MONSANTO TRADE LITERA
PERMANENT FILE

IMPROVED LIGHT STABILITY WITH AROCLOR* COMPOUNDS

#345

The Aroclor compounds, chlorinated biphenyls and chlorinated terphenyls, have long been recognized as outstanding plasticizers and resin modifiers for many synthetic resins. Being chlorinated aromatic materials they offer many advantages over chlorinated aliphatic compounds. These advantages include:

1. Outstanding chemical resistance
2. Permanent thermoplastic compounds (no oxidation)
3. Improved adhesive characteristics to many substrata
4. Improved heat stability
5. Wider resin compatibility
6. Faster resin solvation

In certain critical applications, improvement in the light stability of Aroclors has been desired. Work was undertaken in Monsanto laboratories to improve the light stability of Aroclor compounds. Various additives were incorporated into Aroclor compounds and the resulting composition exposed in quartz test tubes in the Atlas Fadeometer.

One type of compound that has been found to be extremely effective is Tinuvin P produced by Geigy Chemical Company. The results obtained by using various concentrations of this ultra violet screener are shown below in Table I:

TABLE I

Hours Exposure in Fadeometer	Color in Gardner Units				
	0	50	100	150	500
Aroclor 1254	0	5	10	11	14
Aroclor 1254 to 0.01% Tinuvin P	0	1	6	7	14
Aroclor 1254 to 0.05% Tinuvin P	0	0	3	4	11
Aroclor 1254 to 0.1% Tinuvin P	0	0	1	2	6

From the above data it will be seen that as little as 0.01% Tinuvin P approximately doubles the service life in the 50-100 hour range. Increasing the concentration of Tinuvin P to 0.1% results in a 10-fold improvement over the unprotected Aroclor and at a reasonable cost.

Other UV screeners were evaluated and showed promise. UV #9, produced by American Cyanamid, showed the same type of results as was obtained with Geigy's Tinuvin P; however, the initial color was slightly darker at higher stabilizer concentrations.

We believe the above data will be valuable for those critical applications where excellent light stability is required. It should be emphasized that this work is preliminary in nature and compounders are urged to evaluate the effect of the UV screener in their formulations.

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