Quality Assurance and Laboratory Equipment
Quality Assurance Statement

Superior Uniform Group’s® Company-wide “Customer First” philosophy is demonstrated by our world class Quality Assurance processes. Superior Uniform Group manufactures in a range of locations and factories around the globe. We use established procedures to check and maintain our garment integrity, fit, construction, stitching and packaging from development through the lifetime of the program. This means you will always receive a quality product; consistent in size, color and performance. This document outlines the measures deployed to ensure your satisfaction. Superior Uniform Group understands that you the Customer come first and are the final inspector.

The Quality Assurance (QA) Process

High-volume garment production requires many repetitions involving controlled sequences of operations. Where operations are frequently repeated, it is easier to identify appropriate control measures and recognize processing errors. Superior Uniform Group’s quality assurance processes have been implemented to ensure a consistently high-quality garment is produced. This is accomplished by (a) eliminating nonconformities and their consequences, (b) eliminating rework and wasted resources, and (c) performing a root cause analysis to achieve these goals at the lowest possible cost, providing financial savings to our Customers.
Team Overview

Superior Uniform Group utilizes detailed proprietary quality processes in each area of our business. *Adam Schechter*, our Director of Process Improvement oversees the review of these processes in their entirety on a regular basis. These scheduled reviews ensure all processes are being performed according to approved documentation and align with best practices and the expectations for that area of business.

In addition to our Director of Process Improvement, Superior Uniform Group’s quality department is led by *Ervin Hosak*, Director of Quality Assurance. Ervin has more than 35 years of experience in apparel manufacturing, engineering, and Quality Assurance, and he reports directly to our CEO, Michael Benstock.

We manufacture a large percentage of our products in Central America. In Central America, our team is led by our Manager of Quality Assurance. The Manager oversees a quality assurance team of 12 people, all located in Central America. Our quality assurance team performs audits on inbound fabrics, in-line production, as well as final product audits once completed.

At our primary distribution center located in Eudora, Arkansas, our team is led by the Manager of Inbound Quality and the Manager of Outbound Quality, along with an experienced team of auditors. All of these managers report to the Director of Quality Assurance.

Factories utilized by Superior Uniform Group also have third party audits (such as WRAP, CTPAT, Wal-Mart, and JC Penney) yearly to ensure compliance to acceptable social standards for working conditions, wages, as well as ensuring the companies meet all local laws including the age of the workers. Many of our factories are WRAP certified and we also utilize 3rd party companies such as Bureau Veritas, SGS, and IGS to conduct audits for social compliance.
In-House Quality Assurance Laboratory, Equipment and Testing

Superior Uniform Group boasts a state-of-the-art In-House Quality Assurance Laboratory on premises at our corporate headquarters located in Seminole, Florida, utilizing the most current technology available. We duplicate the essential portions of our lab equipment in the Far East and Central America with mirror images of the lab in Seminole and other factories located globally to do testing and identify any quality issues before sending to our primary lab in Seminole for final approval. Our equipment is certified by the American Association of Textile Chemists and Colorists (A.A.T.C.C.) and calibrated in accordance with manufacturer’s requirements. Our Data Color Matching system is the most advanced, presently in use. It depicts color instrumentally rather than through subjective visual examination, enabling us to approve lab dips, submits and samples electronically from any mill in the world. This greatly accelerates the approval process and shortens the fabric lead-times.

We also control production lots in a similar fashion. Based on the fabric that is required by the Customer, we supply a fabric specification sheet to the fabric mill (or contractor) that includes the following:

- Description
- Fabric Type
- Color
- Cuttable Width
- Blend
- Weight oz./yd. sq.
- Count
- Yarn Size
- Yarn Type
- Dye Method
- Finishes

We also include tolerances for the various test methods performed on the specific fabric types. Examples would be pilling, shrinkage, colorfastness, dry and wet crocking.

Our In-House Quality Assurance Laboratory also has capabilities with regard to auditing fabric and findings (buttons, zippers, etc.) to ensure that overall specifications are met. We test not only our own garments, but those that our customers require as well. We offer any testing services to our Customers at no charge when needed.

As with fabrics, the trim items are purchased from a variety of vendors and then sent to various locations until they are required. Each item is identified with a unique number that is only used for that specific item. The words “trim items” encompasses a variety of items such as zippers, buttons, thread, labels, elastic, cuffs, knit collars, heat transfers, kaumographs, collars stays, buckles, rings, snaps and emblems. As styles and requirements change, so does the list. Testing is performed quarterly.
The construction of the trim determines what testing procedures are performed. In order to ensure unsurpassed quality of our products, tests are performed using various testing parameters. Stringent quality checks are conducted by our Quality Controllers from the point of procurement to the final delivery to our customer. All trims are checked for durability and performance to ensure compliance with the garment care instructions. All trims are attached using proper sewing methods.
Fabric Selection
The first area of Quality Assurance concerns all incoming product and raw materials to the Company. Fabric selection and testing are crucial factors in producing quality garments. The most critical issues in fabric selection are quality, performance and comfort.

The process of determining fabric quality begins when incoming fabric and trim are checked, by lot, according to established industry methods in our In-House Quality Assurance Laboratory located at our Company headquarters in Seminole, Florida regardless of where it is produced and constructed. We then evaluate the fabric construction, weight and dye chemicals used in its' production. Consideration is given not only to fabric, but also to major trim items necessary for the construction of the finished product. Such items include thread, elastic, buttons, zippers, inter-linings and tapes. For our Customers, this double-check ensures a longer-lasting end product.

Fabric Testing
Each group or category of fabric is tested principally for applicable properties reflecting its performance in the end use. An example may be a barrier fabric, which is initially subjected to 50 accelerated launderings and tested for hydrostatic pressure, moisture vapor transfer, breathability, etc. Our In-House Quality Assurance Laboratory is capable of performing approximately 50 standard fabric testing procedures. These tests include fabric shrinkage, pilling and abrasion. Home laundering washings are done at 120° Fahrenheit, while our industrial formulas call for laundering at 160° Fahrenheit. Additional tests are conducted to measure colorfastness and appearance. Chlorine concentrations in our bleach formulas are as high as 125 parts per million and our industrial washing procedure is a standard white wash formula. Color continuity is maintained by establishing a scale of tolerance. Once the desired color is attained and approved, a tolerance is set to assure that each dye lot falls within the acceptable tolerance levels.
Superior Uniform Group purchases raw materials not only from domestic suppliers but also globally. Raw materials purchased are mainly fabrics and trim items.

Shade standards for all fabrics purchased are currently maintained in our In-House Quality Assurance Laboratory. The various mills each have quality assurance labs to insure that the standards that Superior Uniform Group has established on each fabric are met and maintained. Upon receipt of the fabrics at all locations, random tests of the fabric are performed to insure quality standards are maintained such as weight, thread count, colorfastness and blend levels of the fabric. Specific wash tests are also performed on the fabrics to insure durability and washing. For our Customers, this maintains the overall integrity of the fabric for the wearer’s comfort.

Listed below are the different tests performed to ensure color stability depending on the fabric type:

**Knits**
1. Weight of the fabric.
2. Count in Wales and Courses.
4. Percent Shrinkage and Skew.
5. Colorfastness
6. Soil Release only if required.
7. Wicking only if the knit is moisture management.
8. Snagging only for waffle knits.
9. Fiber Content

**Wovens**

<table>
<thead>
<tr>
<th>Category 1: Poplins, Twills</th>
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<tbody>
<tr>
<td>1. Weight</td>
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<tr>
<td>2. Count warp and fill.</td>
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<tr>
<td>3. Fiber Content</td>
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<tr>
<td>4. Colorfastness</td>
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<tr>
<td>5. Abrasion for twills only.</td>
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<tr>
<td>6. Pilling</td>
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<tr>
<td>7. Tensile Strength for twills only.</td>
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<td>8. Yarn size only specially requested.</td>
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<tr>
<th>Category 2: Barrier Fabrics:</th>
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<tbody>
<tr>
<td>1. Weight</td>
</tr>
<tr>
<td>2. Spray, Impact test for Class 1</td>
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<tr>
<td>3. Spray, Impact and Hydrostatic for Class 2</td>
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<tr>
<td>4. Spray, Impact and Hydrostatic for Class 3</td>
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<tr>
<td>5. Percent shrinkage</td>
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<tr>
<th>Category 3: Cleanroom Fabrics:</th>
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<tbody>
<tr>
<td>1. Weight</td>
</tr>
<tr>
<td>2. Count</td>
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<tr>
<td>3. Surface Resistivity (at 50 percent RH)</td>
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<tr>
<td>4. Pore Size</td>
</tr>
<tr>
<td>5. Hydrostatic if coated</td>
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<tr>
<td>6. Percent Shrinkage</td>
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Color Testing

Let’s begin with a request for a new color. We can take a PMS shade or swatch of fabric that gives us a starting point. We will measure the new color standard and enter into our data color program system. Next, we will send the data color file via email and mail the physical sample to the mill for development. Once a lab dip is produced and received in our In-House Quality Assurance Laboratory, we will compare the lab dip to the original standard using the textile industry guideline color measurement. The lab dip will also be evaluated visually in our light box. The primary light source used is cool white fluorescent and secondary used is daylight.

Once a lab dip is approved, we assign a fabric code specific to that color and type of fabric. When the first purchase order is placed one yard of fabric is sent to our In-House Quality Assurance Laboratory for inspection before it is released to ship. The one yard sample will be tested for color and physical properties to insure it meets the fabric specifications.

Each time a purchase order is placed for fabric we require a pre-production sample to be sent to our In-House Quality Assurance Laboratory for testing and approval before it is released to be shipped. After production is received in the manufacturing locations random samples are pulled and double checked for color consistency. If any samples do not pass, the lot is put on hold and sent to our Seminole corporate headquarters through data color file for approval. If color passes, then fabric can be used for production. If fabric fails a sample is pulled from every roll in the lot and sent to our In-House Quality Assurance Laboratory for data color reading and disposition.
Pattern Development:

Pattern development is crucial in the production of quality garments. Patterns produced by Superior Uniform Group must meet established high standards. The final sewn garment must be:

- Comfortable
- Practical
- Distinctive
- Fashionable
- Durable
- Low-Maintenance

Patterns can be created from a sketch, picture, and verbal description, a basic change to an existing pattern or a Customer sample. Superior Uniform Group creates all initial patterns and sends them to our contractors for sewing. This ensures that our fit is consistent across many product lines, except where a custom fit is requested from a client.

Product Specification:

The next element in the quality assurance process is the writing of a product specification for every new garment that is introduced into our manufacturing system. Garment samples from our design studios are broken down into content and manufacturing components, and a detailed measurement specification is written on all critical aspects of the product. The approved sample and corresponding specification are then sent to the manufacturing plant for production.

New patterns are tested in the manufacturing environment prior to production. A detailed prototype inspection is performed to verify conformance to the established specifications.

Three sizes from the size range are cut and sewn in the actual production line to establish the correct fabric layout, machine settings and to ascertain if special machine attachments are required. As part of the process the specification’s construction details, trim items, measurement chart and seam standards are compared to the sample and test garments and approved. As part of the process the specification’s construction details, trim items, measurement chart and seam standards are compared to the sample and test garments and approved. For example, this ensures our Customers see that the thousandth medium-sized shirt is the same as the first medium-sized shirt produced.
Sampling Plan and AQL:

Superior Uniform Group Inc. performs quality inspections using a statistical sample plan. The plan utilized by Superior Uniform Group gives the audit team a 98% confidence that the error rate in the shipment will not exceed a 2.5% AQL (Acceptable Quality Level). The AQL of 2.5% means in an average vendor shipment no more than 2.5% of the garments may have some type of defect. (The defects may only be minor and not even noticeable but not affect the appearance, function or wearability of the garment) This statistical measurement process is the standard within the apparel industry although most retailers work with a higher AQL, usually 3.5%.

The use of a sampling plan insures each lot is inspected to the same level no matter the size of the lot. The 2.5% defect level is the maximum we would accept within a shipment but most shipments into our Distribution Center fall well below the 2.5% level. When a shipment is discovered to have a higher defect level than 2.5% corrective action is taken to replace the defective goods and preventive action is taken to avoid having a future rejected lot for the same defect.

Following the appropriate sample plan along with the use of skilled and experienced inspectors ensures a successful final audit and ensures the products shipped by Superior Uniform Group will meet the standards expected by our customers.

Sewing Accuracy:

All sewing procedures are analyzed in the quality assurance process. Garments are examined using a statistical audit procedure during production.

Following the manufacturing process, garments are subjected to a complete inspection during which number of stitches per inch, cleanliness of seams, correct, proper measurements and other criteria are given close scrutiny to ensure they comply with the approved sample and product specification. Defects found in this audit are repaired.

Procedures for determining all types of seams and stitches using Federal Standards are available for review, as is a document detailing the Company’s methods of measuring dimensions on all types of garments.
Inbound Auditing:

Incoming merchandise is subjected to the normal military general Inspection level 1 at 2.5. The AQL (Acceptable Quality Level) is generally specified by the authority responsible for sampling. It is common to use an AQL of 1 percent for major defects, and 2.5 percent for minor defects. In addition to these standards a random audit of all containers is ongoing to ensure compliance. All Superior Uniform Group vendors are required to maintain a 2.5 percent AQL. The levels are closely monitored to ensure compliance.

If merchandise fails to meet the inspection criteria corrective action shall be taken. Blocking inventory is a procedure established to prevent defective garments being shipped while a quality issue is under evaluation. Superior Uniform Group’s Quality Assurance Department will perform a 100 percent inspection on the imported shipment to see if there are any other non-conforming items.

Final Audit:

Final Statistical Audits are very important in catching quality problems. This is the last check before the goods are sent to the Customer and this task is handled in our Eudora, Arkansas main distribution center. Well-trained auditors perform this job because many defects require the attention of a skillful eye. If one of these auditors rejects a cut, then the whole cut is checked 100 percent for that defect.

Elements of the Final Statistical Audit:

Verification- It must be verified that the garment at hand is what is desired by the Customer. This review ensures that your Company logo and brand standards are met.
Inspection for Workmanship Defects- A statistically determined number of units from the lot must be thoroughly inspected in order to evaluate the quality of the lot.

Inspection for Size Problems- Garments from each size must be measured for size after being inspected.

Work area must be well lighted and the measuring table should be large enough to hold the entire garment spread out flat and buttoned.

Cuts should be stored in the auditing storage area to facilitate the access of the boxes for the auditor.

**General Requirements for Inspection:**

Sample boxes must be randomly obtained. Cuts that are only partially boxed are not ready for the final statistical audit and should not be audited until all boxes are complete. Samples must be randomly obtained from finished sealed boxes.

Final Statistical Audits are done following a 2.5 AQL. Acceptable quality level (AQL) sample inspection methods have been proven to be accurate over a long run, minimizing the chance a Customer will have a return for a quality issue.

Auditors should establish a routine for inspecting garments in order to eliminate the possibility of overlooking an operation. The auditor must be aware of the specifications of the garment.

Round measurements are made to the nearest 1/8th unless specifications require that it is taken to the 1/16th.

All operations must be checked in the final audit. Also, tacks, shading, long threads, raw edges, skip stitches and other defects must be checked.

Garments with major defects are to be marked by colored tape and set aside for repair.

Detailed records should be recorded and major defects must be properly recorded with their code.

Cuts that have not passed a final audit or have only been partially audited should not be loaded onto the truck.
After inspection, the remainder of the garments in the box must be counted and checked for size. The label on the exterior of the box must reflect the contents inside the box. Garments that have passed the Final Statistical Audit must be returned to the box in the same manner that they were in when they were taken out. All repairs should be set aside and marked. Detailed records of any defects must be recorded. This form should then be used to correct any operators, procedures, or anything else that causes the defect to persist.

Warehoused Inventory:
Another control system in place focuses on finished goods in the warehouse. This is a random audit of warehoused inventory after it's been accepted in the initial audit. As orders are processed, Superior Uniform Group double-checks stock quantities to ensure the proper amounts of garments are available to our Customers at any given time. For our Customers, this ensures that product does not get counted incorrectly and that accurate inventories are available for orders. Throughout any day, styles and PO’s are continually monitored and methodically checked by a group of auditors for stitching, fabric and specification conformity.

Outbound Auditing:
Cases are selected at random from the Customer’s order and following a series of prescribed procedures are audited for accuracy of size, count and packing quality. Due to individual regulations a few pre-determined Customers require a stricter audit and these audits are preformed following a prescribed list of audit points. In addition to overall garment quality, this aspect of the inspection also includes the quality of the packing, labeling, and shipping materials. Standard Acceptance Quality Limits (AQL) and double sampling plans are established for all outgoing shipments.
In Conclusion

Superior Uniform Group has documented quality standards in place to govern our products and services, ensuring our Customers receive the best quality, service, and products. We are vertically integrated, maintaining tight control over fabric, patterns, and factories. By owning and staffing our own distribution centers, we are able to offer a consistent level of service and technology. This means we can confidently commit to delivery times and meet these delivery commitments more than 98 percent of the time. Superior Uniform Group offers the special touches requested by individual Customers that a contract distribution center cannot or will not do.

For any questions or comments, please contact
Ervin Hosak,
Director of Quality Assurance,
at ehosak@superioruniformgroup.com
Appendix:

Air Permeability Tester – Used to determine the porosity or breathability of a fabric. The tester evaluates the filtration efficiency of cleanroom fabrics. Calculations are in terms of cm³/cm²/sec. units.

Autoclaver – A necessary process to accurately simulate actual laundering and sterilization procedures used in hospital laundries and thus insure that fabrics will process favorably after sterilization.

Crockmeter - Determines whether or not color may be transferred from the surface of dyed fabrics to another surface (such as undergarments) or fabric by rubbing.

Datacolor System – Photo Spectrophotometer – State-of-the-art electronic system for measuring fabric color. It provides numerical data that can be globally transmitted and yields exact color correct matched fabrics from that data.

De-Humidifier - Enables fabric testing to be done under low and controlled humidity.

Dessicator - Fabrics that are to be tested are put in this device to keep out moisture.

Elmendorf Tear Tester - Determines the average force required to rip or tear fabric starting from a single small cut in the fabric. This test is done on woven fabrics only.

Home Washer/Dryer - Used to duplicate normal home wash/dry conditions-cold/warm/hot.

Hydrostatic Tester - Measures fabric resistance to hydrostatic pressure, specifically its' resistance to blood-borne particles. Synthetic blood of exact viscosity and surface tension as natural or human blood is used for this test.

Impact Penetration - Measures the resistance of fabric to the penetration of water by impact. Results depend on the water repellent properties.

Industrial Washer with High Speed Extraction – This 12 lb. washer simulates industrial laundering conditions and has the capability of changing washing conditions by means of a programmable chip. Washing chemicals (liquid form) are pumped directly into the washer at preset time intervals to yield actual industrial laundering. Typical washing cycle will include the introduction of: 1. Non-Ionic Detergent 2. Alkaline Builder 3. Bleach.

Laundrometer - Simulates extensive washing or dry cleaning in a short amount of time. 1 cycle = 5 washings or 5 dry cleanings. Each sample is put in a canister with metal balls. Machine handles 20 canisters at one time.

Macbeth Lightbox – Used to check colors of fabrics visually; compliments datacolor system. Fabrics can be checked under various light sources enabling users to determine whether two fabrics are metameric.

Microscope - Low power microscope permits the examination of fabric structures.

Mullen Hydrostatic Tester - Measures the hydrostatic pressure necessary to force water through a barrier fabric up to 300 lbs. per square inch.

Perspiration Tester - Determines the colorfastness of textiles to the effects of perspiration.

Ph Meter - Determines acidity or alkalinity of a solution

Pilling Tester - Determines the resistance of the fabric to formation of pills and other relaxed surface changes. This procedure is generally applicable to all types of woven and knitted fabrics.

Resistivity Tester - The surface resistivity of fabrics is especially important for all cleanroom fabrics where electrical charges that are not speedily dissipated may cause catastrophic failure of the fabric.

Scott Tester - Test the tensile strength of fabric, paper and skein yarns.

Shimpo Snap Tester - Measures the force required to open and close snaps.

Snag Test - Determines the ability of a woven or knit fabric to resist pulling or snagging of threads.

Spray Test - Measures the resistance of fabric to wetting by water. Results obtained depend primarily on the resistance to wetting or water repellent of the fibers and yarns, not the construction of the fabric.

Taber Abraser - Measures fabric's tendency to wear and deteriorate under various abrasion conditions.

Weight Scale - Accurately measures weight of chemicals or fabrics used in various test.

Wrinkle Tester - Determines the amount of wrinkles retained after 24 hours when exposed to a given weight for 20 minutes.

Yield Scale with Fabric Die Cutter - Determines the weight of fabric in ounces per square yard.