

Internal Angle of Friction

Structural grade LWA's provide an essentially cohesionless, granular fill that develops stability from inter-particle friction. Extensive testing on large 250 x 600 mm (10 x 24 in. high) specimens has confirmed angles of internal friction of more than 40 degrees (1). Testing of expanded slate lightweight aggregate in triaxial and direct shear shows angles of internal friction of 40 to 46 degrees. When tested in direct shear in accordance with ASTM, the internal angle of friction is between 42 and 44 degrees. The following is a chart of triaxial and direct shear tests performed on expanded slate lightweight aggregate.

| Date | Testing Agency | Direct/ Triaxial | Material Size | Angle of Internal Friction |
|---------|----------------|---------------------|---------------|----------------------------|
| 9-06-05 | S&ME | Direct | 3/4" | 44.6° |
| 8-22-05 | ECS | Triaxial | 5/16" | 41.6° |
| 1-10-03 | Mactec | Triaxial | 3/4" | 43.2° |