

ARIZONA DEPARTMENT OF TRANSPORTATION  
**SOIL AND AGGREGATE TABULATION**

**USE CAPITAL LETTERS**

LAB NUMBER				ORG NUMBER				MATL		TYPE		PUR-POSE		TEST LAB	SIZE	SIZE %	
TEST NO.				LOT OR SUFFIX		SAMPLED BY				MO	DAY	YEAR		TIME		MILITARY TIME	
SAMPLED FROM										LIFT NO.		RDWY		STATION			
ORIGINAL SOURCE					PROJECT ENGINEER / SUPERVISOR					PROJECT NUMBER			IF MILEPOST, INPUT DECIMAL TRACS NUMBER				
REMARKS																	
CONTACT PHONE NO.																	

**ARIZ 201**

- Dried to Constant Wt.  
 Not Dried to Constant Wt.

**ARIZ 248**

- Alt 1    Alt 2    Alt 3  
 Alt 4    Alt 5

% OVERSIZE

+ 3"      + 6"      COARSE FACTOR =  $\frac{100}{\text{COARSE SIEVE TOTAL}}$

WET SAMPLE PREWEIGHT = \_\_\_\_\_

WET WT. OF - #4 = \_\_\_\_\_

- #4 SPLIT WET WT. = \_\_\_\_\_

WEIGHTS RETAINED	% RET.	% PASS	SPECS.	CUMULATIVE % RET. FINENESS MODULUS
3"				
2 1/2"				
2"				
1 1/2"				
1"				
3/4"				
1/2"				
3/8"				
1/4"				
#4				
- #4				
Total				

IF TOTAL SAMPLE IS WASHED:

UNWASHED WT. = \_\_\_\_\_

WASHED WT. = \_\_\_\_\_

ELUTRIATION = \_\_\_\_\_

DRY WT. OF -#4 SPLIT      FINE FACTOR =  $\frac{\% \text{ PASS } \#4}{\text{DRY WT. OF } -\#4 \text{ SPLIT}}$

**WEIGHTS RETAINED**

WEIGHTS RETAINED	% RET.	% PASS	SPECS.
#8			
#10			
#16			
#30			
#40			
#50			
#100			
#200			
-#200			
Total			
Elutriation			

Dry Weight

$\text{FINENESS MODULUS} = \frac{\text{TOTAL CUMULATIVE \% RET.}}{100}$

T = AASHTO Tests

Liquid Limit (LL)	T - 89			
Plastic Limit (PL)	T - 90			
Plasticity Index (PI) = LL - PL	T - 90			
<b>SPECS.</b>				
Abrasion method (A,B,C,D)	T - 96			
@ 100 Revolutions			%	
@ 500 Revolutions			%	
Absorption, H <sub>2</sub> O	ARIZ 210			%
	ARIZ 211			
Specific Gravity, SSD	ARIZ 210			
	ARIZ 211			
Specific Gravity, OD	ARIZ 210			
	ARIZ 211			
Specific Gravity, Apparent	ARIZ 210			
	ARIZ 211			
<b>PCF</b>				
Proctor Method				
Optimum Moisture				%
Max. Dry Density				
Sand Equivalent	T - 176 ARIZ 242 (MAFC)			
At Least One Fractured Face	ARIZ 212			%
At Least Two Fractured Faces	ARIZ 212			%
Uncompacted Void Content	ARIZ 247			%
Moisture Content	T - 255 T - 265			%
Flakiness Index	ARIZ 233			%
Carbonates	ARIZ 238			%
pH	ARIZ 236 or 237			
Resistivity (ohm-cm)	ARIZ 236			
Soluble Salts (PPM)	ARIZ 237			
<b>PCF</b>				
Unit Weight	T - 19			%
Voids	T - 19			%
Organic Impurities	T - 21			
Clay Lumps	T - 112			%
Chloride Content (PPM)	ARIZ 736			
Sulfate Content (PPM)	ARIZ 733			
Exchangeable Sodium (%)	ARIZ 729			
Exchangeable Sodium (PPM)	ARIZ 729			
Calcium Carbonate (%)	ARIZ 732			

- A - ARIZ 225  
C - ARIZ 226  
D - ARIZ 226  
AD - ARIZ 245  
A1 - ARIZ 232  
AD1 - ARIZ 246

- WHITE   
YELLOW   
BLUE

RECEIVED DATE

TEST OPERATOR & DATE

SUPERVISOR

SEE BACK ALSO

**Specific Gravity and Absorption of Fine Aggregate (ARIZ 211)**

Bulk Sp. Gr. (O.D. basis) =  $\frac{A}{B + S - C} = \frac{(\quad)}{(\quad) + (\quad) - (\quad)} = \underline{\hspace{2cm}}$

where: A = mass of oven-dry sample in air, g.  
 B = mass of pycnometer filled with water, g.  
 C = mass of pycnometer with sample and water to calibration mark, g.  
 S = mass of saturated-surface-dry sample, g.

Bulk Sp. Gr. (SSD basis) =  $\frac{S}{B + S - C} = \frac{(\quad)}{(\quad) + (\quad) - (\quad)} = \underline{\hspace{2cm}}$

Apparent Sp. Gr. =  $\frac{A}{B + A - C} = \frac{(\quad)}{(\quad) + (\quad) - (\quad)} = \underline{\hspace{2cm}}$

Absorption, percent =  $\frac{S - A}{A} \times 100 = \frac{(\quad) - (\quad)}{(\quad)} \times 100 = \underline{\hspace{2cm}}\%$

**Specific Gravity and Absorption of Coarse Aggregate (ARIZ 210)**

Bulk Sp. Gr. (O.D. basis) =  $\frac{A}{B - C} = \frac{(\quad)}{(\quad) - (\quad)} = \underline{\hspace{2cm}}$

where: A = mass of oven-dry sample in air, g.  
 B = mass of saturated-surface-dry sample in air, g.  
 C = mass of saturated sample in water, g.

Bulk Sp. Gr. (SSD basis) =  $\frac{B}{B - C} = \frac{(\quad)}{(\quad) - (\quad)} = \underline{\hspace{2cm}}$

Apparent Sp. Gr. =  $\frac{A}{A - C} = \frac{(\quad)}{(\quad) - (\quad)} = \underline{\hspace{2cm}}$

Absorption, percent =  $\frac{B - A}{A} \times 100 = \frac{(\quad) - (\quad)}{(\quad)} \times 100 = \underline{\hspace{2cm}}\%$

**Flakiness Index (Ariz 233)**

Sieve Size	1-1/2"	1"	3/4"	1/2"	3/8"	1/4"	#4	#8
% Pass from Sieve Analysis								
% Ret. from Sieve Analysis (F)								
Weight of Test Sample								
Weight Passing Slot								
* Percent Passing Slot (P)								
NOTE: Only the size fractions which have 10 or more percent retained are tested for passing the appropriate slot, and used to determine the Flakiness Index by the equation below.	* Percent Passing Slot (P) = $\frac{\text{Weight Passing Slot}}{\text{Weight of Test Sample}} \times 100$							

FLAKINESS INDEX =  $\frac{[F (1-1/2") \times P (1-1/2")] + \dots + [F (No. 8) \times P (No. 8)]}{[F (1-1/2") + \dots + F (No. 8)]}$

FLAKINESS INDEX =  $\underline{\hspace{2cm}} = \underline{\hspace{2cm}}\%$

TEST OPERATOR & DATE PERFORMED

- Coarse Sieve \_\_\_\_\_
- Fine Sieve \_\_\_\_\_
- P.I. \_\_\_\_\_
- Abrasion \_\_\_\_\_
- Fine Sp. Gr. \_\_\_\_\_
- Coarse Sp. Gr. \_\_\_\_\_
- Proctor \_\_\_\_\_
- Sand Equiv. \_\_\_\_\_
- Fractured Faces \_\_\_\_\_
- Uncompacted Voids \_\_\_\_\_
- Moisture \_\_\_\_\_
- Flakiness Index \_\_\_\_\_
- Carbonates \_\_\_\_\_
- pH \_\_\_\_\_
- Resistivity \_\_\_\_\_
- Soluble Salts \_\_\_\_\_
- Unit Weight /Voids \_\_\_\_\_
- Org. Impurities \_\_\_\_\_
- Clay Lumps \_\_\_\_\_
- Chloride Content \_\_\_\_\_
- Sulfate Content \_\_\_\_\_
- Exchangeable Sodium \_\_\_\_\_
- Calcium Carbonates \_\_\_\_\_

**Fractured Particles (ARIZ 212)**

- At least one Fractured Face:
- Wt. of test sample (Wa) = \_\_\_\_\_
- Wt. of fract. particles (Wf) = \_\_\_\_\_
- Fract. Particles (FF) =  $\frac{Wf}{Wa} \times 100 = \underline{\hspace{2cm}}\%$
- At least two Fractured Faces:
- Wt. of test sample (Wa) = \_\_\_\_\_
- Wt. of fract. particles (W<sub>2</sub>) = \_\_\_\_\_
- Fract. Particles (FF<sub>2</sub>) =  $\frac{W_2}{Wa} \times 100 = \underline{\hspace{2cm}}\%$

Moisture Content (T255, T265) =  $\frac{\text{Wet Weight} - \text{Dry Weight}}{\text{Dry Weight}} \times 100 = \frac{(\quad) - (\quad)}{(\quad)} \times 100 = \underline{\hspace{2cm}}\%$

**SAND EQUIVALENT (AASHTO T 176) (ARIZ 242 FOR M.A.F.C.)**

SAND READING \_\_\_\_\_  
 CLAY READING \_\_\_\_\_  
 SAND EQUIV. \_\_\_\_\_  
 SAND READING \_\_\_\_\_  
 CLAY READING \_\_\_\_\_  
 SAND EQUIV. \_\_\_\_\_  
 SAND READING \_\_\_\_\_  
 CLAY READING \_\_\_\_\_  
 SAND EQUIV. \_\_\_\_\_  
 AVERAGE SAND EQUIV. = \_\_\_\_\_

**ABRASION (AASHTO T96)**

% Abrasion =  $\frac{A - B}{A} \times 100$   
 Where: A = Original Mass (5000 ± 10 grams)  
 B = Plus #12 Material after Abrasion  
 100 REV: \_\_\_\_\_ X 100 = \_\_\_\_\_ %  
 500 REV: \_\_\_\_\_ X 100 = \_\_\_\_\_ %  
 TYPE OF ABRASION \_\_\_\_\_

**PLASTICITY INDEX (AASHTO T89 & 90)**

LIQUID LIMIT (LL):  
 BOTTLE # \_\_\_\_\_ TARE WT. OF BOTTLE \_\_\_\_\_ # BLOWS \_\_\_\_\_  
 % MOISTURE =  $\frac{(\text{WET WT. WITH BOTTLE}) - (\text{DRY WT. WITH BOTTLE})}{(\text{DRY WT. WITH BOTTLE}) - (\text{TARE WT. OF BOTTLE})} \times 100$   
 =  $\frac{(\quad) - (\quad)}{(\quad) - (\quad)} \times 100 = \underline{\hspace{2cm}}\%$   
 LIQUID LIMIT = \_\_\_\_\_ (FOR 25 BLOWS)  
 PLASTIC LIMIT (PL):  
 BOTTLE # \_\_\_\_\_ TARE WT. OF BOTTLE \_\_\_\_\_  
 PLASTIC LIMIT =  $\frac{(\text{WET WT. WITH BOTTLE}) - (\text{DRY WT. WITH BOTTLE})}{(\text{DRY WT. WITH BOTTLE}) - (\text{TARE WT. OF BOTTLE})} \times 100$   
 =  $\frac{(\quad) - (\quad)}{(\quad) - (\quad)} \times 100 = \underline{\hspace{2cm}}\%$   
 PLASTICITY INDEX (PI):  
 PI = LL - PL = ( \_\_\_\_\_ ) - ( \_\_\_\_\_ ) = \_\_\_\_\_