.

Required Knowledge

K 1	industry terminology
K 2	vehicle manufacturers' makes and models
K 3	location of vehicle identification number (VIN) and information stickers
K 4	vehicle information such as year of vehicle, VIN and production date
K 5	types of technical manuals and bulletins
K 6	location of manuals and bulletins in shop
K 7	jurisdictional and WHMIS regulations such as use, handling and storage of hazardous materials
K 8	VOC and VOC tracking procedures
K 9	types of paints such as water-borne and high-solids
K 10	work order formats

K 11	refinishing procedures
K 12	estimated and actual material requirements

Sub-task

B-3.01 Interprets vehicle information.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	NV	ND	yes	yes	yes	yes	yes	NV	NV	ND

Key Competencies

B-3.01.01	locate VIN and vehicle build stickers
B-3.01.02	interpret VIN or vehicle build stickers to determine paint codes, trim levels and colours, and all OEM relevant information

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Sub-task

B-3.02 Uses technical manuals and bulletins.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	NV	ND	yes	yes	yes	yes	yes	NV	NV	ND

Key Competencies

B-3.02.01	access technical manuals and bulletins in printed and electronic formats
B-3.02.02	interpret information in manuals and bulletins such as paint codes and product information to aid in refinish operations

Sub-task

B-3.03 Complies with safety and environmental regulations.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	NV	ND	yes	yes	yes	yes	yes	NV	NV	ND

Key Competencies

B-3.03.01	access environmental regulations such as dealing with application and disposal of paint products
B-3.03.02	interpret safety and environmental regulations as they apply to refinishing procedures
B-3.03.03	complete documentation for safety and environmental compliance such as when spill kits are used, booth filters are changed and injuries occur

Sub-task

B-3.04 Interprets work orders.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	NV	ND	yes	yes	yes	yes	yes	NV	NV	ND

Key Competencies

B-3.04.01	read and understand trade terminology on work order
B-3.04.02	apply information in work order to carry out refinishing procedures

Task 4 Plans work.

Context Automotive painters are constantly adapting to changing circumstances within the body shop environment. Therefore, ongoing planning and communication are important.

Required Knowledge

K 1	types of materials such as abrasives, cleaners and paints
K 2	material ordering procedures
K 3	repair techniques such as blending and butt matching
K 4	computer hardware and software applications such as spectrophotometer, paint mixing, job tracking, inventory and data retrieval

K 5	industry standards for identifying repair and refinishing requirements
K 6	body shop operations such as repair and estimating procedures, and workflow

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Sub-task

B-4.01 Organizes production schedule.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	no	yes	NV	ND	yes	yes	yes	yes	yes	NV	NV	ND

Key Competencies

B-4.01.01	identify and select tools, products and materials according to work to be performed
B-4.01.02	plan daily production schedule according to availability of equipment and material, repair process duration, delivery schedule and shop production limitations
B-4.01.03	adapt to changing shop conditions such as material availability, equipment malfunction and repair additions

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Sub-task

B-4.02 Performs inspections.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	no	yes	NV	ND	yes	yes	yes	yes	yes	NV	NV	ND

Key Competencies

B-4.02.01	verify tasks listed in repair estimate to ensure blend requirements and repairers' tasks have been completed
B-4.02.02	inspect body repairs to ensure they meet shop standards
B-4.02.03	inspect panels for additional damage such as runs, colour mismatch and dust nibs

Sub-task

B-4.03 Contributes to development of repair estimate.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	no	yes	NV	ND	yes	yes	yes	yes	yes	NV	NV	ND

Key Competencies

B-4.03.01	identify types of paint finish such as tri-coat, two-tone single stage and two-stage, and blend requirements
B-4.03.02	provide information to estimator regarding finish requirements such as sanding and polishing

Sub-task

B-4.04 Uses paint manufacturers' software and equipment.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	NV	ND	yes	yes	yes	yes	yes	NV	NV	ND

Key Competencies

B-4.04.01	retrieve information such as colour formula, technical data sheets (TDS), MSDS and VOC information electronically
B-4.04.02	use applicable manufacturers' mixing system to meet colour and product mixing requirements

Trends

There is an increased use of alternate substrate materials such as plastics, metal alloys and composite panels. These new materials affect the preparation and refinishing processes.

Products being introduced include low VOC solvents, interface pads, faster-drying materials and flexible foam-backed sandpaper. Existing products such as water-borne primers, ceramic topcoats and solvent impermeable putties are increasingly being used.

Related Components

All components apply.

Tools and Equipment

See Appendix A.

Task 5 Prepares surface.

Context

Automotive painters must prepare substrates and existing surfaces for the application of undercoats and topcoats. Using proper tools, materials and techniques are important to achieve a smooth transition from repaired area to existing finish.

Required Knowledge

K 1	types of cleaners such as soapy water, degreasers and pre-cleaners
K 2	cleaning techniques
K 3	types of contaminants such as road tar, tree sap and silicone
K 4	types of trim and accessories and their method of attachment
K 5	composition of trim and accessories such as plastic, glass and metal
K 6	types of fasteners for exterior and interior trim
K 7	effect of temperature on removal of components
K 8	substrates such as metals, plastics and composites
K 9	types of imperfections such as minor dents, rock chips and scratches
K 10	repair techniques such as feather edging and stripping

K 11	types of masking materials such as paper, tape, foam, plastic sheeting and spray mask
K 12	masking procedures
K 13	stripping methods such as chemical, mechanical and media blasting
K 14	effect of chemical stripping, mechanical stripping and media blasting on substrates
K 15	types of media blasting such as glass, sand, soda, plastic beads and walnuts
K 16	PPE and safety equipment requirements
K 17	types of abrasives and their characteristics, effectiveness and limitations
K 18	sanding methods such as wet and dry
K 19	sanding techniques such as block, scratch pad, back and final sanding
K 20	sanding materials such as scratch pads, sandpaper and blend paste (blend prep)
K 21	adhesion capability of materials to be applied
K 22	purpose of the guide coat

Sub-task

C-5.01 Performs initial preparation.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	NV	ND	yes	yes	yes	yes	yes	NV	NV	ND

Key Competencies

C-5.01.01	remove trim and accessories to ensure thorough sanding of inaccessible areas
C-5.01.02	handle and store trim and accessories according to best practices to prevent damages or loss
C-5.01.03	remove dust, loose debris and moisture from area to be prepared and painted to ensure a clean finish free of surface imperfections
C-5.01.04	remove residual two-way tape or decal glue using tools and products such as heat guns/lamps, eraser wheels and solvents
C-5.01.05	apply appropriate cleaner based on substrate and refinish material to be applied, using the wipe-on wipe-off method, to improve adhesion and for safety purposes (i.e., avoiding static charged flash fires)

Sub-task

C-5.02 Masks vehicle.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	NV	ND	yes	yes	yes	yes	yes	NV	NV	ND

Key Competencies

C-5.02.01	apply masking tape to avoid over and under masking
C-5.02.02	apply spray mask (liquid mask) using appropriate equipment to protect areas not to be refinished
C-5.02.03	apply masking tape to the edges of adjacent panels and trim/mouldings using masking techniques to protect against damage during preparation
C-5.02.04	use plastic sheeting to cover vehicle and secure edges according to manufacturers' recommendations to protect against overspray
C-5.02.05	use vinyl tape to prevent bridging paint or to make hard edges based on task at hand
C-5.02.06	use edging tape behind moulding to prevent problems such as bridging, peeling and overspray
C-5.02.07	apply masking tape and paper using methods such as back masking and reverse masking to avoid hard edges
C-5.02.08	install soft edge tape to inner panels to protect against overspray and to leave a soft edge

Sub-task

C-5.03 Strips surface.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	NV	ND	yes	yes	yes	yes	yes	NV	NV	ND

Key Competencies

C-5.03.01	apply chemical stripper to work area according to manufacturers' recommendations
C-5.03.02	neutralize chemical residue according to manufacturers' recommendations
C-5.03.03	mechanically strip work area using tools such as dual action sanders or grinders, for task at hand and according to best practices

C-5.03.04	media blast work area using appropriate media according to substrate
C-5.03.05	remove dust residue from work area after mechanical or media stripping according to best practices

Sub-task

C-5.04 Sands surface.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	NV	ND	yes	yes	yes	yes	yes	NV	NV	ND

Key Competencies

C-5.04.01	prepare blend area by wet or dry sanding or using scratch pads and blend paste (blend prep) to achieve a uniform colour match, according to manufacturers' specifications
C-5.04.02	featheredge repaired area by dry sanding using P180-P320 grit sandpaper to achieve a smooth transition from repaired area to existing finish
C-5.04.03	back sand using P320-P600 grit to prepare for the application of undercoats
C-5.04.04	remove excess primer surfacer, putty and filler material by block sanding using the cross hatch method to achieve a level surface

Task 6 Uses repair materials.

Context Repair materials include putties, primers, primer surfacers, gravel guards and seam sealers. The proper use and application of these products is important to set the foundation for the refinishing process.

Required Knowledge

K 1	types of putties such as polyester and glazing putties
K 2	types of substrates such as plastic, composites and metals
K 3	product mixing and application techniques
K 4	selection of putties to maintain characteristics of existing substrate (i.e., flexibility of bumper covers)
K 5	role of environmental conditions on working and curing times
K 6	limitation of use of putties
K 7	types of primers such as etch and epoxy
K 8	types of primer surfacers such as two-part, tintable and UV cure

K 9	application techniques such as spray-on, roll-on, spreadable and aerosol
K 10	types of adhesion promoters
K 11	limitations of primers and primer surfacers
K 12	flash-off times, cure times, induction times and pot life
K 13	use of guide coat
K 14	sandpaper grit
K 15	uses of sanding paste
K 16	sanding methods such as wet and dry
K 17	sanding techniques such as block, edge, back and final sanding
K 18	sanding materials such as scratch pads, sandpaper and blend paste (blend prep)
K 19	types of chip guard materials such as water-borne and acrylic
K 20	uses of paintable and non-paintable chip guards
K 21	appropriate drying timeframes for sanding
K 22	limitations of chip guards
K 23	types of seam sealers such as brushable, solid, two-part and self-levelling
K 24	tooling methods for applying seam sealers
K 25	types of additives such as flexible additives, accelerators, retarders and fish-eye eliminators

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Sub-task

C-6.01 Mixes repair materials.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	NV	ND	yes	yes	yes	yes	yes	NV	NV	ND

Key Competencies

C-6.01.01	mix putty with appropriate amount of hardener on a non-porous mixing board, according to manufacturers' recommendations
C-6.01.02	measure and stir quantities of primers and primer surfacers as per job size, according to manufacturers' recommendations
C-6.01.03	shake aerosol type repair materials such as gravel guards and etch primers
C-6.01.04	incorporate additives while mixing repair material, according to best practices and based on substrate and environmental conditions

Sub-task

C-6.02 Applies repair materials.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	NV	ND	yes	yes	yes	yes	yes	NV	NV	ND

Key Competencies

C-6.02.01	spread putty firmly and evenly over imperfections using tools such as putty knives and plastic spreaders according to industry standards
C-6.02.02	use spray gun with appropriate nozzle assembly, and adjust pattern, fluid delivery and air pressure to apply primer and primer surfacers according to manufacturers' recommendations
C-6.02.03	use aerosol or gun to spray gravel guard onto repaired area to reproduce OEM texture and finish
C-6.02.04	tool seam sealer onto repaired area to reproduce OEM texture and finish

Trends

The relationship between global environmental issues and consumer demand has been a catalyst for innovative VOC compliant product development. Spray gun improvements are increasing transfer efficiency. Nitrogen is being used as an alternative to air.

Booth cycle times are decreasing because of improved application processes and products. Nanotechnology is being used to improve products. For example, scratch resistant and self-healing clear coats, and shrink resistant primer surfacers are becoming more common.

Related Components

All components apply.

Tools and Equipment

See Appendix A.

Task 7 Prepares equipment.

Context

Spray guns and spray booths need to be set up properly to ensure quality refinish results.

Required Knowledge

K 1	types of refinish products such as sealers, base coats and clear coats
K 2	types of refinish equipment such as HVLP, and reduced pressure (RP)
K 3	spray gun air pressure and air volume, and their effects
K 4	spray gun components such as fluid tips, needles and air caps
K 5	pneumatic components such as regulators, inline filters and separators
K 6	product viscosity
K 7	booth types and construction such as down draft, cross draft and semi-down draft
K 8	booth operation
K 9	operating temperatures and humidity, and their effect on topcoat quality
K 10	air drying systems for water-borne paints
K 11	effect of positive and negative booth pressures

Sub-task

D-7.01 Performs spray gun setup.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	NV	ND	yes	yes	yes	yes	yes	NV	NV	ND

Key Competencies

D-7.01.01	select spray gun, fluid tip, needle and air cap according to product to be applied
D-7.01.02	interchange fluid tip, needle and air cap using tools supplied by manufacturer
D-7.01.03	verify paint gun is clean and properly assembled
D-7.01.04	adjust air pressure, fluid delivery and fan width according to paint manufacturers' specifications and application requirements
D-7.01.05	attach spray gun to appropriate sized hose/coupler to achieve proper spray performance
D-7.01.06	verify spray pattern is even using strained product to be applied
D-7.01.07	troubleshoot equipment problems

Sub-task

D-7.02 Prepares spray booth.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	NV	ND	yes	yes	yes	yes	yes	NV	NV	ND

Key Competencies

D-7.02.01	clean spray booth to ensure a dust free environment prior to vehicle or part set-up
D-7.02.02	verify inline filters are drained and well maintained through visual inspection
D-7.02.03	adjust spray booth pressure according to booth manufacturers' specifications
D-7.02.04	adjust spray booth temperature according to product manufacturers' specifications
D-7.02.05	utilize booth space to accommodate work to be accomplished
D-7.02.06	position air movers for maximum coverage and to decrease flash times
D-7.02.07	wipe and tack off air lines

Task 8 Uses refinishing materials.

Context Automotive painters must accurately match colour and apply refinish materials correctly in order to achieve desired colour and finish on vehicle.

Required Knowledge

K 1	scale and ratios
K 2	viscosity
K 3	low and high strength colours
K 4	chroma, hue and value
K 5	metamerism (role of light in colour perception)
K 6	face, pitch and flop of a colour
K 7	role of air pressure, temperature and solvent selection
K 8	paint components such as pearls, mica and metal flakes
K 9	paint code variants
K 10	methods to obtain formulas
K 11	proper use of spectrophotometer and colour corrective lighting
K 12	types of sealers such as tintable, non-tintable and plastic
K 13	types of additives and their applications
K 14	types of topcoats such as single-stage, two-stage and multi-coat
K 15	flash-off times
K 16	the role of sealers in the refinishing process
K 17	spray gun techniques and setups
K 18	types of substrates such as plastic, steel and aluminium
K 19	reducers, hardeners, activators and accelerators, and their application
K 20	forced drying and forced curing
K 21	drying times of materials for two-toning and denibbing
K 22	contaminants
K 23	blending techniques such as drop coat, fan coat and orientation coat

Sub-task

D-8.01 Mixes paint.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	NV	ND	yes	yes	yes	yes	yes	NV	NV	ND

Key Competencies

D-8.01.01	confirm paint code and select appropriate variant
D-8.01.02	agitate toners according to paint manufacturers' specifications
D-8.01.03	clean scale before mixing
D-8.01.04	determine required quantity of paint according to factors such as size of job and coverage required
D-8.01.05	place mixing cup and tare (zero) the scale
D-8.01.06	select solvents, reducers and activators according to ambient conditions (humidity/temperature) and job size
D-8.01.07	pour desired product, reducers and additives according to paint manufacturers' formula
D-8.01.08	mix ready to spray product thoroughly according to manufacturers' specifications
D-8.01.09	strain paint to remove contaminants to prevent poor spray gun performance

Sub-task

8.02 Performs colour matching.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	NV	ND	yes	yes	yes	yes	yes	NV	NV	ND

Key Competencies

D-8.02.01	spray test card to achieve desired coverage using spray gun that has been set up to spray the vehicle
D-8.02.02	spray a let-down panel to determine number of coats required for a multi-coat colour
D-8.02.03	visually compare test card against an adjacent polished panel in natural light or using colour corrective lighting
D-8.02.04	adjust colour formula visually for hue, value or chroma as needed to achieve desired result

D-8.02.05	adjust spray gun or spraying technique as needed to achieve desired result
D-8.02.06	seek technical support for challenging or non-existent colour formulas

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Sub-task

D-8.03 Applies refinish materials.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	NV	ND	yes	yes	yes	yes	yes	NV	NV	ND

Key Competencies

D-8.03.01	select and use cleaning materials such as tack cloths and low-static solvents
D-8.03.02	select and spray sealer according to manufacturers' specifications and job requirement
D-8.03.03	spray colour coat to achieve consistent coverage according to manufacturers' specifications
D-8.03.04	blend colour coat to achieve seamless repair according to manufacturers' specifications
D-8.03.05	spray clear coat to achieve gloss, mil thickness and texture according to manufacturers' specifications
D-8.03.06	verify product is properly flashed prior to subsequent application
D-8.03.07	correct defects such as fish-eyes, dry spray, tiger stripes and mottling
D-8.03.08	tack between coats according to manufacturers' specifications

Trends There is an increased use of colour-coordinated trim, accessories, computer-cut graphics and vehicle wraps. Many of the pre-delivery tasks are performed by designated detailers who communicate with automotive painters. More sophisticated polishing products are being developed which simplifies their use.

Related Components All components apply.

Tools and Equipment See Appendix A.

Task 9 Performs detailing.

Context Automotive painters detail vehicles after the refinishing process and prior to delivery of vehicles to customers. They install trim and accessories, decals and striping, and apply undercoating according to shop standards.

Required Knowledge

K 1	types of trim and accessories
K 2	types of fasteners and adhesives
K 3	types of decals and striping such as vinyl graphics and name plates
K 4	installation methods and sequence
K 5	types of rubberized undercoating
K 6	types of application equipment such as aerosol and schutz gun
K 7	new paint care procedures
K 8	vehicle's pre-existing condition
K 9	industry and OEM standards
K 10	types of tools and equipment such as upholstery tools, spray bottles, squeegees and heat guns

Sub-task

E-9.01 Installs trim and accessories.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	no	yes	NV	ND	yes	yes	yes	yes	yes	NV	NV	ND

Key Competencies

E-9.01.01	identify location of trim and accessories according to OEM standards
E-9.01.02	replace bonding agents such as two-sided tapes, adhesives and glues prior to installation, according to OEM standards
E-9.01.03	determine installation method according to types of trim and accessories and OEM standards
E-9.01.04	select and use tools and equipment to re-attach trim and accessories
E-9.01.05	clip, screw, glue or tape trim and accessories to proper location in sequence without damaging vehicle finish and according to OEM standards

Sub-task

E-9.02 Applies decals and striping.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	no	yes	NV	ND	yes	yes	yes	yes	yes	NV	NV	ND

Key Competencies

E-9.02.01	clean surface prior to application
E-9.02.02	locate position of decals and striping
E-9.02.03	cut decals and striping using methods and tools such as razor blades and stripe cutters, according to job requirements
E-9.02.04	determine application methods such as soapy water, and/or water and alcohol, heat and self-adhesive, according to industry practices
E-9.02.05	install decals and striping according to industry standards and practices, without damaging refinished surface
E-9.02.06	remove air bubbles from applied decals by making a pinhole or by heating

Sub-task

E-9.03 Applies rubberized undercoating.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	no	yes	NV	ND	yes	yes	yes	yes	yes	NV	NV	ND

Key Competencies

E-9.03.01	identify areas needing rubberized undercoating according to OEM specifications
E-9.03.02	clean, prepare and mask substrate prior to application of rubberized undercoating
E-9.03.03	spray rubberized undercoating to repaired location according to TDS of product

Task 10 Carries out quality assurance check.

Context Automotive painters are required to carry out quality assurance checks after all refinishing has been completed and before vehicle delivery.

Required Knowledge

K 1	types of surface imperfections such as runs, sags, dust nibs, dry spray and orange peel
K 2	types of topcoat and their limitations of repair
K 3	types and grits of sandpaper, compounds and polish
K 4	processes for removing imperfections
K 5	types of masking materials
K 6	material application techniques
K 7	material removal techniques
K 8	when to remove masking materials
K 9	contaminants such as silicone and their possible negative effects

Sub-task

E-10.01 Removes surface imperfections.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	NV	ND	yes	yes	yes	yes	yes	NV	NV	ND

Key Competencies

E-10.01.01	identify imperfections such as fish eyes, solvent popping, runs and orange peel
E-10.01.02	determine repair techniques according to type of imperfection
E-10.01.03	sand and denib according to type of imperfection
E-10.01.04	polish repaired area to restore lustre and to match existing finish

Sub-task

E-10.02 Removes masking materials.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	NV	ND	yes	yes	yes	yes	yes	NV	NV	ND

Key Competencies

E-10.02.01	select tools and removal procedures depending on types of masking issues such as bridging and over masking
E-10.02.02	remove masking tape and paper according to industry standards to prevent damaging surface
E-10.02.03	remove spray mask by washing with soapy water

Sub-task

E-10.03 Performs final check.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	no	yes	NV	ND	yes	yes	yes	yes	yes	NV	NV	ND

Key Competencies

E-10.03.01	ensure colour match, blend areas and imperfections have been addressed according to shop standards
E-10.03.02	remove overspray and polishing residue using products such as clay bars, razor blades and solvents

APPENDICES

APPENDIX A TOOLS AND EQUIPMENT

Standard Tool Kit

adhesive remover (eraser)
air powered tools
air pressure gauge
blow gun
clip removal tool
decal removal tool/eraser wheel
drill
dual action sander
heat gun
plastic spreaders
putty board
putty knife
rubber squeegee
sanding blocks
sanding boards
scratch pad
screwdrivers
socket set
sponge blocks
spray bottles
tape measure
timers
trim removing tools
trouble light
tweezers
upholstery tools

Personal Protective Equipment (PPE) and Safety Equipment

barrier cream
disposal containers
dust extraction equipment
dust mask
ear protectors
eye wash station
fire extinguishers
first aid kit
gloves (work and rubber)
paint suit
respirator (air purifying)
respirator (air supplied)
protective eye wear
safety footwear
shower
spill kits

Refinishing Equipment

air brush
anti-static devices
automatic gun washing system
blow gun
colour chips
colour corrective bulbs
computer and software
curing lamps
digital scales
film thickness gauge (wet and dry)
ground cable
heat lamps
hygrometer
liquid mask
measuring sticks
mixing cups
mixing machine
mixing room
mixing scales
mixing sticks
natural light gun
nitrogen spray system
fresh air supply pump
paint shaker

Refinishing Equipment (continued)

paint strainers
pressure washers
schutz gun
spectrophotometer
spray booth
spray gun (electrostatic, reduced pressure (RP), high volume low pressure (HVLP), low volume low pressure (LVLP), pressure pot, suction feed)
spray out cards
thermometer
ultraviolet and infrared lamps
variant decks
venturi fan
viscosity cups

Detailing and Cleaning Equipment

abrasive pad
anti-corrosive applicator
buffer pad
buffer/polisher
clay blocks
cleaning brush
cleaning cloths
cleaning solutions
denibbing file
magnifying glass
moulding cutter
polisher
razor blade
razor blade holder
spray bottle
stripe cutter
tack cloths

Shop Equipment

air compressor
air dryer
air hoses
air makeup system
air transformer
axle stand
brooms
caulking gun (manual/air)
digital devices (tablets)
floor jack
floor squeegees
gun washer
hangers
hoist
manometer
masking cart
media blasting equipment
moisture traps
parts and bumper stands
plastic rivet guns
pneumatic sanders
pressure washers
regulators
solvent recycler
stands
step ladders
telephone
two-way radio
vacuum
wire brush

APPENDIX B GLOSSARY

abrasive	a substance used to wear away a surface by friction
adhesion	the force that makes two materials stick together. When paint bonds with paint, it is called intercoat adhesion; epoxies have great adhesion to most surfaces.
atomize	to convert a substance into very fine particles or droplets
back mask	technique of reverse rolling the tape or masking paper to prevent a hard line in any refinished operation
basecoat/clearcoat	a high-lustre, two-layer paint system, which, unlike conventional lacquer or enamel, has the pigment in the basecoat with a clearcoat as the finish coat to protect the basecoat and produce a deep high-lustre appearance and provide UV protection
blending	a) the stepping out of each coat of colour resulting in a gradual transition from the applied coat to the original coat b) the technique of chemically transitioning an applied clearcoat into an existing clearcoat
chroma	the strength or intensity of a colour
colour	the visual appearance of a material: red, blue, green, and so on; colours are seen differently by different people.
compatibility	the ability of materials to be used together without separation or reaction
contaminants	foreign substances on the surface to be painted (in the paint or air-borne) that would adversely affect the finish
coverage	a) the area a given amount of paint will cover b) the point at which the freshly applied paint fully hides the substrate
cure	the process of evaporation, oxidation and polymerization.
degreaser	combination of solvents for the purpose of removing grease and oil from the surface in preparation for painting

dry spray	the result of product being applied in a manner that does not allow it to wet out or flow. Dry spray appears as a rough sandpaper-like texture on the substrate
drying time	the time it takes for an applied product to reach a specific point in the curing process, for example flash time, tack free time, dust free time and handling time
epoxy	a class of resins characterized by good chemical resistance; a film made from epoxy resins is extremely durable and solvent resistant
film thickness	the thickness of a coating measured in mils
finish	the appearance and quality of the dry final coat
fish-eyes	blemishes usually of a circular or crater-like character caused by contamination
flash-off time	the first stage of drying where some of the solvents evaporate
grit	a measure of the size of particles on sandpaper or discs
guide coat	applied coat of contrasting colour to identify surface imperfections when sanding
hue	the name of a colour; the property of a colour by which it can be distinguished; red, blue, yellow, etc.
lustre	the appearance of depth as obtained by multiple coats
masking	using tape and paper to protect an area that will not be painted
media blasting	removal of topcoat using various materials such as sand, soda and plastic beads
metalic	most generally, aluminium flakes that have iridescent and light reflective properties
metamerism	a term used to describe a colour shift when viewed under different light sources
mottling	irregular grouping of metallic particles in a topcoat
nanotechnology	the manipulation of matter on an atomic and molecular scale; used in the fabrication of macro scale products

orange peel	a film that has the physical appearance of an orange peel, caused by improper spray application
overspray	paint that falls on the area next to the one being painted
primer	an undercoat applied to bare metal to promote adhesion of the primer surfacer or sealer to substrate
primer surfacer	a high-solids primer that fills small imperfections in the substrate and usually must be sanded
putty	a heavy-bodied plastic filler used to repair small dents, pinholes or sanding scratches
respirator	a device worn over the mouth and nose that filters contaminated air; positive pressure fresh air respirators deliver breathable air
runs	a blemish due to excessive paint flow usually caused by improper consistency of paint or heavy application
sags	state of applied paint before running
sealer	a coating which improves adhesion and colour uniformity of the topcoat
solids	the pigment and non-volatile components of paint; material which remains on surface
solvent	the component of a solution which dissolves other components and facilitates the drying process
specifications	performance characteristics of products
spectrophotometer	an electronic device used for recording and measuring colour
spray gun	a tool that uses air pressure to atomize liquids and transfer them uniformly to a surface
substrate	the surface that is to be finished; it can be anything from an old finish or primer to an unpainted surface
tack cloth	a cheesecloth that has been treated to make it tacky, used to pick up dust and lint from the surface to be painted
technical data sheet (TDS)	written instructions on details of paint applications, types of products to be used, areas to be painted and painting procedure

three-stage (tri-coat)	paint application that consists of distinct paint layers that produces a pearlescent appearance: a basecoat, a tinted midcoat and clearcoat.
tint	to add colour to another colour
topcoat	the last coat of colour or clearcoat
two-stage	consists of two distinct layers of paint: basecoat and clearcoat
undercoat	a first coat: primer, primer surfacers or sealer
value	the lightness/darkness of a colour
vehicle identification number (VIN)	the number assigned to each vehicle by its manufacturer, primarily for registration and identification purposes
viscosity	consistency or body of a liquid
viscosity cup	a device to measure the viscosity of a liquid by determining the time it takes to flow through the opening of the cup
volatile	capable of evaporating easily
water-borne paint	a type of paint in which a special de-ionized, purified water is used as the carrier instead of a solvent
volatile organic compound (VOC)	carbon-containing gases and vapors having direct toxic effects on humans, ranging from carcinogenesis to neurotoxicity

APPENDIX C ACRONYMS

HVLP	high volume low pressure
MSDS	material safety data sheet
OEM	original equipment manufacturer
OH&S	Occupational Health and Safety
PPE	personal protective equipment
RP	reduced pressure
TDS	technical data sheet
UV	Ultraviolet
VIN	vehicle identification number
VOC	volatile organic compounds
WHMIS	Workplace Hazardous Materials Information System

APPENDIX D BLOCK AND TASK WEIGHTING

BLOCK A COMMON OCCUPATIONAL SKILLS

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	NV	5	14	NV	ND	10	15	13	5	10	NV	NV	ND	10%

Task 1 Performs safety-related functions.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	NV	70	50	NV	ND	50	50	56	50	30	NV	NV	ND	51%

Task 2 Maintains tools and equipment.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	NV	30	50	NV	ND	50	50	44	50	70	NV	NV	ND	49%

BLOCK B ROUTINE TRADE TASKS

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	NV	5	14	NV	ND	10	15	15	5	15	NV	NV	ND	11%

Task 3 Uses documentation.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	NV	80	45	NV	ND	60	40	50	50	30	NV	NV	ND	51%

Task 4 Plans work.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	NV	20	55	NV	ND	40	60	50	50	70	NV	NV	ND	49%

BLOCK C VEHICLE PREPARATION

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	NV	10	30	NV	ND	40	30	35	30	22	NV	NV	ND	28%

Task 5 Prepares surface.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	NV	50	55	NV	ND	60	60	56	50	80	NV	NV	ND	59%

Task 6 Uses repair materials.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	NV	50	45	NV	ND	40	40	44	50	20	NV	NV	ND	41%

BLOCK D REFINISHING

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	NV	70	30	NV	ND	35	30	27	50	38	NV	NV	ND	41%

Task 7 Prepares equipment.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	NV	20	40	NV	ND	35	25	41	40	30	NV	NV	ND	33%

Task 8 Uses refinishing materials.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	NV	80	60	NV	ND	65	75	59	60	70	NV	NV	ND	67%

BLOCK E PRE-DELIVERY

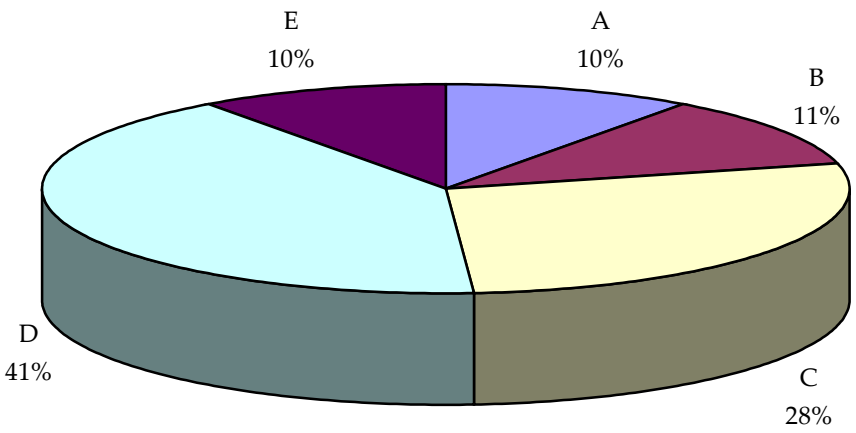
	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	NV	10	12	NV	ND	5	10	10	10	15	NV	NV	ND	10%

Task 9 Performs detailing.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	NV	0	40	NV	ND	40	60	48	70	30	NV	NV	ND	41%

Task 10 Carries out quality assurance check.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	NV	100	60	NV	ND	60	40	52	30	70	NV	NV	ND	59%



TITLES OF BLOCKS

BLOCK A	Common Occupational Skills	BLOCK D	Refinishing
BLOCK B	Routine Trade Tasks	BLOCK E	Pre-delivery
BLOCK C	Vehicle Preparation		

*Average percentage of the total number of questions on an interprovincial examination, assigned to assess each block of the analysis, as derived from the collective input from workers within the occupation from all areas of Canada. Interprovincial examinations typically have from 100 to 150 multiple-choice questions.

APPENDIX F

TASK PROFILE CHART — Automotive Painter

BLOCKS	TASKS	SUB-TASKS			
A – COMMON OCCUPATIONAL SKILLS	1. Performs safety-related functions.	1.01 Uses personal protective equipment (PPE) and safety equipment.	1.02 Maintains safe work environment.		
	2. Maintains tools and equipment.	2.01 Maintains hand and power tools.	2.02 Maintains spray booth.	2.03 Maintains spray equipment.	
B - ROUTINE TRADE TASKS	3. Uses documentation.	3.01 Interprets vehicle information.	3.02 Uses technical manuals and bulletins.	3.03 Complies with safety and environmental regulations.	3.04 Interprets work orders.
	4. Plans work.	4.01 Organizes production schedule.	4.02 Performs inspections.	4.03 Contributes to development of repair estimate.	4.04 Uses paint manufacturers' software and equipment.
C - VEHICLE PREPARATION	5. Prepares surface.	5.01. Performs initial preparation.	5.02 Masks vehicle.	5.03 Strips surface.	5.04. Sands surface.
	6. Uses repair materials.	6.01 Mixes repair materials.	6.02. Applies repair materials.		

BLOCKS	TASKS	SUB-TASKS		
D - REFINISHING	7. Prepares equipment.	7.01 Performs spray gun setup.	7.02 Prepares spray booth.	
	8. Uses refinishing materials.	8.01 Mixes paint.	8.02 Performs colour matching.	8.03 Applies refinish materials.
E - PRE-DELIVERY	9. Performs detailing.	9.01 Installs trim and accessories.	9.02 Applies decals and striping.	9.03 Applies rubberized undercoating.
	10. Carries out quality assurance check.	10.01 Removes surface imperfections.	10.02 Removes masking materials.	10.03 Performs final check.