Instrumental color assessment and communication

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ABSTRACT

The Color Measurement (RA 36) and the Concept 2 Consumer (C2C) Committees of the American Association of Textile Chemists and Colorist (AATCC) administered a closed-response questionnaire for the purpose of determining the current practices and processes used in color measurement and communication. Results of this study will be used to develop a guidebook that will be distributed by AATCC through a subscription-based service that will promote increased knowledge of color measurement and communication. This manuscript presents some of the results of the instrumental color assessment and communication portion of the questionnaire. Over half of the respondents reported that their firms have instrumental tolerances for pass/fail for both lap dip and production. Almost one-third of the respondents stated that their firms participate in a program to improve inter-instrument agreement. Results confirmed the need for a user friendly guidebook to improve understanding of color measurement and communication.

1. INTRODUCTION

The American Association of Textile Chemists and Colorist (AATCC) "created" the Concept 2 Consumer Committee (C2C) in May of 2001. Membership on this committee consists of professionals along the soft goods pipeline and educators and one common goal is to improve instrument color measurement and assessment. [1] "Therefore, a Color Guidebook Subcommittee of C2C was created and charged with promoting increased knowledge in color process and practice in the textile, apparel and retail industries."[2] Hopefully, this guidebook will increase knowledge and therefore reduce costly mistakes.

2. METHOD

Members of both RA36 and C2C developed a questionnaire in order to determine the level of knowledge needed in the guidebook. This questionnaire was a self-administered and consisted mainly of closed responses. In addition to the closed responses, open-ended questions were included to obtain actual practices that are currently being utilized in industry. Thirty members of the C2C were the respondents to this study since it was vital to have respondents that would be able to supply information needed to accomplish the objective of this study. Twenty-six of the respondents worked with apparel products; fashion, intimate apparel, and performance apparel. Six areas of color measurement and communication were included in the questionnaire: company demographics, color process, conditioning requirement, visual color assessment, instrumental color assessment and measurement method.[2] This manuscript will address part of the results on instrumental color assessment and communication. The Statistical Package for the Social Sciences (SPSS) was used to generate relative percentages for all variables.

3. RESULTS

Respondents were asked the color of the backing plate/sample clamp on their spectrophotometers. The majority of the sample responded that their backing plate/sample clamps

were white. Other responses included industrial black, and one response reported white/grey. Over three-fourth (76.7%) of the sample reported that they do not cover their backing plate/sample clamp (Figure 1). Of those that do cover their backing plate/sample clamp, a piece of standard fabric was used.

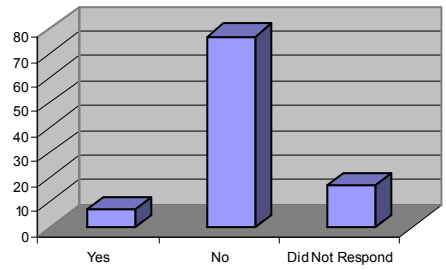

Figure 1: Cover backing plate/sample clamp

Results regarding light sources required from instrumental assessments are presented in Figure 2. The most frequent response was secondary, followed by tertiary then primary. The most frequently reported light sources for both primary and secondary were CWF and D65. And light sources are a critical part of color perception. An individual's perception of the color of a textile product depends to some degree on the light source. As can be seen in Figure 3, respondents were evenly split on requiring that the spectrophotometer have a UV calibration option.

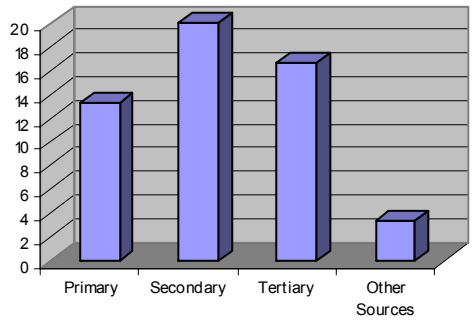

Figure 2: Light sources required for instrument assessment

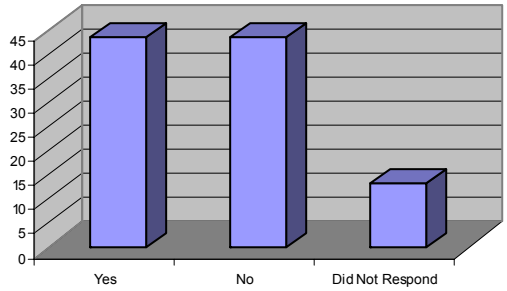

Figure 3: Require spectrophotometer have a UV calibration option

About one-fourth (26.7%) of the respondents specify the software brand and version for their vendors to use for color assessment (Figure 4). Half of the sample reported that they have materials that cannot be read in the spectrophotometer (Figure 5). Material that cannot be read ranged from corduroy, oxfords, heathers, sheer fabrics, heat transfer printed fabric, small stripes, mesh that is not opaque after 4 layers, shiny surfaces, fluorescent colors, and yarn dyes.

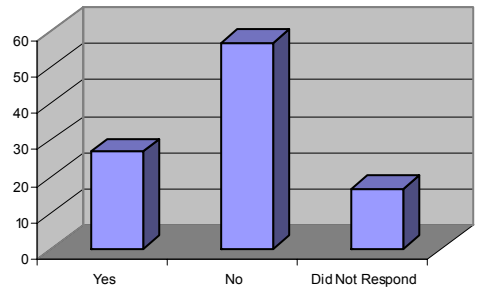

Figure 4: Specify the software brand and version for vendors to use

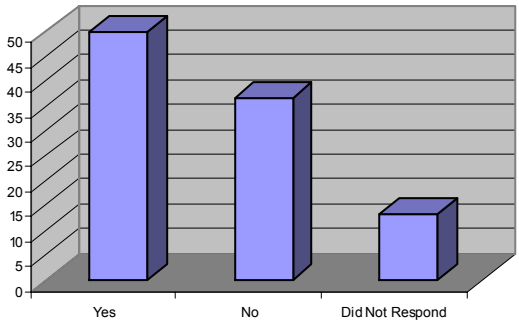

Figure 5: Have materials that cannot be read by spectrophotometer

A majority of the respondents have instrumental tolerances for pass/fail for both the lap dip and production (Figure 6). Over 60% (63.3%) have instrumental tolerance for pass/fail for the lab dips while 73.3% have for production. Responses varied for the set of tolerance. Tolerance for lap dip ranged from 0.5 DE to 1 DE. While for production, DE values ranged from 1.0 to 2.0.

Inter-instrument agreement is an important part of instrumental color assessment. Respondents were asked if they participate in program(s) to improve inter-instrument agreement (Figure 7). Only 30% responded that they do participate in such programs. One reported currently do not but plan to participate when imperative and would appreciate advice. One respondent that currently participates in a program to improve inter-instrument agreement also requires the same of some key supplies. Another respondent that reported not participating stated would like to participate when program is ready. As reported by Vasconcellos (2001), the advantage of a program to improve inter-instrument agreement is "confidence in the numbers. As the technique is deployed for wider ranges of instruments, the ability will rapidly develop to obtain full knowledge of the performance capabilities for color measuring systems in a supply chain. [3]

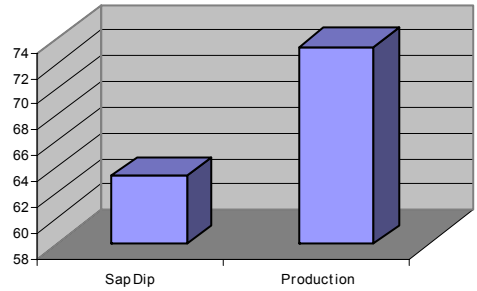

Figure 6: Have instrumental tolerance for pass/fail for both lab dip and production

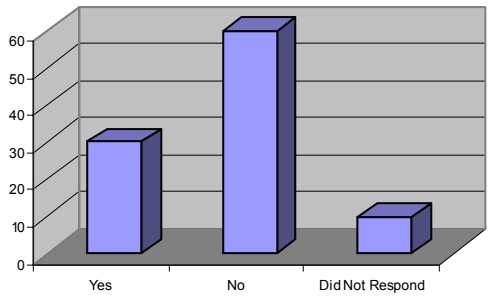

Figure 7: Participate in program to improve inter-instrument agreement

4. CONCLUSIONS

Based upon the results of this study, a guidebook is in the process of being developed by the color guidebook committee of C2C to help improve the quality of color measurement and assessment. Respondents in this study, majority of the respondents reported that their backing plate/sample clamps were white. CWF and D65 were the most frequently reported light sources required for instrumental assessment for both primary and secondary. An overwhelming majority do not specify the software brand and version for their vendors to use for color assessment. Over half of the respondents have instrumental tolerance for pass/fail for both lap dip and production.

Acknowledgement

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