APPENDIX ‘E’

CYCLEGRIP® MMAX SPECIFICATION METHYL METHACRYLATE BIKE LANE TREATMENT

CycleGrip® MMAX SPECIFICATION
Methyl Methacrylate Bike Lane Treatment

1. **USE**: CycleGrip® MMAX is a specialized bike lane treatment system that combines state-of-the-art Methyl Methacrylate resins with hardwearing aggregate and premium pigments to deliver an extremely durable, highly visible and color stable lane delineation treatment that meets the non-slip requirements needed for cyclists.

   CycleGrip® MMAX shall be used to delineate bike lanes and increase bicycle lane presence in applications such as, but not limited to, corridor treatment along the length of a bike lane or cycle track especially at areas where bicycle and vehicular conflict are expected and added safety is needed.

   1.1. CycleGrip® MMAX is only available through Ennis-Flint, or an authorized distributor of Ennis-Flint.

2. **MATERIAL:** Materials used to create CycleGrip® MMAX shall consist of CycleGrip® MMAX Resin, CycleGrip® MMAX Aggregate and catalyst.

   2.1. CycleGrip® MMAX resin.

   2.1.1. CycleGrip® MMAX resin shall have the following properties:

Density	8.1 +/- .35	Lbs/Gal
Tensile	>400 PSI	ASTM D638
Elongation	>180%	ASTM D638
Flash Point	>10°C	ASTM D1310

   2.1.2. CycleGrip® MMAX resin shall be pigmented to meet the following color coordinates:

   2.1.2.1. Daytime chromaticity:

1		2		3		4	
X	y	x	y	x	y	x	y
0.230	0.754	0.266	0.500	0.367	0.500	0.444	0.555

   The daytime luminance factor (Y) shall be at least 20, but no more than 35.

   2.1.2.2. Nighttime chromaticity:

1		2		3		4	
X	y	x	y	x	y	x	y
0.230	0.754	0.336	0.540	0.450	0.500	0.479	0.520

   2.2. CycleGrip® MMAX aggregate shall be provided by the manufacturer and will have a hardness of 9 on the Mohs scale. Aggregate shall be a neutral, light color that will not affect the color of the finished product, and will have a mesh sizing of 24 Grit.

   2.3. Catalyst shall come in a powder form and be supplied in bulk at the maximum usage rate of 0.51 +/- 0.2 lbs (.23 +/- .09 kg) per pail of resin.

3. **APPLICATION EQUIPMENT:**

   3.1. Squeegees shall be designed for heavy duty usage and sourced locally.

   3.2. Rollers shall be medium nap in texture and require a roller cage and handle.

   3.3. Drill shall be high speed, high torque capable of supplying enough power to thoroughly mix CycleGrip® MMAX additives when paired with a paint mixing paddle.

4. **APPLICATION:**

   4.1. Pre-conditions. Aged surfaces containing reflective cracking should be repaired, or it should be expected that reflective cracking may re-appear.

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4.2. Surface preparation. Clean the intended application area thoroughly. All loose particles, dirt, sand dust, etc. must be removed. Broom and use a power blower or compressed air. The surface must be clean, dry and free of all dust, oil, debris and any other material that might interfere with the bond between CycleGrip® MMAX and surface to be treated.

4.2.1. Concrete: All curing compounds shall be completely removed from concrete surfaces prior to installation by shot blasting or grinding. Existing concrete surfaces shall be wire brushed, but may require shot blasting or grinding dependent on condition.

4.2.2. Chemical contaminants: Clean areas containing chemical contaminants such as vehicle fluids, using a degreasing solution, and ensure removal of contaminants and degreasing solution well in advance of the application.

4.2.3. Obstacles: Pavement markings that are to be left in place, utilities, drainage structures, curbs and any other structure within or adjacent to the treatment location shall be masked to protect from application. Existing pavement markings conflicting with the surface treatment should be removed by grinding or water blasting. Extra care should be taken to thoroughly remove the dust and debris caused from grinding.

4.3. Mixing. Catalyst quantity shall be based on ambient and pavement temperature and must be mixed very thoroughly at specified rates and into materials listed in the materials mixing guide. Material shall mix to approximately 2.79 gallons (10.55 liters) and weigh approximately 52 lbs (23.6 kg).

MATERIALS MIXING GUIDE

CycleGrip® MMAX resin CycleGrip® MMAX aggregate	2 (7.6) 25.0 (11.34)	gallons (liters) lbs (kg)
Catalyst < 70° F / 18° C	8 (0.24)	fluid ounces (liters)
Catalyst > 70° F / 18° C	4 (0.12)	fluid ounces (liters)

4.4. Installation. CycleGrip® MMAX shall immediately be poured on to pavement and distributed at 45-50 sq. ft. per pail using a squeegee. Trowels can be used where a squeegee is not effective. Use roller to back roll CycleGrip® MMAX to remove working lines and create a consistent, anti-slip texture. Remove masking as material gels, but before it cures.

4.5. Opening to traffic. CycleGrip® MMAX must be 100% cured, which will be a hardened solid state, before traffic is permitted. Curing typically takes 30-60 minutes and is based on temperature and amount of catalyst added.

5. **PERFORMANCE PROPERTIES:**

5.1. CycleGrip® MMAX will have the following performance properties:

Density	18.5 +/- 0.5	Lbs / Gallon
Solids	>99%	D2205
Build Thickness	90 +/-10	Mils
VOC	<100	Grams/Liter
Pot Life	~15min	AASHTO T237
Skid	>60	ASTM E303
Hardness	50-60	ASTM D2240
Water Absorption	<0.25%	ASTM D570

6. **PACKAGING:**

6.1. CycleGrip® MMAX resin must be supplied in compliant metal pails that have a UN1A2Y1.9/100 rating.

6.2. CycleGrip® MMAX Aggregate must be supplied in 25.0 +/- 0.5 lbs. (11.34 +/- .23 kg) pre-packaged bags or pails.

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7. **STORAGE:** Avoid extreme storage temperatures. Keep materials in dry, protected areas, between 40°F – 80°F. Keep out of direct sunlight and protected from open flame. Use within six months of receipt.
8. **TECHNICAL SERVICES:** Shall be available from the manufacturer upon request.