



MEMORANDUM

PLAINTIFF'S EXHIBIT

BIR-228

To Distribution
From BBH
Date 2/17/78
Subject ACCELERATED WEATHERING OF COATING ASPHALTS

Accelerated weather testing of unfilled and filled asphalts representing the coatings being used by the various mills during mid-1977 has been completed. The tests were run on 30 to 33 mil coatings applied to aluminum panels. The weathering took place in a Model DMCR Weather-Ometer according to ASTM D529-62, Cycle A.

<u>Unfilled Coatings</u>			<u>53% Filled Coatings</u>		
<u>Mill</u>	<u>Sample</u>	<u>Cycles to Failure</u>	<u>Mill</u>	<u>Sample</u>	<u>Cycles to Failure</u>
FK	4/9	58	FK	4/9	105
FK	4/25	54	FK	4/25	96
FB	4/11	50	FB	4/11	75
FS	3/4	48	FJ	March	75
FJ	March	42	FS	3/4	65
FB	3/11	38	FB	3/11	56
FM	5/4	38	FM	5/4	48
FO	4/8	38	FO	4/8	47
FO	5/2	38	FO	5/2	46
FC	4/20	37	FC	5/25	35
FC	5/25	25	FC	4/20	30
FW	3/29	21	FW	3/29	27
FW	3/31	21	FW	3/31	21

BIRD 010972

ACCELERATED WEATHERING OF COATING ASPHALTS

2/17/78

- 2 -

Summary -

1. As is usually the case, FK coating asphalt, both unfilled and filled, had the best durability.
2. FB coatings of two different dates were quite diverse in their resistance to accelerated weathering. The less durable of the two showed a relatively poor performance compared with most FB coatings. The fact that the filled version of this coating was also relatively poor corroborates the reliability of the results.
3. The coatings from FS and FJ can be considered equivalent in weather resistance.
4. Results from the FM and FO coatings were the same. This is to be expected since the asphalts are from the same source.
5. The FC asphalt coatings did not show good average durability. This was especially true of the FC filled coatings which endured for only about one-half the number of cycles expected from a satisfactory coating.
6. The unsatisfactory weathering experienced with the FW coatings has already been commented on in a report under Reference (2).
7. Stain test results indicate that the most resistant coatings were from FK, FB and FS. The least stain resistant was the coating from FC.

NOTE: The unfilled coatings in this series were sampled at their respective plants when shingles were being produced which were also sampled and sent to Shreveport for exposure on the test decks.

This is an attempt to correlate the durability of shingles with the weatherability of the particular asphalt coating used in their construction.

References

- (1) BBH Book 246, pp. 25-27
- (2) Project 007, No. 3, dated 10/24/77

R. J. Hoge

ACCELERATED WEATHERING OF COATING ASPHALTS

2/17/78

- 3 -

ASPHALT COATING DURABILITY - CYCLES TO FAILURE IN AWT

Texas Stain		S.P. °F	Pen. 0.1 mm	<u>Unfilled</u>		<u>Filled</u>	
				Sample	Cycles	Sample	Cycles
--	Norwood 3/11	238	18	963-1	38	964	56
	Exxon/Shell Venezuela			-2	38		
	Average				38		
	Filler					FBW Dust	
3.5	Norwood 4/11	231	20	965-1	48	966	75
	Exxon/Shell Venezuela			-2	51		
	Average				50		
	Filler					FBW Dust	
4.5	Chicago 4/20	234	17	967-1	37	968	30
	Amoco			-2	37		
	Average				37		
	Filler					Limestone	
4.5	Chicago 5/25	233.5	18	969-1	23	970	35
	Amoco			-2	27		
	Average				25		
	Filler					Limestone	
4.0	Martinez 5/4	221	20	971-1	38	972	48
	Shell Oman			-2	38		
	Average				38		
	Filler					Limestone	
4.0	Perth Amboy - March	228.5	21	973-1	42	974	75
	Trumbull Venezuelan			-2	42		
	Average				42		
	Filler					B65 Filler	
3.3	Shreveport 3/4	220	14.5	975-1	48	976	65
	E. Texas, Arkansas			-2	48		
	Average				48		
	Filler					Glenwood Filler	
4.0	Wilmington 3/29	224	16.5	977-1	21	978	27
	Edgerton Californian			-2	21		
	Average				21		
	Filler					3M Filler	
3.8	Wilmington 3/31	226	16.5	979-1	21	980	21
	Edgerton Californian			-2	21		
	Average				21		
	Filler					3M Filler	

ACCELERATED WEATHERING OF COATING ASPHALTS

2/17/78

- 4 -

ASPHALT COATING DURABILITY - CYCLES TO FAILURE IN AWT

Texas State		S.P. °F	Pen. 0.1 mm	Unfilled		Filled	
				Sample	Cycles	Sample	Cycles
--	Portland 4/8 Shell Oman Average Filler	217	20	981-1 -2	38 38 38	982	47
						Limestone	
3.5	Portland 5/2 Shell Oman Average Filler	222	17	983-1 -2	38 38 38	984	46
						Limestone	
--	Charleston 4/9 Exxon Venezuelan Average Filler	231	16.5	985-1 -2	60 56 58	986	105
						Monroe & Augusta	
3.5	Charleston 4/25 Exxon Venezuelan Average Filler	232	17	987-1 -2	56 52 54	988	96
						Monroe & Augusta	

Distribution:

BB - Mr. Hixon	PKL - Mr. Price
BBR - Mr. Wood	PSL - Mr. Kirklin
BE - Dr. Schnizer	PJL - Mr. Peacock
BBQ - Mr. Homan	FP - Mr. McClung
MB - Mr. Clay	FM - Mr. Fitzpatrick
MK - Mr. Marsh	FO - Mr. McAnulty
MS - Mr. Colvin	FW - Mr. Keyser
MJ - Mr. Miller	FP - Mr. Koopmann
MP - Mr. Suva	FM - Mr. Costa
PB - Mr. Reber	FC - Mr. Farnik
PK - Mr. Davis	FC - Mr. Anderson
PS - Mr. Burris	FF - Mr. Berns
PJ - Mr. Dickinson	FF - Mr. Morris
PBL - Mr. Clark	FC - Mr. Peterson