



# Oklahoma Department of Transportation Mix Design Report

Asphalt Concrete, Type S4 (PG 64-22 OK) Mat'l. Code: asco012

Binder - Recycled ID: B2

(Material Full Name and Material Code)

(Design Type and Design Type ID)

Cummins Const Co P/S # m00556

WS4qc0101792600

(Producer/Supplier Name and Producer/Supplier Code)

(Mix ID)

Cummins Const Co (Woodward, OK) - 12000 lb Batch PLANT ID # m00556-14

(Plant Name and Plant ID)

Aggregate	Producer/Supplier	% USED
5/8" Chips	Dolese Co (Cooperton, OK) P/S # m002723801	15
3/8" Chips	Dolese Co (Cooperton, OK) P/S # m002723801	10
Man. Sand	Martin-Marietta (Snyder, OK) P/S # m002323802	30
Scrns.	Dolese Co (Cooperton, OK) P/S # m002723801	10
Sand (Unlisted Source)	Loomis Sand Cleo Springs, OK	10
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)		
Asphalt Cement: Asphaltic Cement Type PG 64-22 OK, acem003, HollyFrontier (Catoosa, OK), m01028 (Material Full Name, Material Code, Producer/Supplier Name, Producer/Supplier Code)		

Producer/Supplier:	Dolese Co (Cooperton, OK) P/S # m002723801	Dolese Co (Cooperton, OK) P/S # m002723801	Martin-Marietta (Snyder, OK) P/S # m002323802	Dolese Co (Cooperton, OK) P/S # m002723801	Loomis Sand Cleo Springs, OK	Contractor / Project Site P/S # Contractor	Requires Form 93-E0 signed by the Department for production use. -Oklahoma D.O.T. Materials-				
	5/8" Chips	3/8" Chips	Man. Sand	Scrns.	Sand (Unlisted Source)	Fine R.A.P.	Comb. Agg.	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)	95	100	100	100	100	97	99	99	92	100	7
3/8 in (9.5 mm)	58	95	100	100	100	85	89	89	82	96	7
#4 (4.75 mm)	7	12	95	91	100	75	69	69	62	76	7
#8 (2.36 mm)	4	4	70	59	100	55	52	52	47	57	5
#16 (1.18 mm)	1	2	41	37	100	42	37	37	33	41	4
#30 (.600 mm)	1	1	22	25	100	30	27	27	23	31	4
#50 (.300 mm)	1	1	10	18	80	20	18	18	14	22	4
#100 (.150 mm)	1	1	3	14	19	15	8	8	5	11	3
#200 (.075 mm)	0.9	1.3	2.6	12.1	4.5	9.5	5.1	5.1	3.1	7.1	2
AC Content %						4.5	4.9	4.9	4.5	5.3	0.4

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)

Tests on Aggregates	Required	Units
Durability Index	80	40 min. %
F.A.A. %U	N/A	%
Flat and Elongated	10	max. %
Fractured Faces	100/100	85/80 min. %
Insoluble Residue	19.4	N/A %
LA Abrasion	26	40 max. %
Micro-Deval	9.8	N/A %
Permeability	7	12.5 max. 10 <sup>-5</sup> cm/s
Sand Equivalent	77	40 min. %
Pba	0.39	
IOC	0.32	%
Gse	2.666	
Gsb	2.639	
Specimen Weight	4800	g

Tests on Asphalt Cement	Found
Specific Gravity @ 77 °F	1.0100

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Tests on Compressed Mixtures (@ Design AC)			
	# Gyr.	% Density of Gmm	% Density Required
Nini	6	89.8	85.5 - 91.5
Ndes	50		96.0

Tests on Compressed Mixtures							
%AC	Gmb	Gmm	% Density of Gmm	% Density Required	% VMA	% VMA Required	% VFA
4.4	2.354	2.487	94.7	Design / Field	14.7	Design / Field	63.9
4.9	2.369	2.468	96.0	96.0 / 94.5 - 97.4	14.6	14.5 / 14.0	72.6
5.4	2.394	2.449	97.8		14.2		84.5

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

**ITS (PSI)** 129.3 N/A min.  
**TSR** 0.87 0.80 / 0.75 min. (Design / Field)  
 Compacted Wt. (lbs/sy/1" thick) = 108.6 @ 4.9 % Asphalt Cement  
 3.8 % New Asphalt Cement

Hamburg Rut Test Depth (mm) 2.97 12.50 max. @ 10,000 cycles

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

Comments:

Last Modified By:

Suitor, Kevin ksuitor  
(User Name and User ID)

Date: 3/13/2018  
(mm/dd/yyyy)