MILLIKEN®

Public Version

November 6, 2008

Mr. R. Matthew Priest
Chairman
The Committee for the Implementation of Textile Agreements
U.S. Department of Commerce
Room 3001A
Washington, DC 20230

Reference: File number - 96.2008.10.23.Fabric.AM&SforSwiftGaley

Dear Mr. Chairman,

On behalf of Milliken & Company, I am writing to strongly object to the 96.2008.10.23.Fabric.AM&SforSwiftGaley commercial availability request seeking a short supply designation for certain cotton twill fabrics treated with liquid ammonia. Milliken & Company can supply a substitutable fabric using traditional caustic mercerization that meets, and in fact exceeds, the performance specifications outlined on page 16 of the request.

Milliken & Company is a U.S. textile producer of various types of high quality polyester-cotton blends and 100% cotton fabrics. We have produced these products for over forty years in our production facilities located in both South Carolina and Georgia.

The 100% cotton fabric, outlined in the above mentioned petition, falls well within the range of fabrics that Milliken is capable of producing. Specifically, Milliken has produced more than [xxxxxxx] of 100% cotton and poly-cotton in the last twenty-four months. These fabrics require no unusual production requirements and can be manufactured on our existing machinery. Milliken is capable of a vertical arrangement; able to supply both the yarn and the fabric in question. Moreover, all finishing operations can be satisfied at our Magnolia Finishing Plant in Blacksburg, South Carolina.

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We have expertise in working with our customers to create and develop fabrics which may be specific to them. We either have existing sample fabrics or we produce prototype samples upon receipt of a purchase order. If we don't have samples immediately available, it certainly doesn't mean we couldn't or wouldn't produce them.

Milliken & Company currently employs over 1,500 workers at our six production facilities in Georgia and South Carolina. We are able to produce large lots for our customer base and are very capable of producing quantities sufficient to meet the demands stated by the petitioner, Swift Galey. Our production capacity is more than [xxxxxxx]. We have the capacity to spare and would welcome the additional business.

Substitutability of Fabrics Treated with Caustic Mercerization for Fabrics Treated with Liquid Ammonia.

We contend that caustic mercerization is a direct substitute for liquid ammonia treatment. Our test results meet or far exceed the testing specifications called for in this petition. See the chart below which compares Table 1 test results (found on page 16 of the petition) to Milliken test results:

Page 16 of the Petition Table I – expanded:	Performance specifications for liquid ammonia treatment of certain twill fabrics prior to resin application (Asian Mills for Swift Galey)	Performance specifications for caustic mercerization treatment of certain twill fabrics prior to resin application (Milliken)
Durable Press – AATCC Test 124 (after 3 home wash and dry cycles)	2.0+	[xxxx]
Flex Abrasion (number of cycles)	425+	[xxxx]
Wrinkle Release – AATCC Test 128 (before washing)	2.0+	[xxxx] (However, our customers do not request this test*)
Tear Rating in the fill	4.0+	[xxxx]
Aesthetics	Luster and pliable (soft) hand	Comparable

* [xxxxxxx], of Milliken & Company, and someone with 41 years of textile finishing expertise has never been asked by a customer to supply the AATCC Test 128. He has worked for three major textile companies over the span of his career.

Points on the substitutability the issue include:

- Language included in the commercial availability request such as *significant, improved, greater, better, greatly superior as compared to conventional caustic soda, etc.* by themselves are terms that need to be quantified and cannot be solely allowed as justification for short supply as a technical or scientific difference. We believe that the use of such vague terms violates CITA's regulations under paragraph 3(vi) which requires that "all characteristics and specifications must be supported by measurable criteria."

- Furthermore, the claim of *superior characteristics* provided by liquid ammonia mercerization has never been proven here in the United States, which originally championed this technology in the '70s and '80s. If they had been, we would still be utilizing this technology, regardless of cost or necessary environmental control.

- Most of what is being referenced in the Commercial Availability Request as "technical proof" was sponged from three articles.

1. *Introduction to the Liquid Ammonia Process* (an equipment sales promotional by Lafer, S.P.A., Italy)

Note that the first publication is by Lafer, S.P.A., an Italian textile machinery producer. This is essentially a biased equipment sales promotional, as opposed to a scientific journal.

2. *Modifying Wear Life of All-Cotton Fabrics: Liquid Ammonia Treatment and Durable Press Finish*, by Lien & Dever, Dept of Textiles & Interior Design, University of Illinois

The second source is from 1982 and as such is extraordinarily outdated. In addition, it speaks to liquid ammonia's properties when used as a pretreatment to durable press finish as compared to durable press treatment on its own. Durable press treatment is applied after pretreatments such as liquid ammonia treatment or caustic mercerization. There is no comparison of liquid ammonia treatment versus caustic mercerization.

3. *Plant and laboratory Mercerized Verses Liquid Ammonia Pretreatments for Durable Press*, TCRO-12 Technical Rpt Cotton Inc.

The third source was not found to be available online for a complete review. However, in the chart from this source presented as Exhibit C, the finish relevant to the subject product of the request and labeled as Finish #4 (Untreated), meaning that no finish was applied after the pre-treatment of either mercerization or ammonia, shows that the liquid ammonia tested sample does not meet the performance specifications outlined on page 16 in 3 out of 5 areas of measure: 1) durable press (AATCC 124) liquid ammonia treated test fabric is 1.8 while spec is 2.0+; 2) tear

rating at the fill is 3.9 for the test fabric while the spec is 4.0+; and 3) wrinkle release is 1.9 in the test while the spec is 2.0+. This independent testing does not prove that liquid ammonia mercerization can meet the specifications required in the petitioner's fabric request. Furthermore, the chart does not specify the specific method of mercerization used in the mercerized samples. Regardless, we can produce a fabric meeting those specifications using caustic mercerization.

- Attached is a memo from Edward Elliot on the substitutability of liquid ammonia and traditional caustic mercerization (Attachment 1). Mr. Elliot has a wide reputation in the U.S. and global textile industry for his technical understandings and contributions. He has been a contributing editor for several U.S. textile journals including Textile World.

- Additional technical issues contained in the Commercial Availability request include:

  - p-3 "Swift Galey will perform processing on the ammonia treated fabric at Society Hill plant in SC, where fabric will be dyed & finished, [**********] which achieves the fabric performance properties that are not achievable with conventional caustic mercerization." [xxxxxxx] experiences from the actual processing of this technology at [xxxxxxx] in the early '70s is that ammonia mercerization will not replace caustic soda mercerization for dyeability. This fabric will have to be caustic soda mercerized to achieve equal dyeability. This contention is also supported in the Elliot memo.

  - p-3 There are claims for ..."parameters allow to significantly improve: dyeing uniformity, dyestuff affinity, color solidity" which were never proven at [Graniteville] nor by anyone else to our knowledge, who invested and used this technology in the United States.

  - p-4 "The textile industry world-wide has acknowledge the advantages of liquid ammonia treatment over mercerizing in improving performance...." if that were true, we would still be utilizing this technology today in the U.S. This would be especially true if there were no readily available substitute for liquid ammonia treatment.

  - p-7 "Fabric processed with conventional caustic mercerizing experiences significant degradation of strength...." This claim is not substantiated by scientific research. Conventional caustic soda mercerization has long been proven to offer improvement in:
    1. dyeability
    2. dimensional stability
    3. luster
    4. strength

- p-7 "This (liquid ammonia treatment) in itself is superior to caustic mercerization because the change within the structure of cellulosic fiber (crystallization)..." It has never been proven that ammonia mercerization forms cellulose II, as is achieved by caustic mercerization. This is likely why ammonia mercerized cellulose does not dye as deeply and richly as caustic treated cellulose.

- p-7 "Caustic mercerization requires up to a minute of immersion in caustic solution, followed by repeated dipping and squeezing." This statement is false. Twenty seconds is all that is required, with one dip, one squeeze.

- p-7 ".... (ammonia treated fabric) require [70%] less resin than does resin application after mercerizing." The term less resin may be accurate, but more on the order of 10-20% to achieve the same performance.

- p-7 – Current processing today will show that strength loss is never greater than 30% when done properly and is the industry norm on caustic mercerized goods, not the 50% as claimed on page seven of the petition.

- p-7 "Exhibit B also shows that fabrics treated with liquid ammonia prior to resin application exceed industry standards for maintaining their properties after washing and maintaining the crease in the trouser leg and cuffs." This was never able to be demonstrated after two years of research and repeated trial work with liquid ammonia. In fact, in our experience, with liquid ammonia, we never achieved greater than a 2.0 on durable press ratings or a 2.0 on crease without the use of resin. Even with resin, we were unable to achieve a sharp crease in a trouser in that ammonia mercerization does not produce a diameter change in the cellulose fiber, which always causes the crease to be rounded and unacceptable to the market.

- p-7 In the opinion of experienced Milliken employees ratings of 3.8 to 3.2 for wash wear appearance, and 4.5 for crease maintenance were never achieved on woven fabrics solely treated with liquid ammonia.

- p-8 "With weaker fabric (caustic soda mercerized), softeners would further decrease the fiber strength and cause significant wear along creases and cuffs." It has been long known in the textile industry that the practice of using softeners increases the lubricity of cellulosic fibers -- thus preventing wear.

- p-12 Milliken has stated that it believes that it can achieve the specification without ammonia mercerization given by Gary Bird on page 12 and on page 16 Table 1 of this document. In doing so, we take exception to the petitioner's comment "... has found no evidence that conventionally mercerized fabrics can produce the properties in the finished fabric that will meet the above specification..."

As a final point, liquid ammonia treated fabrics leave no easily distinguishable footprint that would allow for conspicuous identification of this technology verses conventional caustic mercerized fabrics. This goes both to the issue of substitutability and to enforcement. If the commercial availability request were approved, the U.S. Customs and Border Protection Agency would have no way of determining whether a fabric falls under the approved product description or not. We believe that CITA has a responsibility to reject petitions that on their face are simply unenforceable.

In addition to enforcement concerns, we believe that if adopted this petition would open an enormous loophole under CAFTA. The scope of fabrics covered by this petition is essentially the entire range of cotton twills. Swift Galey proposes that this massive range of fabric, which is far from inconsequential to the domestic industry, be exempted from CAFTA origin rules in effort to gain "improved" crease retention. If approved, this would allow importers to bring in the entire range of cotton twill fabrics covered by this petition for any reason as long as they claim the liquid ammonia process was used. Doing so would dramatically undermine existing CAFTA benefits to U.S. yarn and fabric producers.

Moreover, approving a short supply petition on the basis of a fabric preparation process would certainly invite numerous copy cat petitions that claim the need for liquid ammonia processing. Importers would then be able to stipulate the need for liquid ammonia treatment on virtually all other fabrics once this precedent was established. In short, the yarn forward rule-of-origin under CAFTA would be rendered useless through the adoption of short supply petitions that place an unwarranted value on preparation and finishing techniques as opposed to the proper emphasis - where the fabric is woven or knit.

Due Diligence Requirement

In regard to the due diligence process preceding the filing of this commercial availability request, the requestor specifically requested ammonia treated fabric only (Attachment 2). When asked if this was a short supply request, the requestor responded only that "We are trying to obtain the product as outlined [liquid ammonia treated], can Milliken provide?"[1] If the requestor had provided performance specifications, Milliken would have responded with a quote. Since liquid ammonia was a requirement, Milliken did not respond further as we do not do liquid ammonia mercerizing. Once Milliken and Company saw the performance specifications included in the official request, we knew that we could meet or exceed them with certainty and thus prepared this offer to supply.

Since the requestor did not supply the performance specifications later included in the commercial availability request during the due diligence process, or any other information about substitutable products, we believe they are in violation of section 4(b)(3)(vi) commercial availability procedures which state:

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[1] Email from G. Bunting to K. Dutilh 7/23/08

(vi) *Substitutability of Products:* In undertaking its due diligence, a requestor must clearly communicate information regarding the substitutability of the product in question to CAFTA-DR suppliers. In its inquiries to CAFTA-DR suppliers, the requestor must clearly describe the unique characteristics of the subject product that distinguishes it from other similar or potentially substitutable products. In addition, the requestor must provide CAFTA-DR suppliers with information why such characteristics are required for the purposes of the end-use of the product and cannot be substituted by another product. However, all characteristics and specifications must be supported by measurable criteria. If, in the course of due diligence, a CAFTA-DR supplier proposes a substitutable product, the requestor must provide reasonable justifications to the CAFTA-DR supplier for rejecting potentially substitutable products.

The requestor did not indicate why the fabrics needed to be treated with liquid ammonia processing and therefore did not give mills an appropriate basis for responding. Given that the requestor was clearly attempting to make a case that liquid ammonia processing would impart unique characteristics, they should have indicated that information in their initial due diligence inquiry.

In addition, the due diligence inquiry lacked essential specifications and requirements for this order that would have been included in a business communication regarding a desire to buy fabric that had to meet certain characteristics. As it was, the due diligence request gave Milliken & Company virtually no guidance in understanding what the requestor's needs were. This is all the more surprising because the requestor supplied extensive specification when the formal commercial availability request was filed with CITA. If the requestor had been forthcoming in its initial request, then the need to go to the petition phase most likely would not have taken place.

We urge CITA to review its process for accepting commercial availability requests to take into greater account the actual business practices in the textile and apparel industry and to make sure that requestors present clear, understandable requests particularly when unique characteristics are desired.

Conclusion

Milliken & Company is a capable supplier of these fabrics. Consequently, approval of this petition will have a serious, detrimental impact on our businesses. For the reasons that we have noted above, we urge CITA to reject this petition.

Thank you for your attention to our concerns and please contact us if you feel you need additional information regarding our position in this matter.

Sincerely,

Andy Oberg
Director of Manufacturing
Milliken & Company
Andy.Oberg@Milliken.com

November 4, 2008

Due Diligence Certification

I, T. Andrew Oberg, Director of Manufacturing, Apparel and Specialty Fabrics Division of Milliken and Company, certify that (1) I have read the attached submission, and (2) the information contained in the submission is, to the best of my knowledge, complete and accurate.

By _____

T. Andrew Oberg

Director of Manufacturing
Apparel and Specialty Fabrics Div.
Milliken and Company

Attachment 1

EDWARD JOHN ELLIOTT
PE PLS CCol FSDC

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Mr Thomas Tantillo
Division Tech Mgr
Milliken and Co
920 Milliken Rd
Spartanburg SC 29303

03 November 2008

via E-Mail

Dear Tom: ***"Ammonia"* Mercerization of Fabric**.

The mercerization of celluloses fiber (fabrics) was "invented by John Mercer in UK in 1890's
Mr Mercer used caustic (sodium hydroxide, lye) to impart to cellulose many properties previously unattained by conventional textile processing. Under specific conditions, Mr Mercer was able to gain dye affinity, luster, fiber strength, dimensional stability (shrinkage control) and a "silk-like" appearance to cotton fibers.

Recently developments have been touted claiming that the use of ammonia (ammonium hydroxide) can achieve cotton properties similar to sodium hydroxide. These claims have been debated for many years without definitive technical/commercial documentation on the merits of ammonia to replace the classical caustic mercerization process.

During the 1970's, some USA textile mills installed ammonia equipment for the hoped-for improvement to wrinkle resistance and wash-wear properties to cotton shirting and denim. To date, these attempts have failed either for technical or commercial reasons. All of these ammonia units
have been shut-down. Some experimentation using ammonia Vs caustic did not demonstrate any significant advantages on the parameters espoused by Mr Mercer. Today USA and global mills continue to follow Mr Mercer's concept...albeit being aware of the publicity surrounding ammonia mercerization.

Currently, USA mills have an ammonia-like process to impart fire retardency to fabrics. The equipment used could be easily modified to incorporate any valid expectation that ammonia mercerization could be a technical and commercial success. With the competitive global pressures
for cost and quality, it can be assumed that any such USA mill would immediately convert to a ammonia mercerization process...to date, this acceptance has not been realized. Some textile finish processes are destined for a delayed cure in which fabric is impregnated with a suitable resin and cured (polymerized) after garment formation. In one patented process para-HCOOH (para- formaldehyde) was used. Prior ammonia mercerization was supposed to enhance fabric performance but concerns for environmental and human safety plus no significant improvement over caustic mercerization doomed the process.

Interestingly, many other ideas have evolved in attempts to duplicate or improve on caustic mercerization. In one, although using caustic soda, the application was done at high solution temperatures followed by immediate cooling with the hoped-for "ring-dyeing" effect. The safety aspects of hot (boiling) caustic doomed this attempt which did not exhibit any advantages over Mr Mercer's classic process.

Promoters of ammonia mercerization may cite advantages in luster, dyeability, fiber strength. All these parameters are accomplished with classical caustic mercerization. Therefore there is no

salient need to change/revise a proven caustic mercerization technology. Some data suggests that ammonia mercerization does not yield a depth of dye shade like caustic mercerization. Depth of dye shade is important because it relates to dyeing cost, and wet/dry “crocking” resistance. Additionally, promoters may suggest that caustic mercerization causes crease abrasion on pleated trousers and ammonia process avoids this characteristic. It is well known by those practiced in the trade that crease abrasion is attributed to resin quantity and cure conditions, any of which cause embrittlement of cotton fibers. Either mercerization process may produce a fabric with similar challenges

The ammonia process depends on its cost effectiveness on the recovery of spent ammonia. Such a recovery unit is akin to a chemical plant unit operation. The hazardous nature of leaking ammonia is not for the environmentally conscious.

It would not be prudent to ignore that Cotton Incorporated, one of the most technical and commercial global promoters on the use of cotton, has not made significant editorials/ads on the “advantages: of ammonia mercerization.

In conclusion, I believe the ammonia mercerization process does not contribute advantages over classic caustic mercerization. This is buttressed by the fact that no USA plant has adopted the process

If you require additional information please call.

Yours truly:

Edward J Elliott BSc (chemical engineering)

Qualifications:

PE Professional Engineer	PLS Professional Land Surveyor
CCol Certified Colourist (UK)	FSDC Fellow Society of Dyers and Colourists (UK)
Certified Biological wastewater engineer	Certified physical-chemical wastewater engineer

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Attachment 2

Business Confidential