



ADSORBENT PROPERTY SUMMARY SHEET

Product: 5A 16x40	Form: Granular
Source: UOP	Color: Tan
Lot No.: 2007001316	Date: June 12, 2003
Type: Zeolite	Filename: BASF-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: 2.7124 g/cm³ 2.7499 g/cm³ 2.724 g/cm³ LYK

Avg.: **2.7288** ± **0.0192** 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: 0.7313 g/cm³ 0.7379 g/cm³ LYK

 0.7269 g/cm³ 0.7452 g/cm³

Avg.: **0.7353** ± **0.0080** 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: 1.0550 g/cm³ 1.047 g/cm³ 1.0737 g/cm³ LYK

Avg.: **1.0584** ± **0.014** g/cm³

VOID FRACTIONS:

$$\epsilon = 1 - \rho_B / \rho_S = \epsilon_B + \epsilon_P (1 - \epsilon_B) = 0.7305$$

$$\epsilon_B = 1 - \rho_B / \rho_P = 0.3053$$

$$\epsilon_P = 1 - \rho_P / \rho_S = \phi_P / (\phi_P + 1 / \rho_S) = 0.6121$$

$$\text{Where: } \phi_P = \text{particle specific pore volume} = (\epsilon_P / (1 - \epsilon_P)) / \rho_S = 0.5783 \text{ cm}^3/\text{g}$$

PARTICLE SIZE: Measured using

Procedure B

LYK

<u>Size (mm)</u>	<u>Number %</u>	<u>Size (mm)</u>	<u>Number %</u>	<u>Average Diameter</u>
- 0.500	5.92%	0.801 - 0.900	25.66%	Number: 0.7718 mm
0.501 - 0.600	10.53%	0.901 - 1.000	11.84%	Sauter: 0.8528 mm
0.601 - 0.700	13.82%	1.001 - 1.100	5.92%	
0.701 - 0.800	23.03%	1.101 -	3.29%	