



# Oklahoma Department of Transportation Mix Design Report

Asphalt Concrete, Type S4 (PG 64-22 OK) Mat'l. Code: asco012  
 (Material Full Name and Material Code)  
 Cummins Const Co P/S # m00556  
 (Producer/Supplier Name and Producer/Supplier Code)  
 Cummins Const Co #2728 (Sawyer, OK) - 300TPH PLANT ID # m00556-03  
 (Plant Name and Plant ID)

Insoluble - Recycled ID: I2  
 (Design Type and Design Type ID)  
 WS4qc0101793500  
 (Mix ID)

Aggregate	Producer/Supplier	% USED
Pile # 5	Martin-Marietta (Sawyer, OK) P/S # m002311206	30
'D' Rock	Martin-Marietta (Sawyer, OK) P/S # m002311206	8
Coarse Scrns.	Martin-Marietta (Sawyer, OK) P/S # m002311206	20
Man. Sand	Martin-Marietta (Sawyer, OK) P/S # m002311206	9
Sand (Unlisted Source)	Drake Sand Gay, OK	8
Fine R.A.P.	Contractor / Project Site P/S # Contractor	25

  

Warm Mix Asphalt (WMA) Technology	TEREX (Foaming Process) qual028 Terex Roadbuilding m00801 (Product Name, Material Code, Producer/Supplier Name, Producer/Supplier Code)
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Asphalt Cement:	Asphaltic Cement Type PG 64-22 OK, acem003, Valero (Ardmore, OK), m00352 (Material Full Name, Material Code, Producer/Supplier Name, Producer/Supplier Code)
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Sieve Size	Producer/Supplier:							Comb. Agg.	% Tol. (±)			
	Pile # 5	'D' Rock	Coarse Scrns.	Man. Sand	Sand (Unlisted Source)	Fine R.A.P.	JMF		Min.	Max.	% Tol. (±)	
3/4 in (19 mm)	100	100	100	100	100	100	100	100	100	100	0	
1/2 in (12.5 mm)	74	100	100	100	100	98	92	92	85	99	7	
3/8 in (9.5 mm)	17	94	97	100	100	96	73	73	66	80	7	
#4 (4.75 mm)	3	29	68	99	100	71	51	51	44	58	7	
#8 (2.36 mm)	3	8	48	70	99	52	38	38	33	43	5	
#16 (1.18 mm)	2	3	36	47	98	42	31	31	27	35	4	
#30 (.600 mm)	2	3	30	34	90	35	26	26	22	30	4	
#50 (.300 mm)	1	3	26	25	46	26	18	18	14	22	4	
#100 (.150 mm)	1	2	19	12	3	13	9	9	6	12	3	
#200 (.075 mm)	0.5	1.2	11.6	3.5	1.1	7.7	4.9	4.9	2.9	6.9	2	
AC Content %						5.0	5.5	5.5	5.1	5.9	0.4	

Requires Form 93-E0 signed by the Department for production use. -Oklahoma D.O.T. Materials-

Warm Mix Asphalt (WMA) Additive % 2.0

Mix temperature @ discharge from mixer: 275 (135) ± 20 °F (± 10 °C) **Required**  
 Optimum roadway compaction temperature: 260 (127)  
 Laboratory mixing temperature: 300 (149)  
 Laboratory compaction temperature: 300 (149)

<b>Tests on Asphalt Cement</b>	<b>Found</b>
Specific Gravity @ 77 ° F	1.0100

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Tests on Compressed Mixtures (@ Design AC)			
	# Gyr.	% Density of Gmm	% Density Required
Nini	6	89.3	85.5 - 91.5
Ndes	50		96.0

Tests on Aggregates	Required	Units
Durability Index	85	40 min. %
F.A.A. %U	N/A	%
Flat and Elongated	10	max. %
Fractured Faces	100/100	85/80 min. %
Insoluble Residue	79.9	30 min. %
LA Abrasion	35	40 max. %
Micro-Deval	9.4	N/A %
Permeability	2.4	12.5 max. 10 <sup>-5</sup> cm/s
Sand Equivalent	65	40 min. %
Pba	0.53	
IOC	0.39	%
Gse	2.572	
Gsb	2.538	
Specimen Weight	4650	g

Tests on Compressed Mixtures							
%AC	% Density			% VMA	% VMA Required	% VFA	% VFA Required
	Gmb	Gmm	% Density Required				
5.0	2.262	2.387	94.8	15.3	Design / Field	66.0	72 - 77
5.5	2.276	2.370	96.0	15.3	96.0 / 94.5 - 97.4	73.9	
6.0	2.331	2.354	99.0	13.7		92.7	

**Dust Prop.**  
 1.1 **Dust Prop. Req.**  
 1.0 0.6 - 1.6  
 0.9

**ITS (PSI)** 191.2 N/A min.  
**TSR** 0.95 0.80 / 0.75 min. (Design / Field)  
 Compacted Wt. (lbs/sy/1" thick) = 104.3 @ 5.5 % Asphalt Cement  
 4.2 % New Asphalt Cement

Hamburg Rut Test Depth (mm) 2.32 12.50 max. @ 10,000 cycles

MEETS SPECIFICATION REQUIREMENTS PER SPECIAL PROVISION 708-26(a-f) 09

Comments:

Last Modified By: McComack, Hunter J. hmccomac  
 (User Name and User ID)

Date: 4/25/2018  
 (mm/dd/yyyy)