

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the Application of:	)	
Ram B. Gupta et al.	)	Confirmation No. 5191
	)	
Title: Stabilizing Compositions for Stabilizing	)	Examiner: Anthony, Joseph
David	)	
Material Against Ultraviolet Light and Thermal	)	
Degradation	)	
	)	
U.S. Application Serial No.: 14/700,560	)	Art Unit: 1761
	)	
	)	
	)	
Filed: April 30, 2015	)	(Docket No. 1230-0061-1)
	)	Cytec Ref. No.: 13037S-US-NP

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION OF RAM B. GUPTA

I, Ram B. Gupta, declare and state that:

1. I hold a Ph.D. degree in synthetic organic chemistry from Delhi University, India, and performed my post-doctoral research at Fordham University, Bronx, New York and at Hunter College, City University of New York. I have been employed by Cytec Industries Inc., which is the real party of interest in the above-referenced application, for 27 years -- 17 years of which have been with the Polymer Additives business unit. I have about 30 research publications in peer reviewed scientific journals and am listed as an inventor or co-inventor on at least 50 issued patents. I currently hold the position of Senior Research Fellow where the main focus of my work consists of new molecule synthesis, new process development, and discovery of new products and their applications in polymer stabilization, which work forms part of the subject matter of the present invention.

2. I have reviewed the above-referenced application and pending claims in conjunction with the Office Action dated April 4, 2016 issued by the U.S. Patent and Trademark Office (hereinafter "the Office Action") wherein claim 16 is rejected under 35 USC §103 as

allegedly being unpatentable over Stretanski et al., and claims 2-3, 11 and 19 are rejected under 35 USC §103 Stretanski et al. in view of U.S. Patent No. 5,214,084 to Ishii et al. ("Ishii et al.") or U.S. Patent No. 6,051,164 to Samuels ("Samuels").

3. I make this Declaration to explain the differences between the currently claimed invention and the cited references, and to rebut some of the assertions set forth in the Office Action.

4. The present invention represents an advancement over the state of the art at the time of the invention as represented by the teachings of Samuels et al. and Stretanski et al. (both assigned to the real party in interest, Cytec Industries Inc.), which are both an advancement over Ishii et al. Ishii fails to understand/demonstrate the value of orthohydroxy tris-aryl-s-triazine in its formulation – the importance of which is demonstrated by Samuels and Stretanski et al. Accordingly, stabilizer compositions utilizing orthohydroxy tris-aryl-s-triazine compounds were known to be essential to the performance of stabilizer compositions at the time of the instant invention.

5. However, the automotive industry requires improved stabilization technology to protect against the harmful effects of UV light AND thermal exposure. The current UV and thermal technology available (via Samuels et al. in the form of CYASORB THT® and Stretanski et al. in the form of CYASORB CYNERGY®), fails to provide acceptable thermal stabilization. This is best observed by viewing Figure 1B of the instant application, which is a photograph of a polymer plaque containing CYASORB CYNERGY® stabilizer additive exposed to extreme thermal conditions. Figure 1B (corresponding to Example 2C of Table 3 of the instant application) shows a low percentage of gloss retention, high color change, and blooming, which are all undesirable.

6. Thus, the technology available at the time of the invention is considered insufficient to meet both the UV stability requirement and the thermal stability requirement. The present invention solves this problem by providing a stabilization system that surprisingly meets BOTH UV stability requirements and thermal stability requirements.

7. The data provided in the instant Specification best demonstrates the solution provided by the claimed invention. Specific reference is now made to Table 2 which conveys extreme

thermal performance of Examples 1 to 14 as measured by change in the Tensile Strength of plaques made with polymer containing various (or no) stabilizer compositions after 1000 hr. of exposure. The state of the art at the time of the invention, as provided by Stretanski et al., correlates to Example 2C in Table 2. See Table 2 of Specification at p. 44.

8. In Example 5, thioester (G) is added to the stabilizer composition of Example 3C and the effect of the thioester addition as reflected in the tensile strength and/or % retained tensile strength after 1000 hr. exposure showed no significant improvement on the performance. Indeed, Example 6 shows that the addition of thioester (H) to the stabilizer composition of Example 3C resulted in somewhat adverse effect on the performance after 1000 hr. *Compare* Examples 5 and 6 *with* Examples 2C or 3C of Table 2 of Specification at p. 44.

9. In my opinion, Examples 5 and 6 (when compared to Example 2C or 3C) refute the Examiner's assertion that the teachings of Samuels or Ishii et al. lend motivation to improve the performance of stabilizer compositions of Stretanski et al. by the addition of thioesters.

10. Similarly, an adverse performance effect (as measured by the tensile strength and/or % retained tensile strength after 1000 hr. exposure) was also observed in the addition of hindered phenol antioxidant (E), or the addition of acid scavenger (F) to the stabilizer composition of the Example 3C. *Compare* Examples 4C and 7 *with* Example 3C of Table 2 of Specification at p. 44.

11. In contrast, Examples 8 to 12 of Table 2 demonstrate a synergistic effect on the performance improvement over Example 3C when a combination of any two components selected from phenol antioxidant (E), acid scavenger (F), and thioester (H or G) are added to the stabilizer composition of Example 3C. Once again, comparing the result of Example 10, which does not have a thioester, with the results of Examples 8, 9, 11 or 12 shows that there is no distinct performance advantage of using a thioester.

12. Given that the data for Examples 8-12 does not clearly indicate what additive component gives a performance benefit over the stabilization composition of the prior art, the data provided by Examples 13 and 14 is even more surprising. In Examples 13 and 14, a triple combination of phenol antioxidant (E), acid scavenger (F) and thioester (H or G) is added to the stabilizer composition of Example 3C which unexpectedly results in a superior

performance improvement as reflected in the tensile strength and/or % retained tensile strength after 1000 hr. exposure. Accordingly, taking even one of the components of phenol antioxidant (E), acid scavenger (F), or thioester (H or G), out from the stabilizer composition of Example 13 or Example 14 leads to precipitous drop in the performance of the polymer plaque.

13. Based on the teachings of the cited art and my knowledge in the field of stabilization additive chemistry, I would have never expected that such a performance result as exhibited by Examples 13 and 14 could be achieved.

14. These surprising results are also visually demonstrated by Figures 1D and 1E (corresponding to Examples 13 and 14 of Table 3), where polymer plaques containing a stabilizer additive according to the claimed invention and exposed to extreme thermal conditions show much higher percentage of gloss retention, much lower color change, and no blooming, as compared to Figure 1B (corresponding to Example 2C of Table 3), which is a polymer plaque containing CYASORB CYNERGY® as taught by Stretanski et al. See Table 3 of Specification at p. 46, and compare Examples 13 and 14 with Example 2C.

15. I further declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001 and that willful false statements may jeopardize the validity of this application and any patent issuing therefrom.

Respectfully submitted,

Date: 10/04/2016

Ram B. Gupta

Ram B. Gupta, Ph.D.