



ADSORBENT PROPERTY SUMMARY SHEET

Product:	5A 16x40	Form:	granular
Source:	UOP	Color:	tan
Lot No.:	2007001316	Date:	October 24, 2007
Type:	zeolite	Filename:	Adsorbent Summary 5A.wpd

SOLID DENSITY: (measured in methanol)

$$\rho_{Solid} = \rho_S = (W_2 - W_1) / (V - [W_3 - W_2] / \rho_L)$$

W_1 = flask wt. (g) W_2 = flask+solid wt. (g) W_3 = flask+solid+liquid wt. (g)
 V = flask vol. (cm³) ρ_L = liquid density (g/cm³) ρ_S = solid density (g/cm³)

Results: 2.6958 g/cm³ 2.7221 g/cm³ 2.7043 g/cm³ lyk
 Avg.: **2.7074** ± **0.0134** g/cm³

BULK DENSITY: (measured in air)

$$\rho_{Bulk} = \rho_B = (W_2 - W_1) / V$$

W_1 = vessel wt. (g) W_2 = vessel+solid wt. (g)
 V = vessel internal vol. (cm³) ρ_B = bulk density (g/cm³)

Results: 0.7851 g/cm³ 0.7850 g/cm³ lyk
 0.7932 g/cm³ 0.7864 g/cm³
 Avg.: **0.7874** ± **0.0039** g/cm³

PARTICLE DENSITY:

$$\rho_{Particle} = \rho_P = W_1 / (V - [W_2 / \rho_G])$$

W_1 = particle wt. (g) W_2 = particle +glass wt. (g)
 V = vessel vol. (cm³) ρ_G = glass density (g/cm³)

Results: 1.0053 g/cm³ 1.0094 g/cm³ 1.0415 g/cm³ lyk
 Avg.: **1.0187** ± **0.0198** g/cm³

VOID FRACTIONS:

$$\epsilon = 1 - \rho_B / \rho_S = \epsilon_B + \epsilon_P (1 - \epsilon_B) = 0.7092$$

$$\epsilon_B = 1 - \rho_B / \rho_P = 0.2271$$

$$\epsilon_P = 1 - \rho_P / \rho_S = \phi_P / (\phi_P + 1 / \rho_S) = 0.6237$$

Where: ϕ_P = particle specific pore volume = $(\epsilon_P / (1 - \epsilon_P)) / \rho_S = 0.6123 \text{ cm}^3/\text{g}$

PARTICLE SIZE: Measured using

Method B

lyk

Size (mm)	Number %	Size (mm)	Number %	Average Diameter
- 0.500	0.88%	0.801 - 0.900	22.81%	Number: 0.8371 mm
0.501 - 0.600	8.77%	0.901 - 1.000	18.42%	Sauter: 0.9113 mm
0.601 - 0.700	11.40%	1.001 - 1.100	9.65%	
0.701 - 0.800	21.93%	1.101 -	6.14%	