

In the Fiber Analysis event, competitors will analyze a fiber sample to determine if the fiber is natural or synthetic based on microscopic and chemical analysis. They will justify their choice, in a written conclusion, based on their identified characteristics.

Entry Requirements

- Teams must be composed of 2 members.
- Chapters can only register 2 teams to compete.

Materials

Competitors are required to bring the following materials/supplies, as they will not be provided by TPSA. No other supplies/materials will be permitted.

Competitor Provided Materials

- **Photo Identification:** Reference the rulebook (<https://tpsa.info/rulebook>) for details
- **Slide Preparation Materials:** (i.e. slides, coverslips, water, etc.)
- **Tea Light Candle:** for burn test (TPSA will provide lighter)
- **Safety Equipment:** (i.e. gloves, metal tweezers or forceps, scissors, etc.)
- **Writing utensil:** (Blue/ Black Ink Pen)
- **Blank notebook paper:** Used for notes and summaries
- **Permanent Marker:** used to mark evidence tape and slides
- **Evidence Tape:** (tape may be in strips or on a roll)
- **Scissors:** Any scissors necessary to cut evidence tape.
- **Station Cleaning Materials:** Paper towels or wet wipes to clean up any spilled materials

Procedures and Timeline

- **Check In (10 min Time Limit):** Competitors must check in to their event at their designated **check-in time**. Competitors that arrive **ten (10) minutes** after their designated check-in time will be marked as no-shows and not be allowed to compete out of respect for the time commitment made by our Judges and Volunteers.
- **Pre-Event Briefing (5 min Time Limit):** After check-in, Competitors will be guided to the designated event area. Once there, the Moderator will provide a comprehensive briefing, detailing the event's instructions, rules, and procedures. This briefing ensures that each Competitor is well-informed and prepared for the subsequent stages of the competition.
- **Skills Assessment (20 min Time Limit)**
 1. The competitors will have 20 minutes to complete the skills assessment.
 2. When the moderator starts the timer and calls "start", the competitors will begin their analysis of the fiber sample.
 3. Competitors will use proper technique to open the sample package containing evidence (fibers) for analysis.
 4. Competitors will conduct microscopic analysis and burn testing.
 5. Competitors will determine if the fiber is of natural or synthetic origin.
 6. Competitors will write a summary of their findings, detailing characteristics such as burn test results, color, microscopic appearance, including shape, presence or absence of cuticle scales, striations, uniformity, nodes.
 7. Competitors will seal evidence using proper technique and clean their workstation.
 8. The summary of findings must be submitted to the judge's hands before the moderator calls time at the end of the 20 minutes.
- **Evaluation and Scoring (5 min Time Limit):** After the completion of the event, the Judges will convene to assess each Competitor's performance based on a standardized rubric. This stage is conducted without the presence of the Competitor. Judges will evaluate the criteria outlined in the rubric to ensure a fair and objective scoring process. Once all assessments are finalized, scores will be recorded for each Competitor.

Professional Dress Guidelines

To secure professionalism points, competitors should dress in attire that accurately reflects what professionals in the respective public safety careers would wear while performing the tasks associated with the event. Competitors are also expected to consult and follow the professional dress guidelines in the rulebook to qualify for points. Additionally, participation is contingent upon meeting all prescribed safety protocols.

Safety Protocols

- **Jewelry:** Rings must feature a continuous, even, and unadorned exterior surface. Necklaces must not be visible from the outside of the uniform. Bracelets may not be worn. If competitors have piercings beyond a single stud in each ear, they must cover these additional piercings with band-aids or wear clear studs to maintain a professional appearance.
- **Hair:** All hair must be secured out of the eyes for the duration of the event. Competitors with hair extending past the top of the shoulder shall wear their hair secured neatly in a bun or ponytail ensuring that no hair extends below the collar of the uniform. It is not an exception to the rule that a Competitor's chosen hair style is too thick to be secured above the collar.
- **Shoes:** Competitors must wear low-heeled, closed-toed footwear for this event.
- **Fingernail Length:** Competitors' fingernails shall not extend past the tip of the finger and shall be free of any/all adornments. Color is not a factor.
- **Shirt Sleeves:** IF Long sleeve shirts are worn, they shall fit closely at the wrist and not extend past the wrist.
- **Pant Length:** Pants shall not extend past the sole of the shoe.

Judge Qualifications

- Experience with general microscopy.
- Experience with trace evidence analysis.

Criteria	Unattempted	Unsatisfactory	Satisfactory	Proficient	Exemplary	Points
Professionalism						
Professionalism This criterion evaluates the appropriateness of attire and the level of professional behavior displayed, considering industry standards relevant to the event.	0 No professionalism demonstrated. Attire and behavior are entirely inappropriate or unacceptable.	1 2 Attire is inappropriate for the event and does not meet industry standards. Professional behavior is inconsistent.	3 4 5 Attire is mostly appropriate but may not fully meet industry standards. Professional behavior is generally acceptable.	6 7 8 Attire meets industry standards and is appropriate for the event. Professional behavior is consistent.	9 10 Attire meets industry standards and is appropriate for the event. Professional behavior is outstanding and goes above and beyond expectations. Attire quality is not a factor between Proficient and Exemplary.	
Safety						
Safety Competitor dons gloves.	0 Did not wear gloves	3 One competitor donned gloves	6 Both competitors donned gloves.			
Evidence Packaging/Handling Evidence should be opened using proper technique and handled without unnecessary loss or destruction.	0 Did not open correctly and wasted evidence	2 Evidence was opened using proper technique but did cause unnecessary loss or destruction	4 Evidence was not opened using proper technique, but was handled without unnecessary loss or destruction	6 Evidence was opened using proper technique and handled with minimal unnecessary loss or destruction	8 Evidence was opened using proper technique and handled without unnecessary loss or destruction	
Microscopic Analysis						

Criteria	Unattempted	Unsatisfactory	Satisfactory	Proficient	Exemplary	Points
Slide Preparation Slides are prepared correctly using a wet mount technique: • The proper amount of fiber is placed on the slide. • Tweezers/forceps are used to handle evidence. • Correct amount of water is used. • Cover slip is used. • Slide is labeled.	0 Slide was not prepared correctly.	2 Only 1-2 requirements were met.	4 Only 3 requirements were met.	6 Only 4 requirements were met.	8 All 5 requirements were met.	
Microscope Use Microscope is used correctly: • Slide placed on stage correctly. • Focusing begins on low power. • Stage is moved using knobs, not hands. • Competitor refocuses with each power increase. • Competitor uses appropriate knobs (fine focus/coarse focus).	0 Did not use microscope properly or at all.	2 At least 2 requirements were met.	4 Only 3 requirements were met.	6 Only 4 requirements were met.	8 All 5 requirements were met.	
Burn Test						
Burn Test Competitors correctly complete a burn test. (1) Uses proper amount of fiber. (2) Uses tweezers to correctly handle fiber. (3) Slowly moves near/into flame. (4) Conducts burn test safely.	0 Did not attempt	2 Only 1 requirement was met	8 Only 2 requirements were met	12 Only 3 requirements were met	16 All 4 requirements were met	
Post Analysis						
Written Summary Written summary of findings includes proper spelling and grammar.	0 Did not complete summary	2 Summary was completed with more than 10 spelling or grammar issues	3 Summary was completed with 5-10 spelling or grammar mistakes	4 Summary was completed with up to 4 spelling or grammar mistakes	5 Summary was completed with no spelling or grammar mistakes	

Criteria	Unattempted	Unsatisfactory	Satisfactory	Proficient	Exemplary	Points
Microscopy Results Competitors will include in their summary of their findings characteristics including: (1) fiber color, (2) presence or absence of cuticle scales (3) presence or absence of striations, (4) uniformity of fibers, and (5) presence or absence of nodes	0 microscopic analysis not included in summary	2 1 or 2 characteristics included	4 only 3 characteristics included	6 only 4 characteristics included	8 All 5 characteristics included	
Burn Test Results Burn test results included in written analysis include correct description of (1) the fiber's reaction to the flame (ie ignites quickly, recoils, melts, etc), (2) the smell of the fiber, (3) description of ash residue (ie black ash, black bead, etc)	0 burn test not included in summary	2 Correctly identified 1 characteristic	5 Correctly identified 2 characteristics		8 Correctly identified all 3 characteristics	
Natural or Synthetic Competitors will determine if the fiber is natural or synthetic.	0 Did not determine or determination was incorrect		5 Determination of natural or synthetic was correct, but given verbally, not in written summary		10 Correct determination of natural or synthetic was included in written summary	
Evidence Packaging Evidence is returned to packaging and packaging is sealed using proper technique.	0 Evidence not returned to packaging		3 Evidence returned to packaging but not sealed properly		6 Evidence returned to packaging and sealed correctly	
Clean Up Work area returned to pre-arrival condition, all trash thrown away.	0 No clean up was attempted		4 Clean up was attempted but not completed		7 Clean up was completed and all trash was thrown away	

