



TECHNICAL DATA

CSL-177A
Supplement No. 1

Report from the
COATINGS SERVICE LABORATORY

HIGH-BUILD PARLON MAINTENANCE PAINTS

A Guide To Analysis Of 12-Months-Exposure Photographs

The exposure series at two locations in Miami, Florida, as outlined in Hercules CSL-177A, has now passed the 12-month mark. While many of the coatings are still relatively unaffected, a sufficient number of failures have occurred to make a progress report meaningful at this time.

Results Available for Study

After 12 months' exposure, most of the systems based on Parlon® chlorinated rubber are performing remarkably well at both locations. Complete results, in the form of color photographs of the actual panels after 12 months' exposure, taken on location, are available for examination from any Hercules Polymers Department Sales Office.

Coating Systems on Exposure

Many years of experience in this field have shown that the outstanding systems chosen on the basis of laboratory data, may not necessarily prove to be the most effective systems in the field. As a result, 18 separate systems made up from three primers, two midcoats, and three topcoats which showed the most promising performance in laboratory testing were exposed at both Florida locations. The formulations for these coatings, based on the principles demonstrated in CSL-177A, are detailed in Table I, page 3. Ten panels finished with commercial systems representing the other generic types of successful maintenance coatings were also exposed as controls. A complete breakdown of the 28 systems used is given in Table II, page 4.

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Panel Preparation

All of the coatings were applied to both Kenneth Tator panels and to prerusted channel iron. Surface preparation of the Kenneth Tator panels consisted simply of a solvent wash, while the prerusted channel-iron panels were lightly wire-brushed before coating. The Parlon systems were applied in three coats - a 1.5 to 2-mil prime coat, a 2.5 to 3.5-mil mid-coat, and a 1 to 1.5-mil topcoat - yielding a total dry-film thickness of 5 to 7 mils. The other generic types of coatings were applied according to the specific instructions of each manufacturer, but in no case was there less than a 5-mil total build.

To insure complete coverage of the maintenance painting field, the relative performances of the various coatings applied to sandblasted substrates is also being measured. Since sandblasting prior to coating markedly increases the service life of most coatings, a considerably longer exposure period will be required to obtain significant results.

Exposure Environments

The moving-tide location is so located that each tide-cycle covers the panels. Each panel is thus immersed in sea water for approximately 50 percent of the total exposure time, and during low-tide periods is subjected to the combined sun-and-humidity exposures typical of south Florida. The panels at the Marine Atmosphere Station are located on the roof of a three-story building approximately 100 feet from the shore. Here the sunlight and high-humidity conditions are similar to those at the moving-tide location but the specimens are not, except in severe storm periods, exposed to direct contact with sea spray or wind-driven salt particles.

Further Work in Progress

A well-known firm of independent coatings consultants is reading and grading the panels at both Florida locations on a continuing basis. When failure sufficient to enable them to rate each system's performance has occurred, they will prepare a complete analysis of the results. When this analysis is finalized, a further supplemental report will be issued.



Table I
FORMULATION OF EXPERIMENTAL COATINGS⁽¹⁾

	Primers			Midcoats		Topcoats		
	A	B	C	D	E	F	G	H
Parlon S-10	-	-	-	-	-	23.2	12.4	23.9
Parlon S-20	20.0	12.3	15.8	20.1	15.3	-	-	-
Aroclor 1254	10.0	6.7	8.3	10.0	-	9.2	-	-
Aroclor 5460	5.0	3.3	-	5.0	-	5.6	-	-
Rezyl 869	-	-	8.3	-	-	-	-	-
Chlorowax 70	-	-	-	-	7.5	-	-	-
Clorafin 40	-	-	-	-	4.6	-	-	-
Dioctyl sebacate	-	-	-	-	-	2.3	-	-
Buton 200	-	-	-	-	-	-	12.3	-
Uformite F-240	-	-	-	-	-	-	6.1	-
Hycar 1312	-	-	-	-	-	-	-	12.8
Red lead (97%)	-	22.3	17.1	-	-	-	-	-
Zinc yellow	8.8	3.7	3.1	-	-	-	-	-
Aratone 270 (mica)	9.4	3.7	2.7	6.4	8.1	-	-	-
Indian red	-	0.6	0.8	-	-	-	-	-
Fibrene C-400 (talc)	-	8.4	5.9	-	-	-	-	-
Bentone 34	-	-	-	-	-	-	-	-
Bentone 38	-	1.5	1.5	0.7	1.0	-	-	-
Asbestine 3X	8.8	-	-	15.6	20.1	-	-	-
TiO ₂ , R610	3.5	-	-	4.0	5.1	26.8	24.9	29.8
Lampblack	-	-	-	0.4	0.5	0.3	0.3	0.3
Zinc oxide	4.5	-	-	-	-	-	-	-
Xylene	30.0	30.0	30.0	-	-	32.6	29.4	33.2
Toluene	-	-	-	37.8	37.8	-	-	-
Isopropyl alcohol	-	-	-	-	-	-	3.0	-
Solvesso 150	-	-	-	-	-	-	9.2	-
VM&P naphtha	-	7.5	6.5	-	-	-	-	-
Butanol	-	-	-	-	-	-	2.4	-
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Stabilizer A-5	3% based on Parlon							
Epichlorohydrin	0.5% based on Parlon							
PVC	33.1	38.2	22.6	30.0	40.0	20.0	20.0	20.0

(1) "A" is a Parlon all-chlorinated (Category I) primer with zinc chromate pigmentation. "B" is a Parlon all-chlorinated (Category I) primer with red lead and zinc chromate pigmentation. "C" is a Parlon-alkyd (Category II) primer with red lead and zinc chromate pigmentation. "D" is a Parlon all-chlorinated mastic midcoat. "E" is a Parlon all-chlorinated mastic midcoat. "F" is a Parlon all-chlorinated topcoat. "G" is a Parlon-Buton-Uformite topcoat. "H" is a Parlon-Hycar 1312 topcoat.

Table II
DESIGNATION OF MAINTENANCE SYSTEMS

Experimental Systems

<u>Panel Designation</u>	<u>Primer</u>	<u>Midcoat</u>	<u>Topcoat</u>
38-1	A	D	F
38-2			G
38-3			H
38-4		E	F
38-5			G
38-6			H
38-7	B	D	F
38-8			G
38-9			H
38-10		E	F
38-11			G
38-12			H
38-13	C	D	F
38-14			G
38-15			H
38-16		E	F
38-17			G
38-18			H

Commercial Systems

<u>Panel Designation</u>	<u>Primer</u>	<u>Topcoat I</u>	<u>Topcoat II</u>
39-1	alkyd	alkyd enamel	alkyd enamel
39-2	vinyl	vinyl	vinyl
39-3	epoxy ester	epoxy ester	epoxy ester
39-4	catalyzed epoxy	catalyzed epoxy	catalyzed epoxy
39-5	acrylate copolymer	acrylate copolymer	acrylate copolymer
39-6	chlorinated rubber-phenolic	phenolic	phenolic
39-7	chlorinated rubber	neoprene	neoprene
39-8	chlorinated rubber	chlorinated rubber	chlorinated rubber
39-9	chlorinated rubber	chlorosulfonated polyethylene	chlorosulfonated polyethylene
39-10	polyurethane	polyurethane	polyurethane

Preparation: All systems were spray-applied if sufficient film thickness was obtainable in 1 coat. Special cases were: (1) the vinyl primer on panel 39-2 and the commercial chlorinated rubber primer on panel 39-8, both of which required 2 spray coats for proper film thickness of 1.5 mils, and (2) the acrylate copolymer and neoprene topcoats (I and II) which required brushing to obtain a sufficient film thickness. A total of at least 5 dry mils was applied in all cases.