

PolyPavement™

The Natural Soil Pavement

2-INCH MIX-IN APPLICATION INSTRUCTIONS

**USING ONE 55-GALLON DRUM OF POLYPAVEMENT
(COVERAGE: 40 Square Feet per Gallon of PolyPavement)**

ROTO-TILLER MIX-IN

APPLICATION METHOD

FOR

DATE: _____

**P. O. BOX 36339, LOS ANGELES,
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PRELIMINARY PROJECT DETERMINATIONS

READ THE APPLICATION INSTRUCTIONS THOROUGHLY BEFORE THE DAY OF THE JOB. INSTRUCT EACH EQUIPMENT OPERATOR AND LABORER CAREFULLY BEFORE STARTING PROJECT. PLAN AHEAD. CALL POLYPAVEMENT FOR TECHNICAL SUPPORT IF THERE ARE ANY QUESTIONS.

I. INSPECT THE TOOLS AND THE EQUIPMENT

II. MAKE PRELIMINARY PROJECT NOTATIONS:

- | | |
|---|--------------------------|
| 1. SIZE OF AREA TO BE TREATED: | <u>2,200</u> Square Feet |
| 2. SPECIFIED DEPTH OF TREATMENT: | <u>2</u> Inches |
| 3. RECOMMENDED % POLYPAVEMENT BY VOLUME OF SOIL:
(2% is normally specified or slightly less if some is withheld for the surface treatment. In no case should the % PolyPavement be greater than 2.5%) | <u>2.00</u> Percent (%) |
| 4. VOLUME OF POLYPAVEMENT FOR MIX-IN APPLICATION: | <u>51.0</u> Gallons |
| 5. SET ASIDE POLYPAVEMENT FOR SURFACE APPLICATION:
(The Surface Application is intended to produce a tough, durable surface. If a surface that appears more like natural soil is preferred, omit the surface application and mix all of the PolyPavement into the soil.) | <u>4.0</u> Gallons |

III. COMPLETE THE SOIL MOISTURE FIELD TEST

(TO BE DONE ON THE DAY OF THE JOB)

SOIL MOISTURE FIELD TEST INSTRUCTIONS

THIS TEST IS REQUIRED FOR A MIX-IN APPLICATION. IF WEATHER CONDITIONS, HEAT OR RAIN, CAUSE THE SOIL MOISTURE CONTENT TO CHANGE AFTER THE PROJECT HAS STARTED, REPEAT THE TEST AND RESET THE DILUTION RATIO.

TOOLS NEEDED FOR SOIL MOISTURE FIELD TEST

- 1 One-Gallon Bucket, Calibrated and marked at 100 fluid ounces
- 1 Five-Gallon Bucket or a smooth non-porous surface
- 1 Sixteen Ounce Plastic Bottle (graduated in fluid ounces)
- 1 Hand Spade, Small Garden Type
- 1 Tamping Rod (1" dowel rod, or use the hand spade handle)

1. **ADD IN-PLACE EXISTING OR IMPORTED SOIL** gradually to the 1-gallon bucket with no water, while compacting the soil firmly with tamping rod. Fill the bucket to the 100-ounce fill line with compacted soil.
2. **EMPTY THE 100 OUNCES** of compacted soil into the larger bucket or onto the non-porous surface and loosen the soil with the hand spade.
3. **FILL THE 16 OUNCE BOTTLE** to the 16 oz fill line with plain water. Sprinkle, pour or squirt water slowly onto the soil while mixing the soil with the hand spade.
4. **SQUEEZE HANDFULS OF THE SOIL** continuously while mixing with hand spade until the moisture content of the soil reaches Optimum Moisture Content (OMC) for compacting. OMC is the point reached when soil that is squeezed in the hand holds together in a firm tight clump. It is best to be a little under OMC than a little over OMC.
5. **NOTE THE OUNCES OF WATER USED** to bring the soil up to Optimum Moisture Content for compacting.

OUNCES OF WATER USED: _____ (Call this number "%W") Dilution ratio is set by %W TO 2% PolyPavement

"%W" is the **Percent Water** that must be added to the soil to achieve **Optimum Moisture Content (OMC) for Compacting**.
"%PolyPavement" is the **Percent PolyPavement** required for sufficient bonding (normally 2% or as otherwise recommended).

NOTE: At dilution ratios of 5 to 1 or less it is important to adjust the amount of dilution water to account for the fact that one gallon of PolyPavement contains approximately one-half gallon of water. Adjust the amount of dilution water by lowering the amount by one-half gallon for every gallon of PolyPavement that is to be added to the dilution water.

IV. NOTE OR CALCULATE THE FOLLOWING:

- | | |
|--|----------------------|
| 1. SOIL MOISTURE REQUIREMENTS (Percent Water, or %W) | _____ % (%W) |
| 2. MIX-IN DILUTION RATIO (%Water to %PolyPavement) | _____ to _____ Ratio |
| 3. POLYPAVEMENT REQUIRED FOR MIX-IN | <u>51.0</u> Gallons |
| 4. WATER REQUIRED FOR MIX-IN | _____ Gallons |
| 5. CAPACITY OF DILUTION TANK | _____ Gallons |
| 6. AREA COVERED PER TANK LOAD | _____ Square Feet |

NOTE: The soil should have already been tested for suitability and for chemical contaminants. If not, the test instructions for soil suitability and chemical contamination are on the following page.

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PRELIMINARY SOIL TESTS

1. SOIL SUITABILITY TEST (Natural Cohesiveness)

TOOLS NEEDED FOR THE SOIL SUITABILITY TEST

- 1 Sixteen Ounce Plastic Bottle of Water
- 1 Hand Spade, Small Garden Type
- 1 One-Gallon Bucket or a smooth non-porous surface

SOIL SUITABILITY TEST INSTRUCTIONS:

- 1. SCOOP UP A SPADE FULL** of representative soil. If the soil has sufficient moisture for compacting, go to Step 3. If the soil is too dry for compacting, go to Step 2. If the soil is too wet or too muddy for compacting, allow the soil to dry a bit before doing this test.
- 2. MOISTEN THE SOIL** with water while mixing it with the hand spade until it is moistened to the point of being ready for compacting.
- 3. SQUEEZE A HANDFUL** of the moistened soil tightly and then open the hand. Observe the handful of soil.
- 4. IF THE SOIL FAILS TO CLUMP** and does not hold together when the hand is opened, the soil is not suitable for PolyPavement treatment.
- 5. IF THE SOIL CLUMPS AND HOLDS TOGETHER** in one piece, leaving no free pebbles or soil in the hand, then take both hands and gently break the soil clump in half.
- 6. IF THE SOIL CLUMP BREAKS INTO TWO CLEAN PIECES**, the soil has sufficient natural cohesiveness and it is suitable for PolyPavement treatment.
- 7. IF THE CLUMP BREAKS APART IN SEVERAL PIECES**, the soil is borderline and requires the addition of more fines or the concentration PolyPavement should be increased.

THE LACK OF NATURAL COHESIVENESS is usually due to the soil having too few fine particles to provide the necessary particle contact points for efficient binding, as with gravel.

THE LACK OF NATURAL COHESIVENESS could also be due to soil contamination. Though rare, oily residuals from herbicide applications or other petro-chemicals can cause the soil to lose its natural cohesiveness.

UNSUITABLE SOIL MUST BE REMOVED, REPLACED OR MODIFIED

2. SOIL CONTAMINATION TEST (Water Absorption)

TOOLS NEEDED FOR SOIL CONTAMINATION TEST

- 1 A Bottle of Clean Water

SOIL CONTAMINATION TEST INSTRUCTIONS:

- 1. SPRINKLE, POUR OR SQUIRT** a few drops of water directly onto the compact dry soil surface.
- 2. OBSERVE THE WATER.** If the water stands on the surface, beads, runs-off or fails to seep into the soil immediately, the soil is probably contaminated and it might not be suitable for PolyPavement treatment.

SOIL CONTAMINATION occurs in soils that have been subjected to or treated with petroleum chemicals, surface acting agents or other man-made chemicals. When contaminants come in contact with soil particles, the soil particles are coated with thin layers of oils or residues that interfere with the physical bonding process.

CONTAMINATED SOIL MUST BE REMOVED, REPLACED OR PRE-TREATED

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APPLICATION METHODS & INSTRUCTIONS

MIX-IN APPLICATION METHODS

GENERAL EQUIPMENT FOR MIX-IN APPLICATION METHODS

1. **Storage:** Indoors or outdoors, buckets, drums, avoid freezing temperatures.
2. **Transfer Equipment:** water pump, hoses, fittings, funnels, buckets.
3. **Spraying Equipment:** Truck/trailer mounted dilution tank with spray bar or hand wand.
4. **Tilling, Mixing Equipment:** tractor drawn or walk behind roto-tiller.
5. **Grading and Leveling Equipment:** hand rakes.
6. **Compacting Equipment:** steel drum roller, hand tamper (achieve 95% Proctor).
7. **Measuring Equipment:** tape measure, metering tank, buckets, calculator.

The equipment must be selected to match the size of the project. See "Field Application Equipment & Guide" on the PolyPavement web site for equipment selection recommendations.

MIX-IN APPLICATION PRECAUTIONS

1. **COMPLETE THE SELECTED APPLICATION PROCESS** on a small scale area (i.e. one square yard) before attempting a full scale project.
2. **DO NOT APPLY** PolyPavement Soil Solidifier during rainfall.
3. **DO NOT APPLY** PolyPavement Soil Solidifier if rain is forecast in the next 24 hours. If rain is expected before the surface of the newly applied PolyPavement Soil Solidifier has dried, cover the wet PolyPavement Soil Solidifier application with a waterproof tarp to prevent rain damage.
4. **DO NOT EXPOSE CONTAINERS OF** PolyPavement Soil Solidifier to freezing temperatures.
5. **DO NOT APPLY** PolyPavement Soil Solidifier at air or ground temperatures less than 42 degrees Fahrenheit.
6. **ALLOW FOR PROPER DRAINAGE** of a PolyPavement Soil Solidifier application. Grade, contour, and compact the soil so that the finished soil surface will be free of depressions.
7. **ALLOW ANY EXCESS MOISTURE** in the treated soil to dry before compacting if necessary, as opposed to compacting soil that is over-wet because it might tend to stick to the roller.
8. **THE MINIMUM DILUTION RATIO** recommended for a PolyPavement mix-in application is two parts water to one part PolyPavement. If a dilution ratio lower than 2 to 1 is used (i.e., 1.5 to 1), then the soil has to be mixed quite a bit more to assure that all of the soil particles are coated with PolyPavement before re-compacting. If the Soil Moisture Field Test shows that the percent of water required for OMC is less than 4%, then the soil is too wet. It might be necessary to allow the soil to dry enough so that the OMC requirement is greater than 4%.

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APPLICATION METHODS & INSTRUCTIONS

ROTO-TILLER APPLICATION METHOD FOR

Tractor Drawn or Walk Behind ROTO-TILLER

GENERAL COVERAGE: 80 Sq. Ft. per Gallon Per Inch of Treatment Depth (See Notes 1 & 3)

AREA COVERED: 2,200 Square Feet, per 55-Gallon Drum at 2 Inches Thick

ROTO-TILLER APPLICATION INSTRUCTIONS

READ THE APPLICATION INSTRUCTIONS THOROUGHLY BEFORE THE DAY OF THE JOB. INSTRUCT EACH EQUIPMENT OPERATOR AND LABORER CAREFULLY BEFORE STARTING THE PROJECT. PLAN AHEAD. CALL POLYPAVEMENT TECHNICAL SUPPORT IF THERE ARE ANY QUESTIONS ABOUT THESE INSTRUCTIONS.

- A. COMPLETE A FIELD APPLICATION PLAN SECTION BY SECTION**
- B. COMPLETE THE PRELIMINARY FIELD DETERMINATIONS 1 through 5 on Page 2.**
- C. COMPLETE THE SOIL MOISTURE FIELD TEST and Calculations on Page 2.**
- D. START POLYPAVEMENT APPLICATION WITH A COMPACT SOIL SURFACE**

1. ROTO-TILL A FULL SECTION (2,200 sq ft) of the in-place soil and loosen it thoroughly to the treatment depth of 2 inches.

2. EVENLY SPRAY-APPLY the full calculated amount of properly diluted PolyPavement Soil Solidifier over the entire loosened soil section.

Dilution Ratio: _____ parts water to 1 part PolyPavement.

3. THOROUGHLY MIX the diluted PolyPavement Soil Solidifier into the soil with the roto-tiller to the full treatment depth (See Note 7).

4. RE-CONTOUR AND LEVEL the treated loose soil surface with a hand rake.

5. RE-COMPACT THE SOIL thoroughly and apply the surface toughening application in Step 6.

6. WET THE SOIL SURFACE EVENLY with 16 to 1 diluted PolyPavement Soil Solidifier. [2-1/2 gallons of PolyPavement and 40 gallons of water]

ALLOW THE SOIL SURFACE TO DRY Apply the surface sealing application below.

7. SURFACE SEALING - WET THE SOIL SURFACE EVENLY with 16 to 1 diluted PolyPavement Soil Solidifier. [1-1/2 gallons of PolyPavement and 24 gallons of water]

ALLOW THE SOIL SURFACE TO DRY. USE THE SURFACE AS INTENDED.

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APPLICATION METHODS & INSTRUCTIONS

MIX-IN APPLICATION NOTES

MIX IN-PLACE & BATCH MIX APPLICATION METHODS

APPLICATION NOTES

NOTE 1: "COVERAGE" is the number of square feet of surface area that can be covered (treated) with one gallon of PolyPavement Soil Solidifier. A "Coverage" of 200 square feet per gallon means that one gallon of PolyPavement is sufficient to achieve the specified end-results over an area of 200 square feet.

NOTE 2: "MSR" is MINIMUM SPREAD RATE. Minimum Spread Rate is stated in gallons or fractions of a gallon per square yard (i.e. "MSR: 0.25 g/sy"). Apply no less diluted PolyPavement Soil Solidifier than the stated "MSR" on every square yard of surface area.

NOTE 3: "TREATMENT DEPTH" is exactly what the term implies. The treatment depth most often recommended for PolyPavement Soil Solidifier is 2 inches. Application equipment limitations make it difficult to control a depth of cut less than 2 inches. The superior strength of PolyPavement seldom requires a treatment depth greater than 4 inches. Deeper treatment can be accomplished with limited lightweight equipment by using multiple lifts.

NOTE 4: SOIL PREPARATION AND GRADING - Remove all vegetation, debris, litter and obstructions. The soil should be graded, compacted and sloped to drain with no low spots or depressions. If the soil surface is excessively dry just prior to applying PolyPavement, then soil pre-wetting might be necessary. Pre-wetting is accomplished by wetting the soil lightly with water or with highly diluted PolyPavement Soil Solidifier (i.e. 100 to 1).

NOTE 5: "SPREAD RATE" is the volume of liquid applied per unit area. Spread Rate is normally stated in terms such as "gallons per square yard" or "liters per square meter". Properly diluted PolyPavement is applied at a spread rate that will assure proper polymer concentration and treatment depth.

NOTE 6: "PROPER DILUTION" is the ratio between the "Percent Water that must be added to the soil to achieve Optimum Moisture Content (OMC) for Compacting" compared to the "Percent PolyPavement that is specified to be added to the soil to achieve the desired end-results". (See "Soil Moisture Field Test" on Page 2)

NOTE 7: THOROUGH MIXING - PolyPavement Soil Solidifier is actually tiny polymer particles suspended in water (emulsified). When PolyPavement particles come in contact with dry soil, they tend to cling to and collect on the soil particles instead of flowing through the soil and coating all of the soil particles evenly. This tendency creates a not-so-obvious under-mixing problem. The problem is solved by thoroughly mixing the soil and the PolyPavement. If there is a question as to whether there has been sufficient mixing, mix some more.