EXPERIMENT JOINT SEALING

OF

CONCRETE PAVEMENT

by

Warren N. Dudley
Senior Laboratory Engineer

Special Study 14.1

TEXAS HIGHWAY DEPARTMENT
DISTRICT 20

June 1970

EXPERIMENT JOINT SEALING OF CONCRETE PAVEMENT

In January, 1967 the Texas Highway Department let a contract for routing, sawing, cleaning and resealing of the transverse joints in a section of concrete pavement on U. S. Highway 69 from S. H. 124 to Spur 380 in Beaumont. Purpose of the project was two fold. The original joints had been filled with Class 1-b polymer that at the time of the resealing contract were in poor condition and were in need of repair. In addition to accomplishing the necessary joint repair an effort was made to evaluate various types of joint sealer specified in the Texas Highway Department Standard Specification and other commercial types of joint sealant available for use but not approved ty THD Specification.

The section selected for the joint seal evaluation was originally constructed as jointed reinforced concrete pavement with contraction joints spaced at 61'-6". Initial construction was completed in 1961. The joints were originally 1/2" wide x 3/4" deep and filled with Class 1-b polymer. In cleaning the joint of the original sealant the joint was routed and sawed to 5/8" wide with a minimum depth of 1". Joints that received preformed neoprene were sawed to a depth of $2\frac{1}{2}$" and joints sealed with butyl rod stock were sawed to a depth of $1\frac{1}{2}$". All joints were sandblasted clean prior to resealing. The 4.2 mile test section contained 389 joints to be sealed. The 389 joints were combined into 31 sections and the 31 sections were randomly selected to receive the various types of joint sealants.

The chart below indicates the number of joints assigned to each sealant and the depth to which the joints were grooved prior to resealing.

Type No.	No. Jts.	Joint Sealant Used	Groove Depth
1	56	Class 1-a Polymer	1"
2	37	Class 1-b Polymer	1"
3	63	Hot-Poured Rubber	1"
4	57	Cold Rubber	1"
5	59	Catalytically Blown Asph.	1"
6	63	Preformed Neoprene	$2\frac{1}{2}$"
7	20	Presstite 357.5	1"
8	13	Urethane Polymer	1"
9	8	Butyl Rod Stock	$1\frac{1}{2}$"
10	13	Super Seal 444	1"

Material for resealing the joints with Class 1-a Polymer, Class 1-b Polymer, Hot Poured Rubber, Cold Rubber, Catalytically Blown Asphalt and Preformed Neoprene was obtained by taking statewide bids through the Texas State Board of Control. These materials met the requirements outlined in the Texas Highway Department Standard Specifications and Special Provisions applicable to joint sealants. Material for resealing the joints with Presstite 357.5, Urethane Polymer, Butyl Rod Stock and Super Seal 444 was furnished by the producers of the various material. Specifications for these materials are attached hereto.

In the selection of a test site and the assignment of joint sealants an attempt was made to eliminate as many variables as possible. The entire length of test section utilized the same typical section and pavement structure. At the approximate mid-point of the test section both the traffic count and moisture condition of the subgrade changed. Due to the variable traffic and moisture condition the test site was divided into two sub-sections for assignment of joint sealants to joints. For this test each sealant listed in Texas Highway Department

Specifications was assigned to joints containing all existing variables. Due to a limitation on the amount of sealant furnished by others it was not possible to test them under all conditions. Figure 1 indicates the variables encountered and the assignment of the sealants to the test sections.

Work on this project was done by Coastal Concrete Sawing Company. As it was necessary to keep one lane open to traffic at all times work on the joints was accomplished in lane widths and in several passes. The first step was to rout the old joint sealant and resize the joints to a uniform width. All joints were routed and resized prior to cleaning. Hand cleaning to remove particles of old joint material and sand blasting were done immediately prior to resealing the joints with the various types of joint sealants. Work on the project was completed March 28, 1967.

First inspection of the project after completion of the sealing work was accomplished in August, 1967. Inspection consisted of a two man team that observed each joint. A diary was kept and the condition of each joint was recorded. The types of failures that were observed included loss of adhesion of the joint sealant to the concrete, loss of cohesion of the joint seal material, flotation of the joint seal material out of the joint and failure of the joint. Six follow-up inspections were made between August, 1967 and March, 1970 at various seasons of the year. Figure 2 summarizes the results of the seven inspections made of the test section. It can be noted that most of the failures occurred between the summer inspection of 1968 and the winter inspection of 1968 after the joint material had been in place for a period of approximately 15 months. Main cause of failing joint sealant was loss of adhesion of

the joint seal material to the concrete walls of the joint.

Review of Figure 2 reveals that the preformed neoprene joint sealant displayed the best record of all sealants tested. The failures of the preformed neoprene shown as "other" resulted in failures of the joint rather than loss of seal due to failure of the joint material. True failure of the preformed neoprene was usually a result of the joint material losing adhesion with the concrete walls of the joint, floating out of the joint, thus exposing the joint material to traffic abrasion that destroyed the neoprene.

Of the poured types of seal material tested hot poured rubber listed as Type 2 in the Standard Specification displayed the best sealing characteristics. The hot rubber material appeared to reseal itself as the joint material floated out of the joint and was exposed to traffic.

Results of this experimental project indicates that the preformed neoprene provides the most satisfactory joint seal of all the materials tested. The preformed neoprene material should be installed in the prepared joint far enough below the surface of the concrete surface to prevent traffic abration of the neoprene material.

SEAL TYPE / MOISTURE / TRAFFIC	A		B
	DRY	MOIST	DRY
1	111	121 121R	211
2	112	122	212
3	113	123	213 213R
4	114	124 124R	214 214R
5	115	125	215 215R
6	116	126 126R	216 216R
7		127	217
8		128	
9	119A 119B		
10		120	

313

FIGURE 1

FIGURE 2

	% O.K.							% Poor Adhesion							% Poor Cohesion							% Flotation							% Other						
Class 1-a Polymer	82	54	62	14	7	7	7	2	46	27	86	91	91	91	-	-	2		12	14	35	16		11		7	-	4								
Class 1-b Polymer	70	38	43	8	8	8	8	-	62	57	92	92	92	92	-	5	5	43	54	51	64	30				22	19	19							
Hot Poured Rubber (Class 2)	90	31	37	21	5	35	31	2	68	56	79	95	32	64	-	3	8	6	8	3	10	8		19		63	53	25							
Cold Rubber (Class 3)	79	32	5	4	4	2	1	-	49	82	84	95	91	96	12	84	95	96	91	88	96	10		2		53	24	24							
Catalytic Blown Asph.	5	7	17	7	2	10	8	3	86	51	92	92	64	92	2	25	12	44	34	24	78	98		80	39	50	39	25							
Preformed Neoprene	94	91	92	94	88	83	86	3	2			8	12	12						1	11					8	6	6	3	8	8	6	5	8	8
Presstite 357.5	60	60	45	5	0	5	0	-	35	40	95	100	90	100	-	10	10			5	5	40		15		70	45	30							
Urethane Polymer	69	38	38	23	23	15	15	-	54	54	69	62	62	77	-	8	8	38	35	54	69	23	-	8			-	-	8	8	8	8	8	8	8
Butyl Rod Stock	100	62	75	12	12	25	25	-	12	25	88	88	75	75	-	38			50	-	-						-	-							
Super Seal 444	100	92	92	62	54	23	15	-	8	8	38	46	77	85						-	-						-	-							
Inspect. Date	8/67	12/67	5/68	12/68	4/69	9/69	3/70	8/67	12/67	5/68	12/68	4/69	9/69	3/70	8/67	12/67	5/68	12/68	4/69	9/69	3/70	8/67	12/67	5/68	12/68	4/69	9/69	3/70	8/67	12/67	5/68	12/68	4/69	9/69	3/70

NOTES ON BUTYL ROD STOCK

Rod stock furnished by the Rubatex Corporation, Bedford, Virginia to conform to ASTM Specification D 1056 SCE 43 for 11/16" round neoprene cord.

Eight joints were painted with adhesive lubricant and sealed with the round neoprene cord.

After being treated with Pecora, Inc. P-47 Primer, four of the eight joints were further sealed with a two component polysulfide rubber sealant. The polysulfide rubber sealant used was Synthacalk GC-7 furnished by Pecora, Inc.

protective coatings

caulking compounds

sealants • adhesives

INTERIM TECHNICAL DATA SHEET

RUBBER CALK™ 3105 SEALANT

USE

For sealing contraction and expansion joints in bridge decks, highway pavement, and airfield runways.

DESCRIPTION

Rubber Calk™ 3105 Sealant is a two-part, polyurethane sealant which cures at ambient temperature to a firm, flexible, tear-resistant rubber. It is highly resilient and has excellent recovery characteristics after extended periods of compression or extension.

Rubber Calk™ 3105 Sealant has outstanding resistance to weather aging and has excellent adhesion to primed masonry and metal surfaces even under the most severe weather conditions. Its elastomeric properties and flexibility are maintained over a wide range of temperatures.

Rubber Calk™ 3105 Sealant must be used with PRC Primer #14 on concrete surfaces and PRC Primer #15 on steel surfaces. See "Surface Preparation" for primer requirements.

Rubber Calk™ 3105 Sealant is available in two types:

1. Machine Mix - formulated to have a fast tack free time with excellent self-leveling properties so that the pavement may be placed in service with a minimum amount of lost time.

2. Hand Mix - formulated to have a 2 hour application life with excellent self-leveling and air release properties. Because of these characteristics, the hand mix material is not recommended for use in joints with more than a 2% slope.

SUPERSEDES
April 1966

PRODUCTS RESEARCH & CHEMICAL CORPORATION

CORPORATE OFFICES AND
WESTERN MANUFACTURING DIVISION
2919 EMPIRE AVENUE
BURBANK, CALIFORNIA

EASTERN SALES AND
MANUFACTURING DIVISION
410-416 JERSEY AVENUE
GLOUCESTER CITY, NEW JERSEY

DATE ISSUED
October 1966

PURCHASING DATA

PRODUCT DESIGNATION

When ordering this product, designate Rubber Calk™ 3105 Sealant, Machine Mix or Hand Mix.

NOTE: Refer to "Surface Preparation" for primer requirement.

STANDARD PACKAGING

Machine Mix

Designation	Total Contents	Part A Container	Part B Container
10 gal. unit	10 gallons	1 5-gal. lug cover pail	1 5-gal. lug cover pail

Hand Mix

Designation	Total Contents	Part A Container	Part B Container	Kits per Case
#128 kit	Full gallon	2 qt. can	5 qt. can	2

NOTE: The designation indicates the total contents of Part A and Part B. Kits and units are furnished with a premeasured quantity of Parts A and B in individual containers.

QUANTITY ESTIMATION

Lineal feet per gallon (231 cu. in.)

		Width of Joint						
		1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	1"
Depth of Joint	1/4"	308	205	154	123	102	88	77
	3/8"	. . . .	136	102	82	68	58	51
	1/2"	. . . . .	. . . . .	77	61	51	44	38
	5/8"	. . . . .	. . . . .	. . . . .	49	41	35	30
	3/4"	. . . . .	. . . . .	. . . . .	. . . . .	34	29	25
	7/8"	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	25	22
	1"	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	19

Example: One full gallon is sufficient material to fill a joint 1/2" wide and 3/8" deep and 102' long.

NOTE: Depth of joints receiving Rubber Calk™ 3105 Sealant shall not be less than 1/4". In no event should the depth of the compound in the joint exceed the width. Where necessary, joints should be packed with a joint filler such as flexible tubing or closed-cell sponge of vinyl or rubber, to obtain desired depth.

SHIPPING CLASSIFICATION: Caulking or Glaziers' Compound, NOI

PRIMER DESIGNATION

When ordering primer, designate PRC Primer #14 for concrete or PRC Primer #15 for steel.

STANDARD PACKAGING

PRC Primer #14

Designation	Contents	Container	No. per Case
Full pint	16 fl. oz.	1 pt. can	12
Full quart	32 fl. oz.	1 qt. can	9
Full gallon	128 fl. oz.	1 gal. can	4

ESTIMATED COVERAGE: 2400 lineal feet/gallon/inch of depth of joint face/joint face.

SHIPPING CLASSIFICATION: Paint, NOI

SPECIAL SHIPPING CLASSIFICATION: Red Label

PRC Primer #15

Designation	Total Contents	Parts A & B Container	No. per Case
Pint unit	16 fl. oz.	Pint cans	6

NOTE: The unit designates the total volume content of Parts A and B (128 fluid ounces per gallon). Standard units are furnished with a premeasured quantity of Part A and Part B in individual containers.

ESTIMATED COVERAGE: 450 lineal feet/pint/inch of depth of joint face/joint face.

SHIPPING CLASSIFICATION: Paint, NOI

* * * * * * * * * * * * *

APPLICATION PROPERTIES (Typical)

Color	Part A	Amber
	Part B	Black
Base Rubber		Polyurethane
Mixing Ratio		Part A:Part B
	By weight	1.05:1
	By volume	1:1
Weight per Gallon (Combined)		8.2 lbs.
Consistency		Pourable
Solids		99%

Application Life at 75° F, 50% RH	
Machine Mix	5 minutes
Hand Mix	2 hours
Cure Time at 75° F, 50% RH (For vehicular traffic)	
Machine Mix	15 minutes
Hand Mix	12 hours
Ultimate Cure Time at 75° F, 50% RH	
Machine Mix	24 hours
Hand Mix	72 hours

PERFORMANCE PROPERTIES (Typical)

Color	Black
Hardness, Shore A After 72 hrs. cure at 75° F, 50% RH	5 - 10
Shrinkage	Negligible
Weight Loss After 6 months exposure to weather and solar radiation	1.5%
Resilience Test in accordance with Para. 4.3.3.10 Federal Specification SS-S-00200c	99%
Hot Flow at 200° F Test in accordance with Para. 4.3.3.13 of Federal Specification SS-S-00200c	None

Adhesive Strength in Tension and Ultimate Elongation

(Test specimens consisted of two small concrete blocks primed with PRC Primer #4, sealed with a seam of Rubber Calk™ 3105 Sealant 1/2" x 1/2" x 2" and cured for 72 hours at 75° F and 50% RH

	Tensile Adhesion (psi)	Ultimate Elongation (%)
At 75° F	55-70	700-775
At 75° F after 7 days at 160° F	60-80	500-600
At 75° F after 7 days in water	45-50	550-700

Temperature Range -40° F to 200° F

NOTE: The above application and performance property values are typical for the material, but are not intended for use in specifications or for acceptance

inspection criteria because of variations in testing methods, conditions, and configurations.

JOINT DIMENSIONS

Expansion Joints

It is recommended that dimensions be established on each joint in conformance with service conditions. Width of joint may be determined by calculating expansion and contraction limits of the joint in the temperature extremes of the locale and multiplying this figure by a factor of 3. For example, if it is calculated that a joint will open and close 1/4" under temperature extremes, the joint should be designed 1/4" times 3 or 3/4" wide. No joint should be less than 1/2" wide.

It is recommended that the depth of the sealant in a joint be no greater than the width and not less than 1/2". For joints greater than 3/4" in width, the depth of the sealant shall be 1/2 the width.

Control Joint

Saw cut control joints are usually 1/4" wide by 1" to 2" deep. These joints move very little and are not to be compared to expansion joints. We suggest these joints be backed with 3/8" butyl rod where necessary when movement is encountered.

Joint Backing

Where necessary, joints should be packed with expansion joint fillers to obtain depth of sealant. For joints greater than 3/4" wide, medium density polyurethane foam or closed cell sponge vinyl should be used. For joints less than 3/4" wide, PRC 89 Preformed Joint Filler should be used. If polyurethane foam is used masking tape must be applied on the top surface of the filler to prevent the sealant from adhering to or being absorbed by the filler.

CAUTION: PRC primers will deteriorate polystyrene foam. Therefore, do not use polystyrene foam as joint fillers or in areas where it may come in contact with primers. Foam and sponges other than those recommended should be used only when the compatibility with PRC primers has been tested to the customer's satisfaction.

SURFACE PREPARATION

NOTE: The following surface preparation and priming requirements are recommended for optimum results.

All surfaces must be clean and dry and must be free of loose aggregate, paint, oil, corrosion, grease, wax, mastic compounds, waterproofing agents, or form release agents.

Concrete

1. Cleaning

The surfaces must be cleaned by sandblasting and dry before application of the primer or sealant. Fresh concrete must be cured fully and dry before primer is applied. When resealing surfaces formerly sealed with mastics, all traces of the old materials must be removed and enough concrete must be removed by saw cutting to insure a clean surface, followed by a light sandblasting.

2. Priming

NOTE: Do not open containers of PRC Primer #14 until ready to use since the material will deteriorate gradually when exposed to moisture in the air.

Apply a thin, uniform coat of PRC Primer #14 to the clean concrete joint surface and allow to dry at least ½ hour; but not more than 8 hours before applying Rubber Calk™ 3105 Sealant. If PRC Primer #14 dries for more than 8 hours before the application of Rubber Calk™ 3105 Sealant, reprime the joint surface with PRC Primer #14. See drying times at other temperatures under "Primer Description".

Steel & Galvanized Steel

1. Cleaning

Surfaces must be dry, clean, and free of corrosion, mill scale, rust, oil, tars, paint, and other surface contamination. The surfaces must be given a commercial sandblast.

2. Priming

Immediately after cleaning and before a new attack of corrosion begins, prime the sandblasted steel with a thin uniform coat of PRC Primer #15. Allow the primer to dry at least ½ hour, but not more than 8 hours before application of Rubber Calk™ 3105 Sealant. Should the primer be allowed to dry for more than 8 hours, reprime the joint surface with PRC Primer #15. See drying times at other temperatures under "Primer Description".

PRIMER DESCRIPTION

PRC Primer #14

PRC Primer #14 is a one-part, brown colored solution of thin syrup consistency ready for use as packaged. Apply to previously prepared concrete by brush or spray and allow to dry for at least ½ hour, but not more than 8 hours before application of Rubber Calk™ 3105 Sealant. The air drying cycle of PRC Primer #14 is as follows:

30 minutes at temperatures above 80° F
1 hour at temperatures between 60° F and 80° F
2 hours at temperatures between 50° F and 60° F
3 hours at temperatures between 40° F and 50° F

PRC Primer #15

PRC Primer #15 is a two-part material consisting of zinc dust, Part A, and a resin solution, Part B. It is shipped in units with the proper amount of Part A and Part B packaged individually. It is prepared for use by mixing the entire contents of Part A into Part B with continual agitation or stirring until all of Part A has been added and the mixture is uniform.

NOTE: 1. Do not mix Part A and Part B until ready to use and do not mix more than can be used in 4 hours. Once Part A and Part B containers have been opened, they should not be resealed since the material will deteriorate gradually.

2. Do not thin PRC Primer #15.

Apply PRC Primer #15 to previously prepared steel or galvanized surfaces by brush or spray and allow to dry at least ½ hour, but not more than 8 hours before application of Rubber Calk™ 3105 Sealant.

CAUTION: The zinc in PRC Primer #15 has a tendency to settle. Therefore, it should be continuously agitated. When spray equipment is used, the material hose must be blown clear if spraying is halted even for a few minutes.

PRC Primer #15 not only promotes adhesion between Rubber Calk™ 3105 Sealant and steel, but also provides a corrosion resistant coating for the steel. The air drying cycle of PRC Primer #15 is as follows:

30 minutes at temperatures above 80° F
1 hour at temperatures between 60° F and 80° F
2 hours at temperatures between 50° F and 60° F
3 hours at temperatures between 40° F and 50° F

MIXING AND APPLICATION PROCEDURE

NOTE: Do not thin Rubber Calk™ 3105 Sealant because thinning will result in loss of adhesion of the cured material. Rubber Calk™ 3105 Sealant must be used with a primer to obtain adhesion to concrete and steel.

1. Sandblast interface of joint, blow all debris from joint with clean oil-free air.

2. Prime concrete joint with PRC Primer #14 or steel joint with PRC Primer #15 and allow to dry a minimum of ½ hour.

3. Place proper backing in joint to provide correct conformation.

4. Mixing instructions:

   A. Mixing of Rubber Calk™ 3105 Sealant, Machine Mix:

      NOTE: Rubber Calk™ 3105 Sealant, Machine Mix, Part B, must be mixed with a Jiffy Mixer blade prior to pouring into the mixing machine reservoir to be sure it is homogeneous.

      Since application life is short it must be mixed and applied only by equipment which will mix equal part material and eject the mixture from the mixing chamber into the joint within the 5 minute application life of the material. Such equipment is available from The Boardman Company, Oklahoma City, Oklahoma.

   B. Mixing of Rubber Calk™ 3105 Sealant, Hand Mix:

      Remove rim of cans with can opener to assure accessibility of all material. Mix entire contents of Part A and Part B together. Thorough mixing is absolutely essential. Mixing this material is best accomplished by using 1/2" or larger drill fitted with Model "H" Jiffy Mixer blade for #128 kit. Mix for 8 to 10 minutes, moving mixer around sides and bottom of container to ensure complete mix. Jiffy Mixer blades are available from Products Research & Chemical Corporation.

5. Fill expansion joint with Rubber Calk™ 3105 Sealant to not more than 1/8" nor less than 1/4" from top of joint.

SUPERIOR
CONSTRUCTION MATERIALS

SUPERSEAL 444

Joint Sealant — HIGHWAY TYPE

Single-Component, Polymer,
Hot-Poured Type

EXCEEDS Federal Specification SS-S-164

Elastomeric Polymer Type Joint Sealant for General Sealing of Concrete Joints in Highways, Airfield Pavements, and Commercial Buildings

Advantages:

* Improved weathering properties for longer life.
* High resilience rejects non-compressibles.
* Easily and quickly applied.
* Liquid during all phases of handling prior to application to the joint.

**** Exclusive Features:** .....

Superseal-444 is the only hot-poured sealant available with the following characteristics:

* Highly resilient to reject non-compressibles.
* No flow at elevated temperatures.
* Does not blister or bubble from weathering.

.....

Description:

Superseal-444 is a newly developed polymer type, hot-poured, elastomeric sealant offering a combination of ease of application and outstanding service performance.

It is supplied as a liquid (5 gallon pails) which is heated to approximately 250 degree F. prior to application into the joint. After application and cooling, it forms a resilient, tough, and well bonded seal for exclusion of all types of foreign material.

Being initially liquid, Superseal-444 is much easier to handle than the solid hot-poured types. Production can be increased. At application temperature it is very fluid. Being self-leveling, it produces uniform and neat appearing sealed joints.

Joint Preparation:

Joints must be clean and dry. Because it is very fluid at the pouring temperature, use of cord or rope may be required at the bottom of the joint.

Cleaning of Joints:

New Concrete pavement: All joints should be formed or sawed to produce a minimum joint size of 3/8" x 1". If a deeper sealed joint is required, then the minimum width should be 1/2". Prior to sealing the joint, surfaces should be cleaned of all dirt, curing compound residue, laitance and any other foreign material. **Clean by sand blasting thoroughly.** Immediately prior to sealing, joints should be blown using a minimum of 100 PSI compressed air.

Old concrete pavement: For resealing of joints, the old sealant in the joint should be plowed out and the joint widened to 1/2" x 1", using a concrete saw. **Joints should be cleaned of all old sealant.** Remove all foreign material by sand blasting thoroughly. Immediately prior to sealing, joints should be blown using a minimum of 100 PSI of compressed air.

Application:

Superseal-444 comes "ready to use" in liquid form, and is poured or pumped into the double-boiler type of melter-application kettle and then heated to the recommended application temperature. Joints should be filled flush or not more than 1/8" below pavement surface.

Refer to: Superior Application Bulletin #202 and Superior Applicator Bulletin #AH-1.

Storage of Compound:

The sealing compounds should not be exposed to ambient temperatures in excess of 100 degrees F., whether open or indoor storage. Indoor storage is recommended. Avoid exposure to direct sunlight.

(OVER)

Specification:

Federal Specification SS-S-164, upgraded as follows:

	Present **164 Specification**	Modified **Upgraded Specification**
Preparation of Sample (Heating Time — Pouring Temperature)	Mfrs. Recommendation usually 30 minutes	3 Hours at Safe Heating Temperature
Penetration	0.90 cm max.	1.30 cm max.
Flow	0.5 cm, 5 hrs. at 140 degrees F.	No flow, 24 hrs. at 158 degrees F.
Bond	1/4" separation, max.	* 1/4" separation, average
Resilience		
48 hours, room temperature	No requirement	* * 60% min.
24 hours, oven aging at 158 degrees F.	No requirement	* * 50% min.
Artificial Weathering Test Tested in accordance with paragraph 4.3.3.14, Interim Fed. Spec. SS-S-00200c	No requirement	Shall not show tackiness, reversion to a mastic type substance, flow, or formation of surface bubbles, either intact or broken except as described in 4.3.3.14.4 of SS-S-00200c

* Concrete test blocks to be made in accordance with Interim Federal Specification SS-S-00200c.

* * Resilience to be measured in accordance with Interim Federal Specification SS-S-00200c.

No. 357.5 HOT-POUR RUBBER-ASPHALT JOINT SEALER

DESCRIPTION

Presstite No. 357.5 is a hot-pour, polymer-based, asphalt-extended sealer which provides high performance in concrete and asphaltic concrete pavement joints. This material possesses excellent bonding characteristics at low temperatures and retains its ductility and resilience at all temperature extremes.

After heating to its recommended pouring temperature of 400±10°F, and applied to the joint, No. 357.5 cools to form a tough, rubber-like material which resists impregnation and loading with dirt, gravel and debris. It is also highly resistant to impact under the shock of heavy vehicular traffic at low temperatures.

Unlike conventional hot-pour sealers which tend to break down under prolonged heating, the performance characteristics of No. 357.5 actually improve when melted at recommended temperatures. Standard double-wall oil bath melters, equipped with agitators and heavy duty gear or cam type pumps should be used to prepare and apply this material.

USES

No. 357.5 can be used in almost any joint or crack sealing application in concrete or asphaltic concrete pavement such as highways, airfield runways, streets, parking areas, etc. Typical application areas include:

Longitudinal and traverse contraction joints in concrete pavement.

Expansion joints in concrete paving.

Longitudinal joints between concrete paving and asphaltic shoulder paving.

Random cracks in concrete or asphaltic concrete paving.

JOINT PREPARATION

Joints to which No. 357.5 is to be applied, must be free from dirt, dust, water, oil, grease, curing membrane and loose surface particles. Curing compound should be removed by sandblasting. Immediately prior to application of the sealant, the joints should be blown with oil-free compressed air at 90 psi to remove dust and debris.

On replacement work, the old sealing material should be plowed out to a depth of not less than 1-1/2". The joint can be cleaned either by sandblasting or with a mechanical joint cleaning and grooving machine. Compressed air can then be used to remove remaining particles from the joint.

TYPICAL CHARACTERISTICS

The following chemical and physical characteristics are typical of No. 357.5 and are tested and controlled by Presstite Laboratories:

Composition:	Polymer base, extended with asphalt and selected inert fillers.
Weight:	Approximately 9 lbs. per gallon.
Pouring Temperature:	400°F.
Safe Heating Temperature:	440°F.
Adhesion:	Excellent to green or cured concrete and asphaltic concrete.
Service Temperature Rang Range:	-40 to 150°F.

The following typical characteristics are given for the material after being held at 400°F for the indicated intervals:

	90 minutes	6 hours
Consistency (150 gram grease cone):	81 mm	77 mm
Flow @ 140°F.:	.7 cm@75° angle	.5 cm@75° angle
Ductility ASTM D-113.44	42 cm@77°F	74 cm@77°F
Resilience ASTM D-113.44 Ball Penetration (75 grams):	30 mm	35 mm
Compression Recovery: (50% compression of 1/2" specimen)	Recovers to .44" in 15 min.@75°F.	Recovers to .46" in 15 min.@75°F.
Impact Resistance: (Presstite Impact Machine)	Over 100 inch pounds @ 0°F.	Over 100 inch pounds @ 0°F.
Shrinkage:	None after cooling to ambient temperatures	None after cooling to ambient temperatures

SPECIFICATION COMPLIANCE

No. 357.5 fully complies with the following specifications:

State of Minnesota Department of Highways Spec. 3723 (November 5, 1963)
State of New Jersey (selected lots)
State of North Carolina
State of Virginia

Original: June 1, 1966

No. 357.5 HOT-POUR RUBBER-ASPHALT JOINT SEALER

MELTING AND APPLICATION

No. 357.5 may be melted to a pourable consistency in any standard double-wall oil bath melter, equipped with an agitator and heavy duty gear or cam type pump.

The material is supplied in tapered pails with plastic liners. The material and the liner are placed in the melter. The liner disintegrates during the melting process.

The pouring temperature for No. 357.5 is 400°F. and the material is ready for application immediately upon reaching this temperature. If 400°F. is not exceeded, the material may be kept for several hours in an agitated melting pot before it is used.

The safe heating temperature of 357.5 is 440°F. This temperature is defined as the highest temperature to which the material may be heated and still retain all its ultimate performance of characteristics.

SAMPLES

A free sample of No. 357.5 is available for testing under individual application conditions. Contact your nearest Presstite representative or write to our main office in St. Louis.

PRECAUTIONS

WARNING! Heating for prolonged periods at temperatures above those recommended for this material can cause the material to gel. If this occurs, remove the material from the melter immediately and discard.

PURCHASING DATA

Ordering:	Specify Presstite No. 357.5 Hot-Pour Rubber-Asphalt Joint Sealing Compound.
Packaging:	Supplied in 50-lb. net weight pails with plastic liner and removable top.
Freight Classification:	Billed as "Compound, Paving or Paving Joint." No label required.

CONDITIONS OF SALE

Facts stated regarding this material and suggested uses, are based on tests believed to be reliable. However, the following warranty is in lieu of all others expressed or implied, namely, that this material is manufactured of first class materials by competent workmen; if any material supplied by us proves upon inspection within 60 days from date of delivery to be defective in material or workmanship, we will replace the same or refund to the purchaser the price of the defective goods. Since results obtained with the use of our products depend on circumstances beyond our control, we cannot assume and we disclaim any responsibility for expense or consequential damage of any kind.