



CONCRETE MIX DESIGN

DarCole Products, Inc.
 1940 US 41 South
 Sebree, KY 42455
 USA (270) 826-6499

| | |
|--------------|---------------|
| Customer: | Fc Mix |
| Description: | 4000 PSI Pump |

| | |
|-----------|-------------------|
| Mix Code: | UTFCM4KPUMP102020 |
| Date: | 10/20/2020 |

| | | |
|------------------|---------|------|
| Air Range: | Minimum | 3.0% |
| | Maximum | 7.0% |
| Slump Range: | Minimum | 3" |
| | Maximum | 5" |
| Aggregate Ratio: | Coarse | 53% |
| | Fine | 47% |

| | |
|-------------------------|----------|
| Compressive Strength: | 4000 PSI |
| Mortar Content %: | 66.3% |
| Paste Content %: | 31.2% |
| Mix Suitability Factor: | 32.24 |
| Unit Weight: | 142.6 |
| Water/Cement ratio: | 0.45 |

| Material Description | Specification | Quantity (lbs) | Density | Volume | |
|--------------------------|---------------------------------------|----------------|---------|--------|-------|
| Cementious | | | | | |
| Cement | Holcim 1P Blend | ASTM C-150 | 585 | 3.000 | 3.13 |
| Coarse Aggregates | | | | | |
| Coarse Aggregate 1 | Kilgore 21-07014 #3/8 Washed Rock | ASTM C-33 | 1575 | 2.564 | 9.84 |
| Fine Aggregates | | | | | |
| Fine Aggregate 1 | Kilgore 22-09514 Washed Concrete Sand | ASTM C-33 | 1426 | 2.618 | 8.73 |
| | Water: 31.6 gallons | | 263.25 | 1.000 | 4.22 |
| | Air Content 4.0% | | | | 1.08 |
| Total: | | | 3849 | | 27.00 |

| Admixture(s) | Material Description | Specification | OZ/CWT | Density | OZ/YD |
|--------------|------------------------------|---------------------|--------|---------|-------|
| DNL 785 | DarCole Products DarNlok 785 | AASHTO M-194 Type A | 10 | 1.030 | 58.50 |

| | | | |
|--------------|-----------------------------------|--------------|--|
| Reported by: | Ryan Risley-DarCole Products Inc. | Approval by: | |
| Date: | 10/20/2020 | Date: | |

Disclaimer: The information in this chart is to the best of our knowledge, reliable. Users should make their own tests to determine the suitability of these for their own particular purposes. DarCole Products, Inc. makes no warranty of any kind, express or implied, including those of merchantable and fitness for purpose.

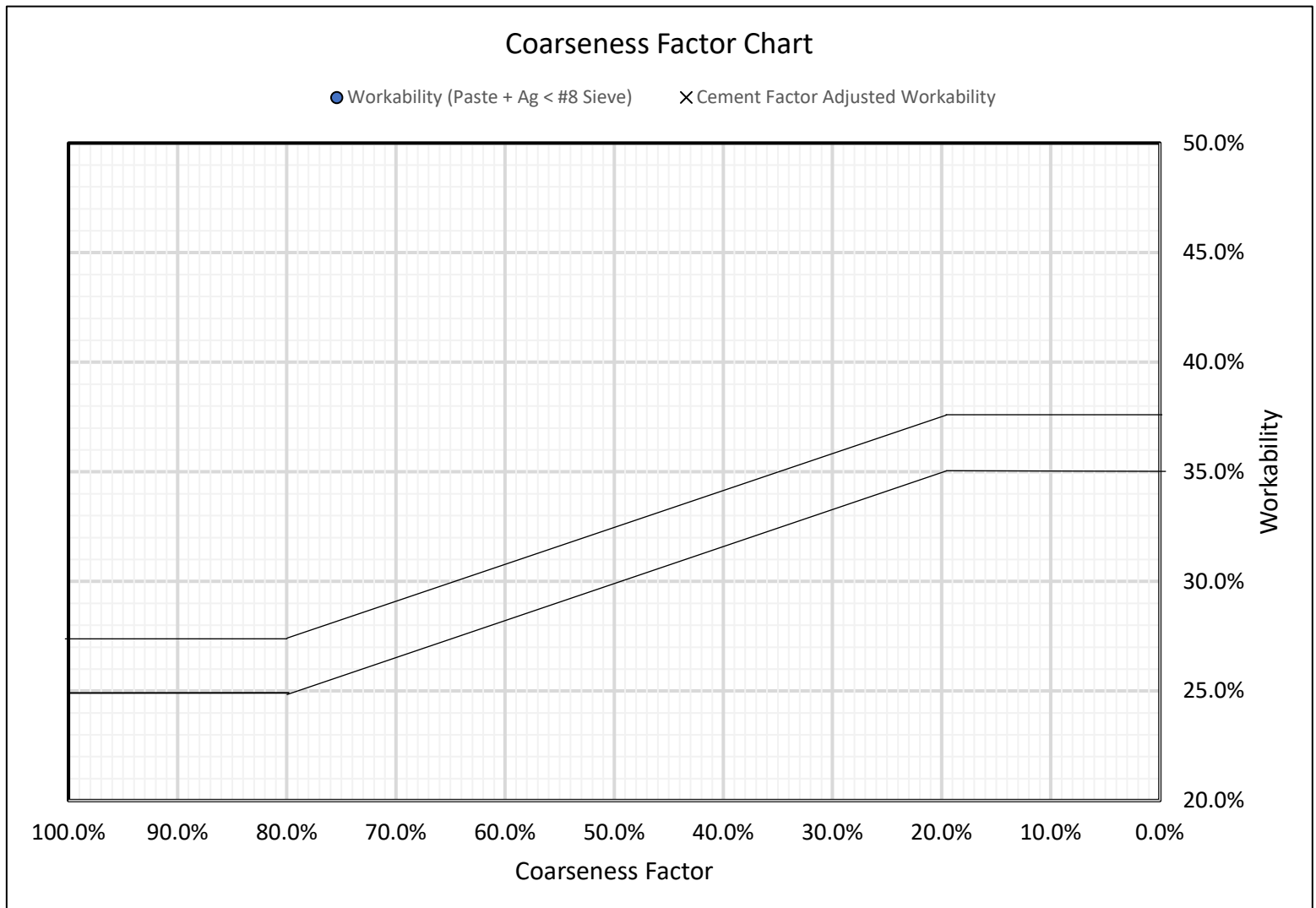


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| Mix Analysis | | | | | | | | |
|---|-------------------------------------|----------------|-----------------------------|--------|--------|---------|--------|--------|
| 66.3% % Mortar | | Paste & Mortar | | | | | | |
| 0.0% % Ag Retained on 3/8 Sieve | | | Vol | %Total | % Agg | %Mortar | %Paste | |
| 49.0% % Ag Passing 3/8 but Retained on #8 Sieve | | +3/8 | 0.00 | 0.0% | 0.0% | | | |
| 0.0% Coarseness Factor | | 3/8-#8 | 9.10 | 33.7% | 49.0% | | | |
| 51.0% Workability (Paste + Ag < #8 Sieve) | | +#8 | 9.10 | 33.7% | 49.0% | | | |
| 51.6% Cement Factor Adjusted Workability | | -#8 | 9.48 | 35.1% | 51.0% | 52.9% | | |
| 28.28 Modified Specific Surface | | Mortar | 17.90 | 66.3% | | | | |
| 32.24 Mix Suitability Factor | | Paste | 8.42 | 31.2% | | 47.1% | | |
| Mix Suitability Factor Guidelines | | Slump Range | Powder | 3.13 | 11.6% | | 17.5% | 37.1% |
| 16-20 | Unstable, too Harsh | 0 | Air | 1.08 | 4.0% | | 6.0% | 12.8% |
| 20-22 | Harsh Mixes-Heavy Vibration | 0-2 | Water | 4.22 | 15.6% | | 23.6% | 50.1% |
| 22-25 | Hard Wearing-Slabs, Precast | 2-3.5 | TOTAL | 27.00 | 100.0% | 100.0% | 100.0% | 100.0% |
| 25-27 | Structural Concrete | 3-4 | Calculated for Total | | | | | |
| 26-28 | Good Pumpable Concrete=Good Surface | 4-5 | | | | | | |
| 27-31 | Pumpable, Lightweight, Flowing | >8 | | | | | | |





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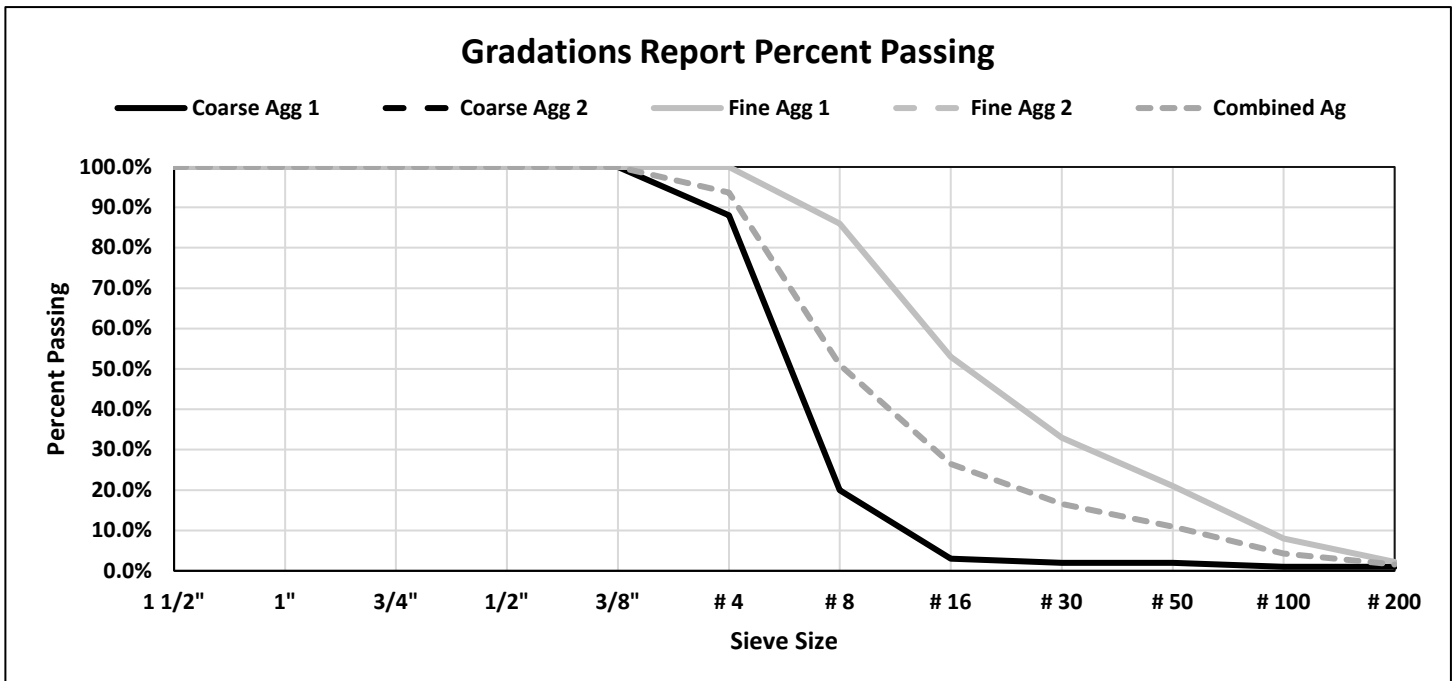
| Aggregate Sieve Analysis | | | | | | | | | | | | |
|--------------------------|--------------|--------|--------------|--|------------|--------|------------|--|-------------|--------|-----------|-------|
| Sieve | Coarse Agg 1 | | Coarse Agg 2 | | Fine Agg 1 | | Fine Agg 2 | | Combined Ag | | Paste+Agg | |
| 1 1/2" | 100.0% | 0.0% | | | 100.0% | 0.0% | | | 100.0% | 0.0% | 100.0% | 0.0% |
| 1" | 100.0% | 0.0% | | | 100.0% | 0.0% | | | 100.0% | 0.0% | 100.0% | 0.0% |
| 3/4" | 100.0% | 0.0% | | | 100.0% | 0.0% | | | 100.0% | 0.0% | 100.0% | 0.0% |
| 1/2" | 100.0% | 0.0% | | | 100.0% | 0.0% | | | 100.0% | 0.0% | 100.0% | 0.0% |
| 3/8" | 100.0% | 0.0% | | | 100.0% | 0.0% | | | 100.0% | 0.0% | 100.0% | 0.0% |
| # 4 | 88.0% | 12.0% | | | 100.0% | 0.0% | | | 93.6% | 6.4% | 95.6% | 4.4% |
| # 8 | 20.0% | 80.0% | | | 86.0% | 14.0% | | | 51.0% | 49.0% | 66.3% | 33.7% |
| # 16 | 3.0% | 97.0% | | | 53.0% | 47.0% | | | 26.5% | 73.5% | 49.4% | 50.6% |
| # 30 | 2.0% | 98.0% | | | 33.0% | 67.0% | | | 16.6% | 83.4% | 42.6% | 57.4% |
| # 50 | 2.0% | 98.0% | | | 21.0% | 79.0% | | | 10.9% | 89.1% | 38.7% | 61.3% |
| # 100 | 1.0% | 99.0% | | | 8.0% | 92.0% | | | 4.3% | 95.7% | 34.2% | 65.8% |
| # 200 | 1.0% | 99.0% | | | 2.2% | 97.8% | | | 1.6% | 98.4% | 21.8% | 78.2% |
| # 325 | 0.0% | 100.0% | | | 0.0% | 100.0% | | | 0.0% | 100.0% | | |
| % Agg | 53.0% | | | | 47.0% | | | | | | | |

| |
|------------------|
| Percent Passing |
| Percent Retained |

Coarse Aggregate 1
 Coarse Aggregate 2
 Fine Aggregate 1
 Fine Aggregate 2

Kilgore 21-07014 #3/8 Washed Rock
 Kilgore 22-09514 Washed Concrete Sand

| | | |
|------------------------|-------------|------------|
| | Fine Agg 1 | Fine Agg 2 |
| F.M. | 2.99 | |
| F.M. Guidelines | | |
| | Fine Sand | 2.2-2.6 |
| | Medium Sand | 2.6-2.9 |
| | Coarse Sand | 2.9-3.2 |





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| Individual Percent Retained | | | | | | |
|-----------------------------|--------------|--------------|------------|------------|-------------|------------|
| Sieve | Coarse Agg 1 | Coarse Agg 2 | Fine Agg 1 | Fine Agg 2 | Combined Ag | Paste + Ag |
| 1 1/2" | 0.0% | | 0.0% | | 0.0% | 0.0% |
| 1" | 0.0% | | 0.0% | | 0.0% | 0.0% |
| 3/4" | 0.0% | | 0.0% | | 0.0% | 0.0% |
| 1/2" | 0.0% | | 0.0% | | 0.0% | 0.0% |
| 3/8" | 0.0% | | 0.0% | | 0.0% | 0.0% |
| # 4 | 12.0% | | 0.0% | | 6.4% | 4.4% |
| # 8 | 68.0% | | 14.0% | | 42.6% | 29.3% |
| # 16 | 17.0% | | 33.0% | | 24.5% | 16.9% |
| # 30 | 1.0% | | 20.0% | | 9.9% | 6.8% |
| # 50 | 0.0% | | 12.0% | | 5.6% | 3.9% |
| # 100 | 1.0% | | 13.0% | | 6.6% | 4.6% |
| # 200 | 0.0% | | 5.8% | | 2.7% | 12.3% |
| % Agg | 53.0% | | 47.0% | | | |

Coarse Aggregate 1 Kilgore 21-07014 #3/8 Washed Rock

Coarse Aggregate 2

Fine Aggregate 1 Kilgore 22-09514 Washed Concrete Sand

Fine Aggregate 2

Gradations Report Individual Percent Retained

