

HOLCIM DUQUESNE SLAG

AIR COOLED BLAST FURNACE SLAG

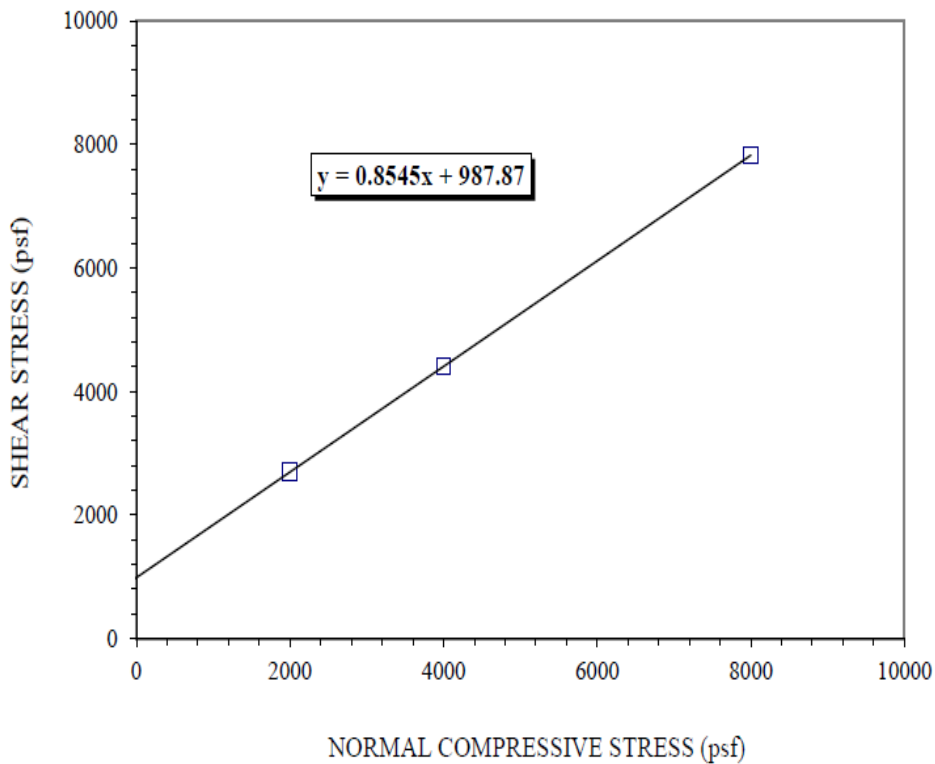
#8 Sheer
Test Results

INTERFACE : 12" Direct Shear of #8 Aggregate
@ 88.2 pcf & 7.1 % M.C.

PEAK SHEAR

FRICITION ANGLE (deg) : $\phi = 40.5$
COEFFICIENT OF FRICTION : = 0.855
COHESION [Calculated] (psf): a = 988

- NOTES:
- 1.) Specimen was lightly compacted at the as-received moisture content.
 - 2.) The specimen was loaded & seated for 1 hour prior to shearing.
 - 3.) The peak friction angle was calculated using linear regression on the three data points.



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Duquesne Slag Operations
890 Noble Drive
West Mifflin, PA 15122
Tel.: 412-461-1163
www.holcim.us

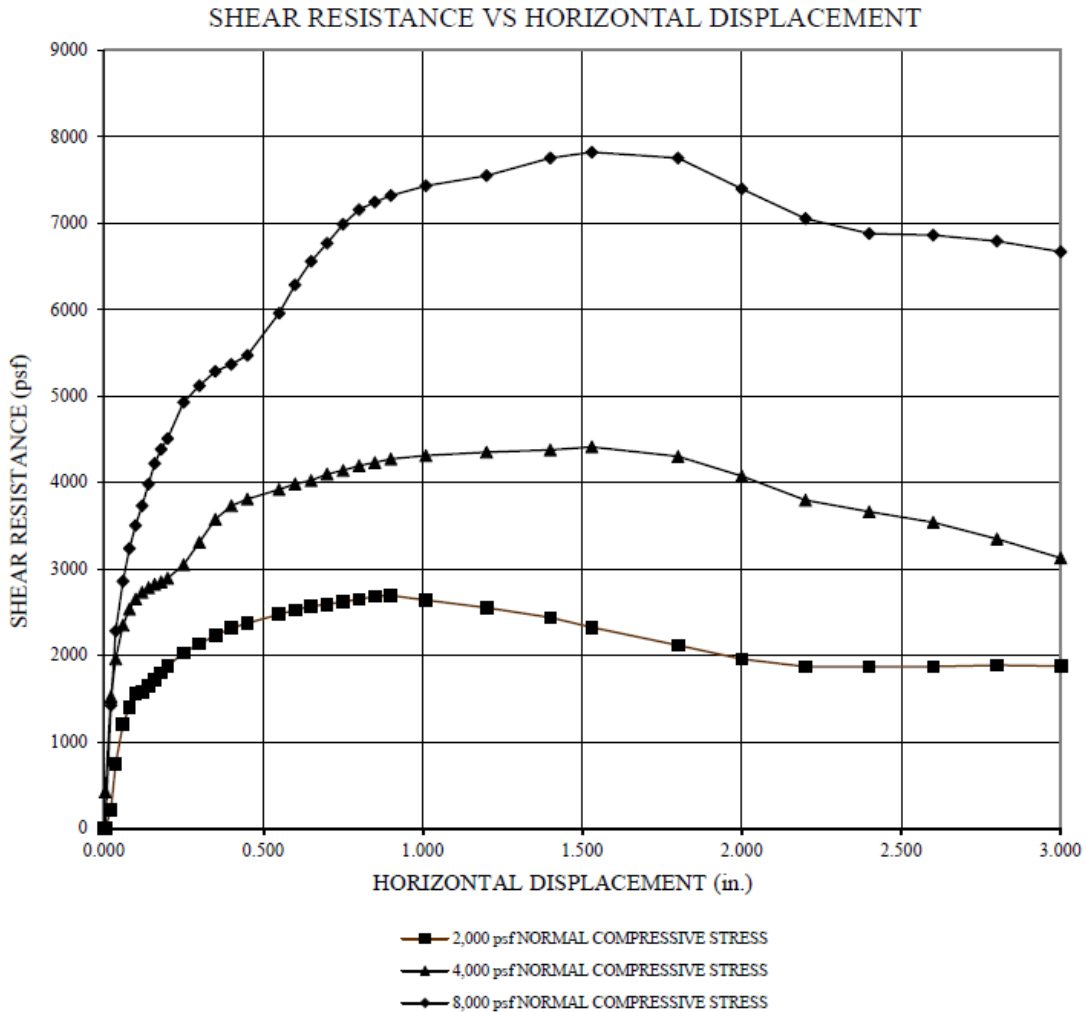


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STRAIN RATE (in / min) : 0.04
PLACEMENT CONDITION: Dry

DIRECT SHEAR UNIT: Geo Test 1
NORMAL LOAD: Hydraulic Cylinder

NORMAL LOAD (psf)			NORMAL LOAD (psf)			NORMAL LOAD (psf)		
2000			4000			8000		
PEAK SHEAR STRESS (psf)			PEAK SHEAR STRESS (psf)			PEAK SHEAR STRESS (psf)		
2693			4411			7822		
PEAK SECANT ANGLE (deg)			PEAK SECANT ANGLE (deg)			PEAK SECANT ANGLE (deg)		
53.4			47.8			44.4		
RESIDUAL SHEAR (psf)			RESIDUAL SHEAR (psf)			RESIDUAL SHEAR (psf)		
1877			3126			6670		
RESID. SECANT ANGLE (deg)			RESID. SECANT ANGLE (deg)			RESID. SECANT ANGLE (deg)		
43.2			38.0			39.8		
HORIZONTAL			HORIZONTAL			HORIZONTAL		
DISPLACE.	SHEAR FORCE	STRESS	DISPLACE.	SHEAR FORCE	STRESS	DISPLACE.	SHEAR FORCE	STRESS
(in.)	(lbs)	(psf)	(in.)	(lbs)	(psf)	(in.)	(lbs)	(psf)
0.000	0	0	0.000	0	0	0.000	0	0
0.005	1	1	0.005	420	420	0.005	2	2
0.023	214	214	0.023	1523	1523	0.023	1423	1423
0.038	746	746	0.038	1962	1962	0.038	2282	2282
0.060	1205	1205	0.060	2351	2351	0.060	2857	2857
0.080	1399	1399	0.080	2536	2536	0.080	3237	3237
0.100	1562	1562	0.100	2653	2653	0.100	3503	3503
0.120	1572	1572	0.120	2731	2731	0.120	3732	3732
0.140	1649	1649	0.140	2781	2781	0.140	3981	3981
0.160	1721	1721	0.160	2820	2820	0.160	4222	4222
0.180	1798	1798	0.180	2850	2850	0.180	4385	4385
0.200	1879	1879	0.200	2892	2892	0.200	4511	4511
0.250	2030	2030	0.250	3048	3048	0.250	4929	4929
0.300	2133	2133	0.300	3310	3310	0.300	5122	5122
0.350	2231	2231	0.350	3575	3575	0.350	5288	5288
0.400	2313	2313	0.400	3729	3729	0.400	5369	5369
0.450	2372	2372	0.450	3809	3809	0.450	5472	5472
0.550	2475	2475	0.550	3920	3920	0.550	5958	5958
0.600	2525	2525	0.600	3983	3983	0.600	6287	6287
0.650	2569	2569	0.650	4023	4023	0.650	6560	6560
0.700	2592	2592	0.700	4096	4096	0.700	6767	6767
0.750	2621	2621	0.750	4141	4141	0.750	6988	6988
0.800	2649	2649	0.800	4196	4196	0.800	7158	7158
0.850	2681	2681	0.850	4232	4232	0.850	7245	7245
0.900	2693	2693	0.900	4273	4273	0.900	7319	7319
1.010	2640	2640	1.010	4312	4312	1.010	7433	7433
1.200	2553	2553	1.200	4353	4353	1.200	7551	7551
1.400	2438	2438	1.400	4378	4378	1.400	7755	7755
1.530	2326	2326	1.530	4411	4411	1.530	7822	7822
1.800	2116	2116	1.800	4301	4301	1.800	7754	7754
2.000	1958	1958	2.000	4076	4076	2.000	7397	7397
2.200	1872	1872	2.200	3796	3796	2.200	7054	7054
2.400	1866	1866	2.400	3663	3663	2.400	6882	6882
2.600	1871	1871	2.600	3540	3540	2.600	6860	6860
2.800	1885	1885	2.800	3348	3348	2.800	6793	6793
3.000	1877	1877	3.000	3126	3126	3.000	6670	6670

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