



# Oklahoma Department of Transportation Mix Design Report

Asphalt Concrete, Type S3 (PG 70-28 OK) Mat'l. Code: asco008  
 (Material Full Name and Material Code)

Binder - Recycled ID: B2  
 (Design Type and Design Type ID)

Cummins Const Co P/S # m00556  
 (Producer/Supplier Name and Producer/Supplier Code)

WS3qc0101360500  
 (Mix ID)

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

Aggregate	Producer/Supplier	% USED
#67 Rock	Dolese Co (Cooperton, OK) P/S # m002723801	28
3/8" Chips	Dolese Co (Cooperton, OK) P/S # m002723801	15
Man. Sand	Martin-Marietta (Snyder, OK) P/S # m002323802	10
Scrns.	Dolese Co (Cooperton, OK) P/S # m002723801	20
Sand (Unlisted Source)	Kline Sand (Camargo, OK)	12
Fine R.A.P.	Contractor / Project Site P/S # Contractor	15
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 70-28 OK, acem002, Lion Oil Co. (Muskogee, OK), m00511 (Material Full Name, Material Code, Producer/Supplier Name, Producer/Supplier Code)		

Sieve Size	#67 Rock	3/8" Chips	Man. Sand	Scrns.	Sand (Unlisted Source)	Fine R.A.P.	Comb. Agg.	% Tol. (±)			
								JMF	Min.	Max.	(±)
1 in (25 mm)	100	100	100	100	100	100	100	100	100	0	
3/4 in (19 mm)	98	100	100	100	100	100	99	92	100	7	
1/2 in (12.5 mm)	59	100	100	100	100	97	88	81	95	7	
3/8 in (9.5 mm)	31	95	100	100	100	85	78	71	85	7	
#4 (4.75 mm)	5	12	95	91	100	75	54	47	61	7	
#8 (2.36 mm)	3	3	70	59	100	55	40	35	45	5	
#16 (1.18 mm)	2	2	45	37	100	42	31	27	35	4	
#30 (.600 mm)	1	1	27	25	94	30	24	20	28	4	
#50 (.300 mm)	1	1	14	18	47	20	14	10	18	4	
#100 (.150 mm)	1	1	8	14	3	15	7	4	10	3	
#200 (.075 mm)	0.6	1.3	4.0	12.5	2.2	9.5	5.0	3.0	7.0	2	
AC Content %						4.0	4.3	3.9	4.7	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) °F (°C) Required ± 20 °F (± 10 °C)  
 Optimum roadway compaction temperature: 260 (127)  
 Laboratory mixing temperature: 300 (149)  
 Laboratory compaction temperature: 300 (149)

Tests on Aggregates	Required	Units
Durability Index	79	40 min. %
F.A.A. %U		N/A %
Flat and Elongated	10	max. %
Fractured Faces	100/100	95/90 min. %
Insoluble Residue	8.6	N/A %
LA Abrasion	24.7	40 max. %
Micro-Deval	12.2	N/A %
Permeability	6.1	12.5 max. 10 <sup>-5</sup> cm/s
Sand Equivalent	78	45 min. %
Pba	0.32	
IOC	0.31	%
Gse	2.689	
Gsb	2.666	
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	7	89.0	85.5 - 90.5
Ndes	65		96.0

Tests on Compressed Mixtures							
%AC	Gmb	Gmm	% Density of Gmm	% Density Required Design / Field	% VMA	% VMA Required Design / Field	% VFA
3.8	2.375	2.529	93.9	14.3	14.3	13.5 / 13.0	57.3
4.3	2.409	2.510	96.0	96.0 / 94.5 - 97.4	13.5	13.5 / 13.0	70.4
4.8	2.436	2.490	97.8	13.0	13.0		83.1

Dust Prop. 1.4 1.3 1.1  
 Dust Prop. Req. 0.6 - 1.6  
 ITS (PSI) 169.4 N/A min.  
 TSR 0.89 0.80 / 0.75 min. (Design / Field)  
 Compacted Wt. (lbs/sy/1" thick) = 110.4 @ 4.3 % Asphalt Cement  
 3.7 % New Asphalt Cement

Hamburg Rut Test Depth (mm) 2.28 12.50 max. @ 15,000 cycles

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

Comments: \_\_\_\_\_

Last Modified By: Williams, Bobby Ray bwilli01  
 (User Name and User ID)

Date: 1/31/2017  
 (mm/dd/yyyy)