
MASTIC
PATCHING
WITH
SEALANT
BINDER

Two Problems
Two Crews
Two Machines?

In Pavement Maintenance the two most troubling problems are Cracks and Potholes. There are different methods for each repair, and different machines for these repair types. The C1 will combine these two processes into one machine with the performance and results the user is expecting.

Cracks

- Crack Seal (hot)
- Crack Pour (hot or cold)

Potholes

- Throw and Roll
- Spray Injection
- Remove and Replace
- **Mastic Sealant**

CPMG CIMLINE PAVEMENT MAINTENANCE GROUP

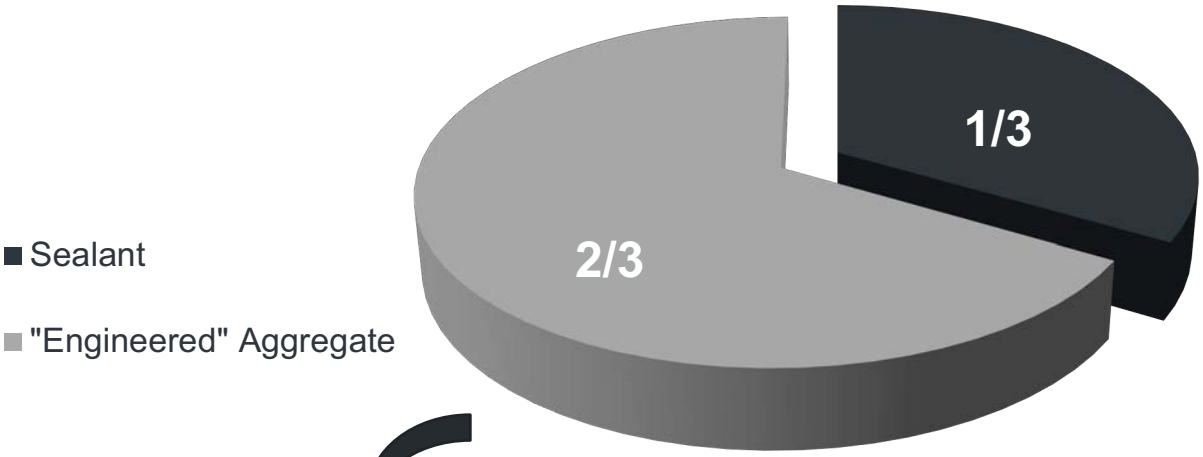
The Cimline C-1 Crack Sealer / Mastic Patcher

The C1 Combination Machine combines two crews into one by utilizing your crack sealing crew with best practices to provide solutions for crack seal and mastic patch using one machine. This is done by using the proper sealant binder and local crushed stone material that is available in your area. **No longer is factory packaged mastic your only repair choice.**

CIMLINE PAVEMENT MAINTENANCE GROUP

What is it Factory Packaged Mastic

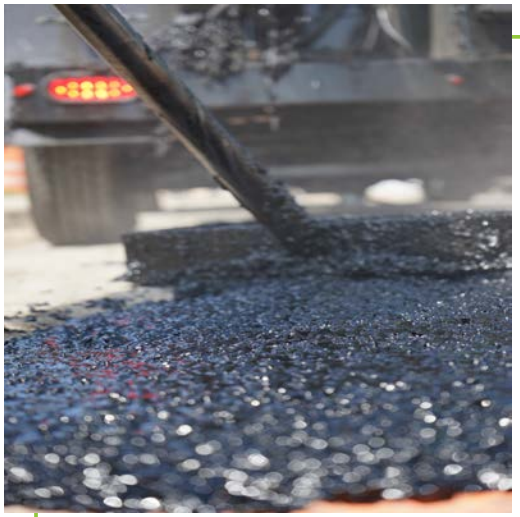
Factory packaged mastic today in its standard application is 1/3 sealant and 2/3 engineered aggregate.



Example of Factory Packaged Mastic Sealant Block

CPMG CIMLINE PAVEMENT MAINTENANCE GROUP

What is it



Mastic Patching with the C1

The patent pending design blends aggregate and sealant to make mastic patch.

Aggregate Local Crushed

Crushed aggregate that is sized to specification and washed.

- 1/8” crushed
- ¼” crushed
- 3/8” crushed
- ½” crushed

Sealant Climate and Type

Sealant specified for the climate region, surface, and application.

- Type 1 Parking Lot
- Type 2 DOT ”3405” Most Common
- Job specific sealants Aviation

CPMG CIMLINE PAVEMENT MAINTENANCE GROUP

How It Works
Aggregate

Aggregate is moved from the rock hopper through the heating chamber using a centerless screw. Each revolution drops a measured amount of dried, pre-heated stone into the mixing chamber. A hopper guard prevents oversized stone from entering the system.

Hopper

- Sized Screened Aggregate
- Damp is OK
- Fines will produce a stiffer mix
- Hopper Guard keeps out oversize

Heating

- Diesel burner
- Aggregate is heated to a minimum of 240 degrees
- Removes all moisture
- Ensures proper blending
- Heated Tool Carrier

CPMG CIMLINE PAVEMENT MAINTENANCE GROUP

How It Works
Sealant

A measured flow of sealant binder is introduced into the mixing trough at the same location as the pre-heated aggregate. The mix has 100% binder coverage in the first third of the mixing system. The mix continues to flow down the second centerless screw to the placement chute

Mixing

- Metered Sealant Flow introduced at application temperature
- Centerless screw folds sealant through mixing chamber
- Mixing chamber is insulated and heated

Placing

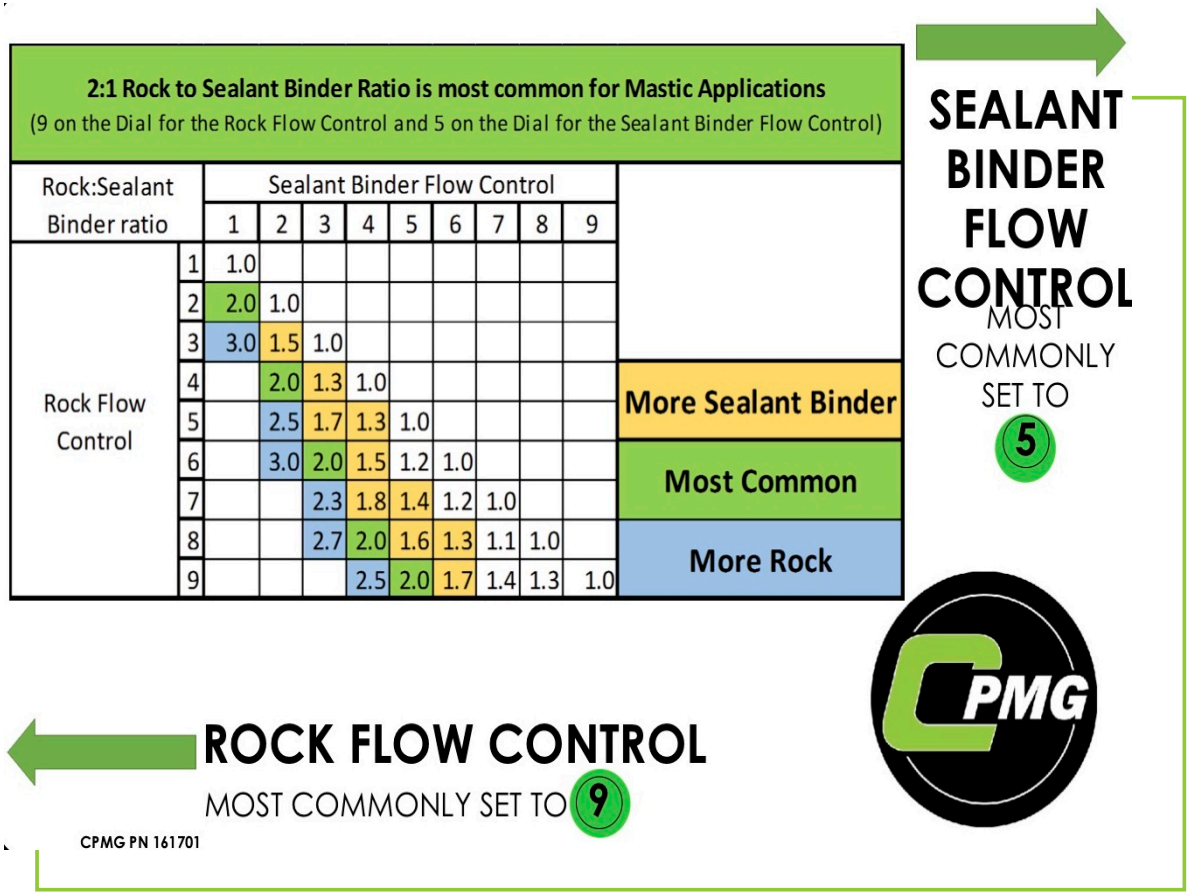
- Electrically heated placement chute transfers mastic to buggy or screed box
- Chute swings left to right from lane center line to center rear of machine

CIMLINE PAVEMENT MAINTENANCE GROUP

How It Works
Ratio

Flow controls for rock and sealant can be set for a variety of mixture rates and application speeds. This also allows the user to specifically blend mastic to the characteristics of the application.

- Potholes
- Transverse cracks for smooth ride
- Centerline segregation
- Bridge Joints
- Curb to street or transition leveling



CIMLINE PAVEMENT MAINTENANCE GROUP

Installation Best Practices

CLEAN! Like all pavement preservation techniques, operators should follow best practices in job site preparation.

Good-Compressor

- Clean dry surfaces promote a strong bond to surrounding pavement
- A 100 + CFM compressor is ample in size

Best-Heat Lance

- Heat lances clean with compressed air while heating the repair area
- This dries where necessary, softens the asphalt, and exposes fresh binder which promotes bond to sealant

CPMG CIMLINE PAVEMENT MAINTENANCE GROUP

Installation Best Practices

Placement. Mastic is **HOT**. Safety first. Gloves, long sleeves, and safety glasses. This operator is using a 10” placement screed box on a curb to asphalt transition.

Screed Box 10”

- Keep your tools HOT! There is a heat chamber on all machines

Hot Iron

- Heat lances clean with compressed air while heating the repair area
- This dries where necessary, softens the asphalt, and exposes fresh binder which promotes bond to sealant

CPMG CIMLINE PAVEMENT MAINTENANCE GROUP

Installation Best Practices

Aggregate Selection is an important step. Remember to consider your traffic load, average depth, and surface friction when choosing your stone. Maximize your production and performance.

1/4-1/8” Stone

- Higher skid resistance
- Higher static load capacity
- Impermeable to water

1/8” Only Stone

- Smoother texture
- Best for banding on smaller cracks and depressions
- Impermeable to water

CPMG CIMLINE PAVEMENT MAINTENANCE GROUP

Customer Value

The C1 offers value to the customer through the entire process.

- **Less Disruption**
- **Safer**
- **Faster**
- **Material Savings**

Less Disruption

- One closure for two processes
- One Crew
- One disruption to the public

Safety

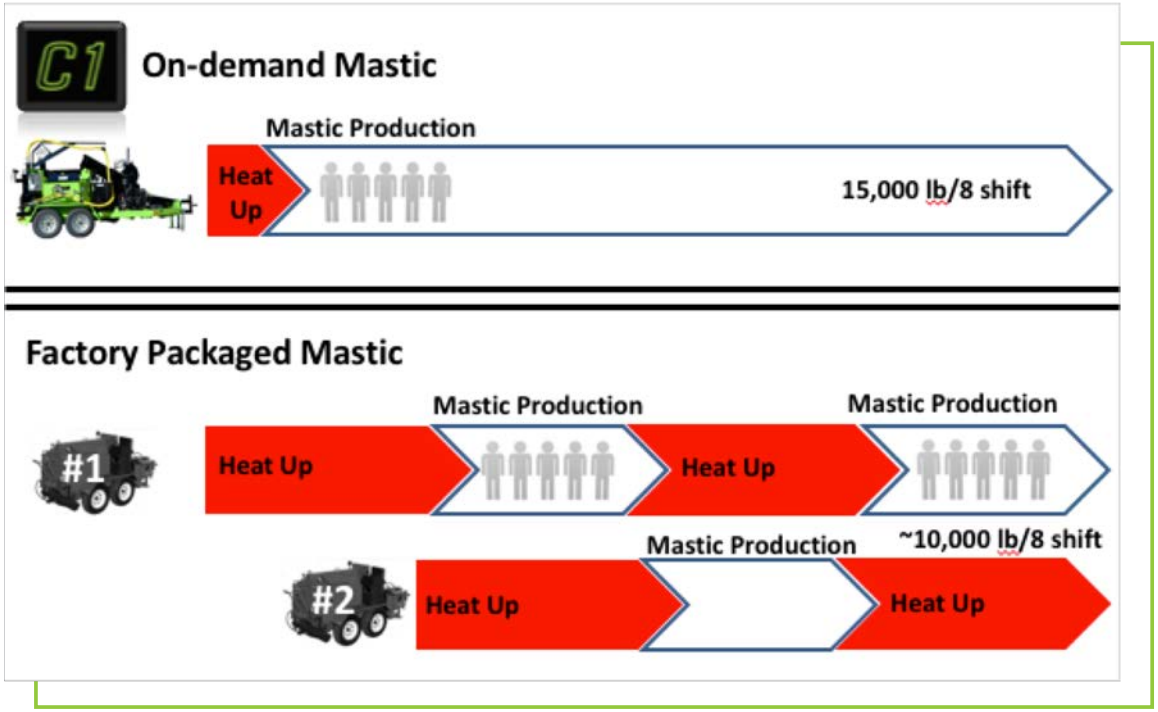
- Lowest load height
- Best visibility to operator with moveable placement chute
- Electric heated placement chute
- Simple operator control

CPMG CIMLINE PAVEMENT MAINTENANCE GROUP

Customer Value

The C1 offers value to the customer through the entire process.

- **Less Disruption**
- **Safer**
- **Faster**
- **Material Savings**



Faster

- C1 1 Tank = 450 Gallons
- Others Tank = 200 Gallons
- C1 on demand heats material faster
- 1 Machine does the work of 2

CPMG CIMLINE PAVEMENT MAINTENANCE GROUP

Customer Value

+

The C1 offers value to the customer through the entire process.

- **Less Disruption**
- **Safer**
- **Faster**
- **Material Savings**

Material Savings

- Local Aggregate Cost $40 Ton or $0.02 per pound
- Local Sealant Cost $0.55 per pound
- **C1 Mastic Cost $0.20 lb.**

CPMG CIMLINE PAVEMENT MAINTENANCE GROUP

Customer Resources

- Cost of Operation
- C1 Operator Instructions
- Product and Application Instructions

Mastic Start up (follow Material Start-up from page 10)

1. **Assure rock heating chamber is full of rock.**

   A. Turn Rotary switch to "Rock Only" and open gate until rock begins to dump from the rock heating chamber into the mixing chamber.

   B. Turn Rotary switch to "Off"

2. **Turn "ON" rock burner**

   A) Allow Rock Burner to preheat for a minimum of 45 minutes

   B) This can be running while the rubber material is warming up.

3. **Set flow control on material to "5".**

   A) Make sure material is up to the material manufacture predetermined temperature. This will be listed on the material packaging.

TOTAL COST OF OPERATION COMPARISON FOR 5 YEAR TERM

		Reference - Equivalent "Days Performing Task"		
		Crew of 8	Crew of 4	Crew of 2
Annual Man Hours patching	700	11 days	22 days	44 days
Annual Man Hours crack sealing	1000	16 days	31 days	63 days
Labor Rate $/hr (average)	$ 40.00			

Annual Material Usage	lbs	Cost/lb
Crack Sealer	45,000	$ 0.55
Mastic	45,000	$ 0.61

Pricer per ton of Crushed Aggregate	$ 25
Cost of Acquisition for a Mastic Machine AND a Crack Sealer	$ 105,000
Cost of Acquisition for CPMG C1 Combination Machine	$ 85,000

Production MATERIAL Cost

Application Process	Mastic	Crack Sealer	Aggregate	ANNUAL TOTAL	5 YEAR TOTAL
Separate Crack Sealer and Mastic Machine	$ 27,450	$ 24,750	$ 175	$ 52,200	$ 261,000
CPMG Mastic Combo	$ -	$ 22,000	$ 175	$ 33,374	$ 166,87

Production LABOR Cost

Application Process	Mastic	Crack Sealing	Combined Application	ANNUAL TOTAL	5 YEAR TOTAL
Separate Crack Sealer and Mastic Machine	$28,000	$40,000	$ -	$68,000	$ 340,000
CPMG Mastic Combo	$ -	$ -	$48,000	$48,000	$ 240,000

Capital Expense over 5 Years

Application Process	Acquisition Cost	5 YR Trade-in/Residual Value	Cost of Capital
Separate Crack Sealer and Mastic Machine	$ 105,000	$ 15,750	$ 89,250
CPMG Mastic Combo	$ 85,000	$ 12,750	$ 72,250

True Cost of Operation*

Application Process	Material Cost	Labor Cost	Cost of Capital	Total Costs	$ Savings	% Savings
Separate Crack Sealer and Mastic Machine	$ 261,000	$ 340,000	$ 89,250	$ 690,250	$ 211,129	31% Savings
CPMG Mastic Combo	$ 166,871	$ 240,000	$ 72,250	$ 479,121		

CPMG CIMLINE PAVEMENT MAINTENANCE GROUP

PRODUCT DATA SHEET
NOVEMBER 2017

Overview: Cimline On Demand Mastic System prepares and dispenses repair mastic material on demand. The mastic system incorporates locally approved crack sealant material and aggregate in a self -contained machine. Unlike other systems that require a prepackaged product that includes aggregate and the mastic binder, Cimline's mastic system prepares the mastic binder and the aggregate in the machine at the jobsite, thus reducing handling and shipping of a batched pre-packaged product and allows on-demand supply. The final outcome is a finished product that is economical, locally sourced, and of highest quality.

Use Cimline Repair Mastic System is used for sealing, filling, and repairing asphalt and concrete distresses on pavements as well as bridge deck surfaces. Typical uses include repair of wide transverse and longitudinal cracks and joints, pothole repair, utility cuts, patch repairs, curb and gutter to pavement alignment, leveling manhole and utility covers, as well as leveling of bridge approaches, spalled concrete joints, pop outs, corner breaks or other faulted areas that require needed maintenance. After proper application, the mastic forms a flexible, waterproof, durable, well bonded product that will give years of service to the existing pavements.

Generally Recommended Properties:

Mastic Binder: Any locally approved packaged crack sealant material may be used that conforms to your climatic conditions. Please refer to your local supplier and/or your Cimline dealer for additional information.

Aggregate: Any locally sourced graded aggregate that is clean, wear resistant and free flowing with a minimum aggregate size of 1/8" (3.17mm) and a maximum aggregate size of 5/8" (15.88mm) may be used. Please refer to your local aggregate supplier or asphalt mix producer for guidance and aggregate specifications. For best performance, the aggregate gradations shall correspond to the patch depth and surface structure loads that are encountered on the roadway.

Finished Mastic: The finished mastic is the combination of the mastic binder and the aggregate. The material will form a strong, durable, water resistant membrane that will have years of service life. Being that the finished mastic is blended in the field using local approved crack sealant and locally approved aggregate the finished mastic is not limited in scope as is a pre-packaged mastic material. The finished mastic will be poured and leveled in the repair area and be traffic ready upon cooling and solidification.

Surface Preparation: All surfaces shall be free from moisture, loose material, fugitive dust, dirt, vegetation, and other materials that inhibits the bonding of the mastic to the existing surface. Repairs for concrete pavements may require a surface conditioner. This may be deemed an appropriate action if deemed by the Contract administrator, inspector, or contractor to obtain necessary bonding characteristics.

Installation and Equipment Instructions: Prior to use the operator shall refer to the Installation Instructions Document for detailed information. This document will be necessary to review and understand prior to and during operation.

Limitation: Do not apply the material to a wet surface or over coal tar sealers as delamination may occur. The applicator shall take necessary precautions to confirm suitability of use.

Packaging: The mastic binder will normally consist of a modified asphalt crack sealant prepackaged in meltable plastic bags in a cardboard box weighing approximately 40 pounds. Please refer to your local crack filler supplier for information regarding the needed product.

Performance: Using best operating practices, such as surface preparation, crack sealant and aggregate selection, the finished mastic material life cycle analysis is normally 4-5 years.

FOR ADDITIONAL INFORMATION
www.CimlinePMG.com or Contact your local Cimline dealer


CPMG
SERVING PAVEMENT
PRESERVATION
877-841-0848
www.CimlinePMG.com