PLAINTIFF'S EXHIBIT

BIR-910

PROPOSED
PURCHASE SPECIFICATION

SUPPLIER: CHEMICAL ADDITIVES, P. O. Box 0, 15 Globe Court
Red Bank, New Jersey 07701

Representatives: Leigh G. Tyluki
Leslie M. Barnett

Phones: 201-842-3550; 212-285-9392

1. PRODUCT: RATOP-B7
2. USE: As release agent, roofing shingles
3. METHOD: Diluted with water, 6%
4. PACKAGE: Bulk or apx. 175# fiber drums
5. OSHA-20: Attached hereto
6. FLASH POINT: None
7. TOXICITY: None
8. FREIGHT DESCRIPTION: Powdered soap; NOIBN
9. DANGEROUS ARTICLE DESCRIPTION: None
10. DOT WARNING LABELS REQUIRED: None
11. FOB POINTS: N. J. and Los Angeles (others may be added as required)
12. TERMS: Spot purchases: 1-10-30
Contract Purchases: 2-10-30

November 15, 1977

DATE: 8/31/77 — 24 HOUR SEALING TESTS — By: Steve

MFR: Bird TYPE: Org. SIZE: 6" x 3" LOAD: 45 lb. TEMP: 122-127°F. Page: 89

SPLIT PRODUCT APPLY		TRANSFER RATING					TEMP	TIME	TEAR DIAGRAM
COLD: WET:	1	2	3	4	5	In	118	3:35	
HOT: DRY:						Out	125	3:35	
						Max. Temp. 128°F			
1. Brad. 12% 0.8ml	X								
2. " " "	X								
3. A-W 6% 0.6ml	X								
4. " " "	X								
5. A12RW 6% 0.6ml	X								
6. " " "					X	Tear			
RATOP-B7 7. 50/50 6% 0.8ml	X								
RATOP-B7 8. " " "	X								
9. Control									
10. Control									

TEMP: BOND:	S	M	W	F				
SEALING 16hrs TRSFR:	%	%	%	%		In	130	5:50
						Out	136	9:53
						Max. Temp. 139		
1. Bradford			X 0					
2. "			X 1					
3. A-W			X 1					
4. "		X 1						
5. A-12-RW			X 1					
6.								
RATOP-B7 7. 50/50		X 2						
RATOP-B7 8. "		X 3						
9. Control		X 4						
10. Control		X 2						

Chemical
Additives

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Tel. (201)842-3550 (212) 285-9392

Cable Address "LESBAR"

RATOP PRESENTATION

BIRD & SON, INC.

November 16, 1977

Chemical Additives

Additives for Ecology

P.O. BOX 0, RED BANK
NEW JERSEY, 07701
Tel. (201)842-3550 (212) 285-9392

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November 16, 1977

Mr. Leonard W. Weaver
Product Development Manager
Bird & Son, Inc.
East Walpole, Mass. 02032

Dear Mr. Weaver:

The brochured material briefly describes the development test methods and economics of a system for applying RATOP-B7, a unique release agent designed to separate BIRD shingles in the bundle more effectively. The greater effectiveness of RATOP-B7 raises the upper temperature limits at which separation without transfer is possible, with a coincident improvement in the sealing characteristics of the asphalt resin. Most important, RATOP-B7 makes it possible to use a less expensive adhesive, i.e., one without wax.

Originally the RATOP system was designed so that flat shingle producers could eliminate the various problems inherent in handling mylar film. We are aware BIRD does not use tape and has added anti-stick protection from its thick butt configuration. Last year you taught us why BIRD uses "higher titre" soaps which must be dissolved in hot water, which is also necessary when using RATOP. Accordingly, a switch to the RATOP system can be made with little or no change in the basic application method.

While many higher titre soaps often perform well as release agents, just as often so much soap transfers to the resin surface that there is interference with the final sealing process. This soap film not always visible to the eye, is easily seen with U.V. light. RATOP has either minimal or no transfer to the resin surface, hence the resin's better sealing action.

BIRD patent #3032928 protects an adhesive system that has novel characteristics due to introducing into the composition certain waxes, etc. Compared with the incumbent BIRD release agent performance on the standard BIRD adhesive, we have aimed for a release agent that will separate and seal as well or better over a wide temperature range on a BIRD adhesive that does not contain wax. The objective is to obtain economies of material and labor that measure about $30,000 annually per million squares. On a laboratory scale we have succeeded.

Over two years of development, more than 2,000 splitting and sealing tests later, the RATOP formulas emerge in patentable compositions, according to our attorneys. These estimable gentlemen cautioned us to obtain disclosure agreements from our prospective customers. The proposed document was discussed with two potential users and the complications and delays inherent in this approach were quickly exposed. The compromise suggested to us was to have a CHEMICAL ADDITIVES representative present to mix or observe the mixing of the RATOP during laboratory test procedures. Surplus material would be discarded at the end of each day's tests. At first this presence was looked upon as a slight nuisance. However, it quickly became apparent that our tec i staff could be used as skilled technicians in the pertinent lab processes. In fac , what may be a major breakthrough in production technique resulted from the suggestion of one of our staff to the Senior Research Associate at the research center of a major producer.

We cannot in good conscience change the ground rules on protecting RATOP confidentiality during the laboratory testing period. We feel the potential improvements will become more visual when you do your tests your way. We do not expect you to "take our word for it." In all humility, we are just learning about your adhesive technology requirements. In fact, it is possible that by being permitted aboard we may be shown how and why the RATOP-B7 can be made even more effective. But certainly we expect you to agree we have some expertise worthy of your consideration, including, of course, certain mechanical improvement suggestions.

We do know how to behave as "guests" in a research laboratory and will be pleased to give you as references certain key officials at Johns-Manville, Denver, Colorado and CertainTeed, Elverson, Pennsylvania.

We trust you will have good reasons to act facorably on our presentation.

Sincerely,

Leslie M. Barnett

LMB:kg
enc: RATOP Presentation

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OBJECTIVE:

To provide at a commercially practical cost a unique release agent, RATOP-B7, useable on a BIRD adhesive composition without wax, that effectively prevents shingles from sticking in the bundle, while improving sealing efficiency.

The benefits to BIRD Roofing Plants:

1. RATOP treated shingles separate and seal better at a higher temperature range than those processed with Bradford soap on the standard BIRD adhesive.

2. RATOP reduces adhesive cost about $30,000 per million squares.

3. RATOP is used in an automated, efficient application system designed by CHEMICAL ADDITIVES.

4. The RATOP system includes a practical mechanical means to reduce cooling water in the cutter section with potential major improvements in the problems of blistering and granular embedment.

LOAD AND TEMPERATURE (splitting tests):

RATOP laboratory screen tests were conducted at Red Bank, N. J. by CHEMICAL ADDITIVES' technicians using BIRD shingles and adhesive provided by the BIRD Perth Amboy plant. The test method is as follows:

On a 6" x 3" shingle containing three sealant dots of 25 mls. thickness a cover section of equivalent size is treated with soap, then allowed to dry. The cover is applied and a maximum of four such sets is made into a stack and two 22.5 lb. weights are placed on a wood board over the shingles. Oven temperature is set at 135°F. (+5). Shingles are removed after 24 hours and are split immediately. Separation results are graded 1 thru 4, 1 = excellent, meaning no evidence of transfer. 1H indicates 3 or less specks (pencil head size) of transfer are visible. Either 1 or 1H passes. Relatively larger amounts of transfer are graded between 2 and 3 and such results indicate a failure. A grade of 4 indicates at least one tear and is a failure.

Because of the small size of the test shingle the sealing test is not done on a slope. A cover of equivalent size is placed over a top with 3 resin dots and each single pair is placed unweighted on a perforated oven tray. Oven temperature is 135°F. ($\pm 5^{o}$). After 16 hours the samples are withdrawn and allowed to cool to room temperature for 45 minutes. The technician picks up each pair by the outer edges with one hand and shakes six times. If the bottom shingle falls, the bond is deemed too weak and the test is graded F for failure. We grade the bond as W for weak, M for moderate and S for strong. The amount of transfer as a % of the total resin surface area is calculated visibly and recorded under the appropriate grade.

The 60 hour test is similar as to separating, sealing and grading requirements except that the oven temperature is 115°F. (+5°).

The standard 12% concentration for the incumbent soap was used on most tests. At lower concentrations the incumbent failed some splitting tests so we went back to 12%. We applied .8 mls. of the incumbent soap to the back surface on all tests according to volume requirements described by letter of September 1, 1976 to Paul Hoye, i.e., a hypodermic syringe application of .1 ml. for each square inch of surface. We reduced to .8 mls. for 9 square inches hoping to help sealing. However, too much of the incumbent soap transfers to the sealant stripe. Even at 6% concentration shingles treated with the incumbent soap did not seal, providing strong evidence that the incumbent soap creates an abherent surface.

Conversely, the RATOP-B7 does not transfer as much soap and does not cause an adherent surface to become abherent. You can surely see this with a UV lamp. Due to superior separating qualities we used only .6 mls. of a 6% concentration of RATOP-B7. This lower concentration and lesser volume means there are no significant cost increases when using RATOP-B7 vs. the incumbent soap that might dilute the savings resulting from deleting wax from the sealant formula. Lastly, RATOP-B7 meets Mr. Weaver's requirements that a release agent must not have "wettability," meaning solubility in cold water. RATOP-B7 is a solid (powder) which must be dissolved in hot water and is in a similar titre range to the incumbent soap.

PROPOSED METHOD OF APPLICATION (Schematic is last page of brochure.)

1. Add water until desired tank level is attained. Then start heating to 120°F. (±10).

2. Start Lite-ning mixer.

3. Add RATOP at optimum temperature 120°F. until a predetermined concentration is reached (5-10%).

4. Mixing is completed according to timer setting.

5. RATOP application is made by a specially designed rubberized ink roll.

6. Point of application is determined on a plant by plant basis. Ideally the location is where the sheet is hot enough but also sufficiently free of cooling water to aid in drying the sheet, and assure drying of the RATOP film.

7. Somewhat before the looper section an electronic monitor installation measures and reports the adequate presence of the RATOP solution on the sheet.

8. To aid in keeping the shingle dry the cutter section may be cooled with CHEMICAL ADDITIVES' equipment that reduces water usage through means of a special style of atomized spray.

RATOP-B7 developed for BIRD & SON, INC. is a neutral compound that is safe on skin and is non-toxic. It is supplied as a powdered compound in fibre drums of about 170 lbs. net each. All ingredients used in RATOP-B7 are generally available and have not been in short supply during boom periods in the economy.

APPLICATION COST ANALYSIS:

Perth Amboy, N. J. -- 1978 Estimates

99% Adhesive Composition

91.4% Asphalt
7.6% Wax

1.8 lbs. adhesive per square -- 1MM squares -- wax content 136,800 lbs.

Sunoco 5512 @.252 lb. x 136,800 lbs. = $34,474. Replace with asphalt, 136,800 x .053 lb. = $7250. Cost reduction = $27,224. Estimated labor to handle wax - $4500 per annum -- Total reduction $31,724.

Bradford	@$.367 lb.--	114,807 lbs. annually =	$42,134.
RATOP-B7	@*$1.00 lb.**	43,052 lbs. annually =	43,052.
RATOP-B7	"	***57,403 lbs. annually =	57,403.

*$1.00 lb. is the final discounted system C/A price based on estimated $200,000 annual usage.

**Perth Amboy uses Bradford at 12% concentration. RATOP-B7 is used at 6%. Under controlled conditions (electronic monitor, etc.) RATOP-B7 used at .6 mls. on the test substrates is calculated at 37.5% of the amount of Bradford used at .8 mls. on the test substrates.

***RATOP-B7 used at .8 mls. on the test substrates is 50% of the amount of Bradford used.