



# AUTOMOTIVE REFINISHING TECHNOLOGY

SkillsUSA Championships Technical Standards

## PURPOSE

To evaluate each competitor'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: <http://updates.skillsusa.org>.

## ELIGIBILITY

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

## CLOTHING REQUIREMENT

### **Class D: Competition Specific — Blue Attire**

- Official SkillsUSA light blue work shirt
- Navy pants
- Black, brown or tan leather work safety shoes (with protective toe cap)

*Note:* Safety glasses must have side shields or goggles. (Prescription glasses may 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](http://www.skillsusastore.org). If you have questions about clothing or other logo items, call 1-888-501-2183.

*Note:* Competitors must wear their official competition clothing to the competition 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. UV Primer surface
  - 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. Waterborne cleaner
  - s. Sanding masks
  - t. Supplied air respirators
  - u. Safety glasses
  - v. Paint suits
  - w. Spray guns
2. Supplied by the competitor:
  - a. All competitors must create a one-page resume. See "Resume Requirement" below for guidelines. Competitors must also bring two hard copies of their resume to the competition.

### RESUME REQUIREMENT

Competitors must create a one-page resume to submit online. SkillsUSA national competitors should submit their resume by June 1. The link for resume submission will be published on <http://updates.skillsusa.org> on May 1. Failure to submit a resume will result in a 10-point penalty.

**Your resume must be saved as a PDF file type using file name format of "Last Name\_First Name."** For example, "Amanda Smith" would save her resume as **Smith\_Amanda**. If you need assistance with saving your file as a PDF, visit [the Adobe website](#) for more information.

**Note:** Check the Competition Guidelines and/or the updates page on the SkillsUSA website at <http://updates.skillsusa.org>.

## **PROHIBITED DEVICES**

Cell phones or other electronic devices not approved by a competition's national technical committee are **NOT** allowed in the competition area. Please follow the guidelines in each technical standard for approved exceptions. Technical committee members may also approve exceptions onsite during the SkillsUSA Championships if deemed appropriate.

### **Penalties for Prohibited Devices**

If a competitor's electronic device makes noise or if the competitor is seen using it at any time during the competition, an official report will be documented for review by the SkillsUSA Championships director. If confirmed that the competitor used the device in a manner which compromised the integrity of the competition, the competitor's scores may be canceled.

## **SCOPE OF THE COMPETITION**

The competition 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](http://www.natef.org).

Competitors 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): 3M Automotive Aftermarket Division, Akzo Nobel Coatings Inc., Axalta Performance Coatings, BC Marketing Inc., BASF, Collision Hub, Dan Am Air, LKQ Corp., National Institute for Automotive Service Excellence (ASE), PPG, WIN, Society of Collision Repair Specialist (SCRS), Saint-Gobain Norton, SATA Spray Equipment, Sherwin-Williams, State Farm Insurance Companies, New Pig & Carstar.

## **KNOWLEDGE PERFORMANCE**

The competition includes a written knowledge test given by ASE 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 competitors will consist 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 competition includes a series of workstations, 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.

## **STANDARDS AND COMPETENCIES**

### **Spot Repair**

#### **ART 1.0 — Prepare a panel surface for a basecoat blend & clearcoat application (full panel) in relationship to the Technical Data Sheet (TDS) supplied by the supporting paint manufacture.**

- 1.1. Demonstrate proper safety procedures.
- 1.2. Clean the entire area of panel being repaired; use appropriate cleaner to remove contaminants (we must use waterborne cleaner only due to fumes in the competition area).
- 1.3. Dry sand areas to be refinished, removing all gloss to level finish using TDS recommendations for sandpaper grit range.
- 1.4. Clean area to be refinished using a final cleaning solution.
- 1.5. Remove dust from the area to be refinished, using a tack rag.

#### **ART 2.0 — Basecoat spot repair application in relationship to the Technical Data Sheet (TDS) supplied by the supporting paint manufacture.**

- 2.1. Demonstrate proper safety procedures.
- 2.2. Remove, with a tack rag, any dust or lint particles from the area to be refinished
- 2.3. Check and adjust spray gun operation.
- 2.4. Apply clear blender if applicable to prevent metallic halo.
- 2.5. Apply finish using appropriate spray techniques (gun arc, gun angle, gun distance, gun speed and spray pattern overlap) for the finish being applied.
- 2.6. Apply basecoat for panel blending.
- 2.7. Dry basecoat per Technical Data Sheet.

#### **ART 3.0 — Full panel clearcoat application in relationship to the Technical Data Sheet (TDS) supplied by the supporting paint manufacture.**

- 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. Check and adjust spray gun operation.
- 3.4. 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 4.0 — 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)**

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

**ART 5.0 — 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)**

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

**ART 6.0 — 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)**

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

**ART 7.0 — 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)**

- 7.1. Apply tinted product to produce evidence of a blendable color match for the finish being applied

**Featheredge, Priming and Blocking  
(Scratched Substrate)**

**ART 8.0 — 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)**

- 8.1. Clean entire panel; use appropriate cleaner to remove contaminants.
- 8.2. Apply surface cleaner to remove contaminants.

**ART 9.0 — 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)**

- 9.1. Sand area using dual action sander.
- 9.2. Sand areas to show appropriate removal of material for good featheredge technique.
- 9.3. Sand beyond the repair area for adhesion of primer.

**ART 10.0 — Apply UV 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)**

- 10.1. Apply UV primer surfacer onto surface of repaired area.
- 10.2. Check and adjust spray gun operation.
- 10.3. Apply finish using appropriate spray techniques (gun arc, gun angle, gun distance, gun speed and spray pattern overlap) for the finish being applied.
- 10.4. Use UV light to dry according to material manufacturer recommendations.

**ART 11.0 — 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)**

- 11.1. Dry sand the area to which two-component finishing filler has been applied.
- 11.2. Dry sand the area to which UV primer-surface has been applied.
- 11.3. Block the sand area to achieve levelness of repaired area.

**Paint Code ID and Masking**

**ART 12.0 — 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)**

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

**ART 13.0 — 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)**

- 13.1. Identify variant swatches/chips.
- 13.2. Match variant to vehicle using color- corrected lighting.
- 13.3. Identify variant that will produce the best possible blend.

**ART 14.0 — 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)**

- 14.1. Mask and protect adjacent panels that will not be refinished.
- 14.2. Mask door jambs and other aperture panels.

**ART 15.0 — Oral Assessment/Interview**

- 15.1. Exhibit personal skills such as attendance, time management and individual responsibility.
- 15.2. Demonstrate promptness when required to meet interviewer at specific time and location.

**ART 16.0 — Maintain professional conduct**

- 16.1. Demonstrate courteous behavior while waiting for the interviewer.

**ART 17.0 — Maintain professional appearance**

- 17.1. Demonstrate proper attire (SkillsUSA uniform).

**ART 18.0 — Complete job application and resume \***

- 18.1. Properly and legibly complete a job application and resume.

## **ART 19.0 — Demonstrate interview skills**

### 19.1. ASE Written Test

## **ART 20.0 — Competitors will be required to take a written test prior to the official competition. A 100-point scale is used for this segment.**

20.1. Competitors will take a written test in the area of painting and refinishing that includes 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.

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 competition.

### **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](http://www.ncte.org/standards).