AUTOMOTIVE REFINISHING TECHNOLOGY

PURPOSE

To evaluate each contestant's preparation for employment and to recognize outstanding students for excellence and professionalism in the field of automotive refinishing technology.

First, download and review the General Regulations at: updates.skillsusa.org.

ELIGIBILITY

Open to active SkillsUSA members enrolled in programs with automotive refinishing technology as the occupational objective.

CLOTHING REQUIREMENT

Official SkillsUSA light blue work shirt and navy pants; black, brown or tan leather work shoes; and safety glasses with side shields or goggles. (Prescription glasses can be used only if they are equipped with side shields. If not, they must be covered with goggles.)

These regulations refer to clothing items that are pictured and described at: www.skillsusastore.org. If you have questions about clothing or other logo items, call 800-401-1560 or 703-956-3723.

Note: Contestants must wear their official contest clothing to the contest orientation meeting.

EQUIPMENT AND MATERIALS

1. Supplied by the technical committee: basic equipment of an automotive refinishing laboratory
   a. Various grits and styles of sandpaper
   b. Clean-up thinner
   c. Waterborne basecoats
   d. Strainers
   e. Reducer
   f. Paint
   g. Primer surfacer
   h. Clear coats
   i. DA sanders
   j. Abrasive sanding pads
   k. Sanding blocks
   l. Paint panels
   m. Necessary masking materials
   n. Razor blades
   o. Cleaning towels
   p. Tack cloths
   q. Painter's gloves
   r. Solvent cleaner
   s. Waterborne cleaner
   t. Sanding masks
   u. Fresh air respirators
   v. Safety glasses
   w. Paint suits
   x. Spray guns

2. Supplied by the contestant:
   a. All competitors must create a one-page résumé and submit the résumé at the orientation.

   ***Note*:** Your contest may also require a hard copy of your résumé as part of the actual contest. Check the Contest Guidelines and/or the updates page on the SkillsUSA website at updates.skillsusa.org.

SCOPE OF THE CONTEST

The contest will be consistent with the Collision Repair/Refinishing Technician Task list outlined in the guidelines published by the National Institute for Automotive Service Excellence (ASE) and the National Technicians Education Foundation (NATEF), www.natef.org. Contestants will demonstrate their ability to perform jobs of skills selected from the standards mentioned above as determined by the SkillsUSA Championships technical committee. Committee membership includes (but is not limited to): AM Automotive Aftermarket Division, ABC Autobody Color, Akzo Nobel Coatings Inc., All Star Marketing, Axalta Performance Coatings, Complete Sales and Marketing, LKQ Corp., Martin-Senour Paints, National Institute for Automotive Service Excellence (ASE), PPG Industries, Safety Kleen Corp., SATA Spray Equipment, Sherwin-Williams, State Farm Insurance Companies and Toyota Motor Sales USA Inc.

Knowledge Performance

The contest includes a written knowledge test given by ASE, which will consist of 50 questions covering the automotive refinishing areas that are identified in the NATEF Collision Repair/Refinishing Program Standards and the ASE Official Study Guide: Collision Repair/Refinish. The tests for the high school and college contestants will be comprised of surface preparation; spray gun operation and related equipment; paint mixing, matching, and applying; solving paint application problems; and finish defects, causes and cures and safety precautions.

Skill Performance

The contest includes a series of workstations, a manually written estimate and an interview process designed to assess skills in the following areas: spot repair, color tinting, featheredge, prime and block, paint id and masking. The overall appearance of the finished product, speed and proper safety practices will be judged.

***Note*:** "*" Denotes this material is covered on a separate written test prior to the official contest day.

Standards and Competencies

Spot Repair

ART 1.0 — Prepare a panel surface for a basecoat blend in relationship to the tasks in the National Automotive Technicians Education Foundation (NATEF) Collision Repair and Refinishing Technical Standards for Painting and Refinishing (B2 ASE test)

1.1 Demonstrate proper safety procedures
1.2 Clean the entire area of panel being repaired; use appropriate cleaner to remove contaminants
1.3 Dry sand areas to be refinished.
1.4 Featheredge damaged areas to be refinished
1.5 Clean area to be refinished using a final cleaning solution
1.6 Remove dust from the area to be refinished, including cracks or moldings of adjacent areas
1.7 Remove, with a tack rag, any dust or lint particles from the area to be refinished

ART 2.0 — Prepare a panel surface for clearcoat application (full panel) in relationship to the tasks in the National Automotive Technicians Education Foundation (NATEF) Collision Repair and Refinishing Technical Standards for Painting and Refinishing (B2 ASE test)

2.1 Demonstrate proper safety procedures
2.2 Dry sand the areas to be refinished
2.3 Clean the area to be refinished using a final cleaning solution
2.4 Remove dust from area to be refinished, including cracks or moldings of adjacent areas
2.5 Remove, with a tack rag, any dust or lint particles from the area to be refinished

ART 3.0 — Prepare a panel surface for basecoat spot repair application in relationship to the tasks in the National Automotive Technicians Education Foundation (NATEF) Collision Repair and Refinishing Technical Standards for Painting and Refinishing (B2 ASE Test)

3.1 Demonstrate proper safety procedures
3.2 Remove, with a tack rag, any dust or lint particles from the area to be refinished
3.3 Apply clear blender if applicable to prevent metallic halo
3.4 Check and adjust spray gun operation
3.5 Apply finish using appropriate spray techniques (gun arc, gun angle, gun distance, gun speed and spray pattern overlap) for the finish being applied
3.6 Apply basecoat for panel blending or partial refinishing

ART 4.0 — Prepare a panel surface for full panel clearcoat application in relationship to the tasks in the National Automotive Technicians Education Foundation (NATEF) Collision Repair and Refinishing Technical Standards for Painting and Refinishing (B2 ASE Test)

4.1 Demonstrate proper safety procedures
4.2 Remove, with a tack rag, any dust or lint particles from the area to be refinished
4.3 Check and adjust spray gun operation
4.4 Apply clearcoat finish using appropriate spray techniques (gun arc, gun angle, gun distance, gun speed and spray pattern overlap) for the finish being applied

Color Tinting

ART 5.0 — Complete color assessment in relationship to the tasks in the National Automotive Technicians Education Foundation (NATEF) Collision Repair and Refinishing Technical Standards for Painting and Refinishing (B2 ASE Test)

5.1 Determine the type of mismatch problem encountered while evaluating the color sample
5.2 Determine adjustment that must be made to correct the hue/color, value/lightness or darkness, chroma/saturation/purity and flop

ART 6.0 — Select the correct toner for color adjustment (toner within the formula) application in relationship to tasks in the National Automotive Technicians Education Foundation (NATEF) Collision Repair and Refinishing Technical Standards for Painting and Refinishing (B2 ASE Test)

6.1 Demonstrate the ability to select the correct toner to correct predetermined mismatch problems while selecting the correct toner
6.2 Demonstrate the ability to select the correct toner to correct the hue/color, value/lightness or darkness, chroma/saturation/purity and flop

ART 7.0 — Spray out completed (includes clearcoat application) application in relationship to tasks in the National Automotive Technicians Education Foundation (NATEF) Collision Repair and Refinishing Technical Standards for Painting and Refinishing (B2 ASE Test)

7.1 Apply finish using appropriate spray techniques (gun arc, gun angle, gun distance, gun speed and spray pattern overlap) for the finish being applied

ART 8.0 — Make proper adjustments/hits producing a blendable color match (evidenced of a sprayout card) application in relationship to tasks in the National Automotive Technicians Education Foundation (NATEF) Collision Repair and Refinishing Technical Standards for Painting and Refinishing (B2 ASE Test)

8.1 Apply tinted product to produce evidence of a blendable color match
8.2 Finish being applied

Featheredge, Priming and Blocking (Scratched Substrate)

ART 9.0 — Surface cleaning application in relationship to tasks in the National Automotive Technicians Education Foundation (NATEF) Collision Repair and Refinishing Technical Standards for Painting and Refinishing. (B2 ASE Test)

9.1 Clean entire panel; use appropriate cleaner to remove contaminants
9.2 Apply surface cleaner to remove contaminants

ART 10.0 — Repair damaged area in preparation for primers in relationship to tasks in the National Automotive Technicians Education Foundation (NATEF) Collision Repair and Refinishing Technical Standards for Painting and Refinishing (B2 ASE Test)

10.1 Sand area using dual action sander
10.2 Sand areas to show appropriate removal of material for good featheredge technique
10.3 Sand beyond the repair area for adhesion of primer

ART 11.0 — Apply 2-K primers application in relationship to tasks in the National Automotive Technicians Education Foundation (NATEF) Collision Repair and Refinishing Technical Standards for Painting and Refinishing (B2 ASE Test)

11.1 Apply primer surfacer onto surface of repaired area
11.2 Check and adjust spray gun operation
11.3 Apply finish using appropriate spray techniques (gun arc, gun angle, gun distance, gun speed and spray pattern overlap) for the finish being applied

ART 12.0 — Perform proper block sanding techniques and final sand for basecoat application in relationship to tasks in the National Automotive Technicians Education Foundation (NATEF) Collision Repair and Refinishing Technical Standards for Painting and Refinishing (B2 ASE Test)

12.1 Dry sand the area to which two-component finishing filler has been applied
12.2 Dry sand the area to which primer-surfacer has been applied
12.3 Block the sand area to achieve levelness of repaired area

Paint Code ID and Masking

ART 13.0 — Locate and document vehicle manufacturers' paint code application in relationship to tasks in the National Automotive Technicians Education Foundation (NATEF) Collision Repair and Refinishing Technical Standards for Painting and Refinishing (B2 ASE Test)

13.1 Determine the type and color of paint already on the vehicle by manufacturer's vehicle information label
13.2 Identify the code using paint manufacture manuals and or computer to determine paint code location

ART 14.0 — Select the correct variant application if applicable in relationship to tasks in the National Automotive Technicians Education Foundation (NATEF) Collision Repair and Refinishing Technical Standards for Painting and Refinishing (B2 ASE Test)

14.1 Identify variant swatches/chips
14.2 Match variant to vehicle using color-corrected lighting
14.3 Identify variant that will produce the best possible blend

ART 15.0 — Appropriate masking techniques for refinishing fender and blending into adjacent panel (front door) application in relationship to tasks in the National Automotive Technicians Education Foundation (NATEF) Collision Repair and Refinishing Technical Standards for Painting and Refinishing (B2 ASE Test)

15.1 Mask and protect adjacent panels that will not be refinished
15.2 Mask door jambs and other aperture panels

Note: * Denotes this material is covered on a separate written test prior to the official contest day

ART 16.0 — Complete an estimate to related tasks in ASE Catalog of Collision Repair/Refinishing Tests B6 (Damage Analysis and Estimating)*

16.1 Report heading/legibility*
- 16.1.1 List entrant number on estimating test*
- 16.1.2 Locate provided "Vehicle Description and Labor Rate Page" and complete owner and vehicle information segment on estimate (e.g., owner name, address, phone numbers, license plate, vehicle year, series, mileage, vehicle identification number)
- 16.1.3 Write legibly*

ART 17.0 — Identify parts replacement*

17.1 Locate and select vehicle to be estimated in the provided collision estimating guide*
17.2 Locate and list the correct part prices and replacement labor times and refinish labor times for the pre-determined parts being replaced*
17.3 Estimate labor adjustments for vehicle options when appropriate*
17.4 Recognize and apply body labor overlap and refinish labor overlap where appropriate*
17.5 Consider and apply "included" and "not included" operations where appropriate*
17.6 Consider and apply labor footnotes (# signs) when necessary*

ART 18.0 — Prepare calculations*

18.1 Calculate and list the correct paint and materials allowance*
18.2 Calculate and list parts, body labor, refinish labor, paint and material column totals*
18.3 Calculate and list total labor hours (body labor plus refinish labor)*
18.4 Multiply total labor hours by provided labor rate and list labor dollar amount*
18.5 Calculate and list **total** estimate amount*

ART 19.0 — Oral Assessment/Interview*

19.1 Exhibit personal skills such as attendance, time management and individual responsibility*
19.2 Demonstrate promptness when required to meet interviewer at specific time and location*

ART 20.0 — Maintain professional conduct*

20.1 Demonstrate courteous behavior while waiting for the interviewer*

ART 21.0 — Maintain professional appearance*

21.1 Demonstrate proper attire (SkillsUSA uniform — light blue shirt, dark blue pants)*

ART 22.0 — Complete job application and résumé *

22.1 Properly and legibly complete a job application and résumé*

ART 23.0 — Demonstrate interview skills*

ASE Written Test

ART 24.0 — Contestants will be required to take a 50-question multiple-choice test prior to the official contest. A 100-point scale is used for this segment. Participants will be expected to successfully complete this segment. Participants should have some basic knowledge in math and science

24.1 Contestants will take a 50-question multiple-choice test in the area of Painting and Refinishing

24.1.1 Contestants will answer 50 questions in the area of painting and refinishing in the content areas of: surface preparation, spray gun operation and related equipment, paint mixing, matching and applying, solving paint application problems, finish defects, causes and cures and safety precautions and miscellaneous

This information is obtained through the National Institute for Automotive Service Excellence Painting and Refinishing (B2) Certification Test.

Committee Identified Academic Skills

The technical committee has identified that the following academic skills are embedded in this contest.

Math Skills

- Use fractions to solve practical problems
- Use proportions and ratios to solve practical problems
- Solve practical problems involving percentages
- Make predictions using knowledge of probability
- Make comparisons, predictions and inferences using graphs and charts
- Solve problems using proportions, formulas and functions
- Solve practical problems involving complementary, supplementary and congruent angles
- Calculate percentages

Science Skills

- Plan and conduct a scientific investigation
- Describe and recognize elements, compounds, mixtures, acids, bases and salts
- Describe and recognize solids, liquids and gases
- Describe characteristics of types of matter based on physical and chemical properties
- Use knowledge of physical properties (shape, density, solubility, odor, melting point, boiling point, color)
- Use knowledge of chemical properties (acidity, basicity, combustibility, reactivity)
- Use knowledge of classification of elements as metals, metalloids and nonmetals
- Describe and demonstrate simple compounds (formulas and the nature of bonding)
- Use knowledge of temperature scales, heat and heat transfer
- Use knowledge of the nature and technological applications of light
- Use knowledge of work, force, mechanical advantage, efficiency and power
- Use knowledge of simple machines, compound machines, powered vehicles, rockets and restraining devices

Language Arts Skills

- Provide information in conversations and in group discussions
- Provide information in oral presentations
- Demonstrate use of such verbal communication skills as word choice, pitch, feeling, tone and voice
- Demonstrate use of such nonverbal communication skills as eye contact, posture and gestures using interviewing techniques to gain information
- Demonstrate comprehension of a variety of informational texts
- Use text structures to aid comprehension

- Organize and synthesize information for use in written and oral presentations
- Demonstrate knowledge of appropriate reference materials
- Use print, electronic databases and online resources to access information in books and articles
- Edit writing for correct grammar, capitalization, punctuation, spelling, sentence structure and paragraphing

Connections to National Standards

State-level academic curriculum specialists identified the following connections to national academic standards.

Math Standards

- Problem solving
- Numbers and operations
- Measurement
- Geometry
- Representation
- Communication
- Connections

Source: NCTM Principles and Standards for School Mathematics. For more information, visit: http://www.nctm.org.

Science Standards

- Understands the structure and properties of matter
- Understands the sources and properties of energy
- Understands forces and motion
- Understands the nature of scientific inquiry

Source: McREL compendium of national science standards. To view and search the compendium, visit: http://www2.mcrel.org/compendium/browse.asp.

Language Arts Standards

- Students apply a wide range of strategies to comprehend, interpret, evaluate and appreciate texts. They draw on their prior experience, their interactions with other readers and writers, their knowledge of word meaning and of other texts, their word identification strategies and their understanding of textual features (e.g., sound-letter correspondence, sentence structure, context and graphics)
- Students adjust their use of spoken, written and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes
- Students use spoken, written and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion and the exchange of information)

Source: IRA/NCTE Standards for the English Language Arts. To view the standards, visit: www.ncte.org/standards.