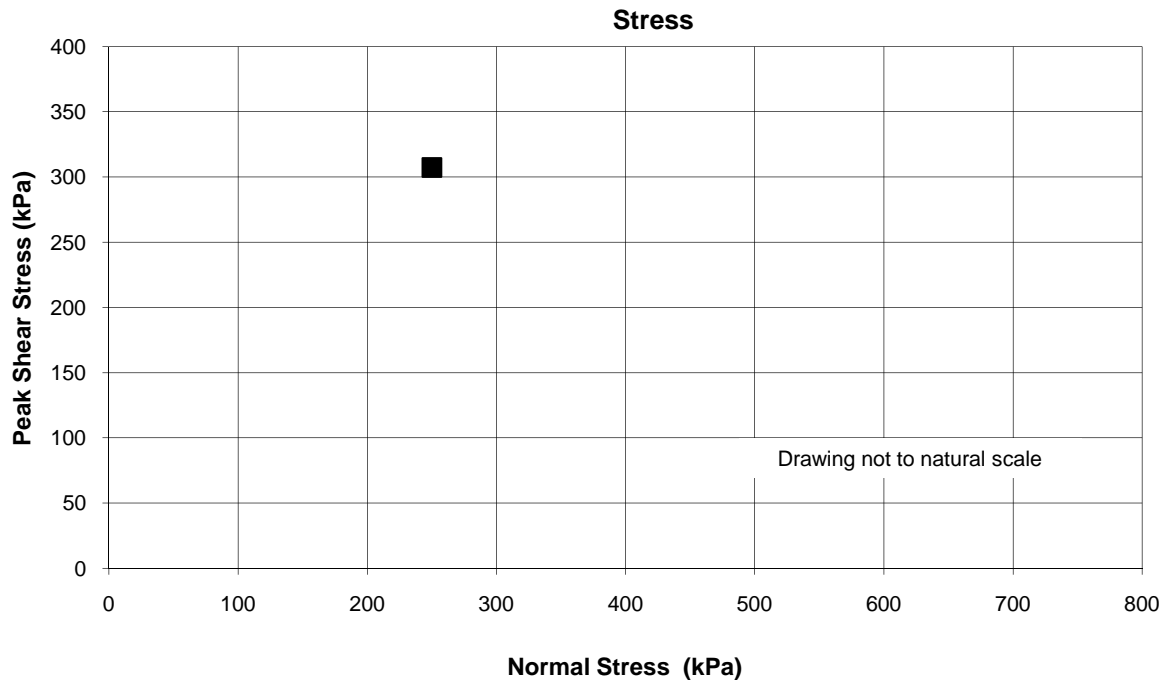


## Direct Shear Testing of Soils Under Consolidated Drained Conditions

**Reference**  
ASTM D 3080-04

<b>Client:</b>	Dundee Precious (Krumovgrad) BV	<b>Sample No.:</b>	n/a
<b>Project:</b>	Krumovgrad Gold Project	<b>Sample Location:</b>	n/a - Waste Rock
<b>Location:</b>	Bulgaria	<b>Depth (m):</b>	n/a
<b>Project No.:</b>	09-1221-3019/5000/3000	<b>Lab ID No:</b>	22



Bottom of Shear Box

Top of Shear Box

	February 19, 2010	BEW	March 9, 2010
TESTED BY	DATE	CHECKED BY	DATE

Direct Shear Testing of Soils Under Consolidated Drained Conditions					Reference ASTM D 3080-04	
<b>Client:</b>	Dundee Precious (Krumovgrad) BV		<b>Sample No.:</b>	n/a		
<b>Project:</b>	Krumovgrad Gold Project		<b>Sample Location:</b>	n/a - Waste Rock		
<b>Location:</b>	Bulgaria		<b>Depth (ft):</b>	n/a		
<b>Project No.:</b>	09-1221-3019/5000/3000		<b>Lab ID No:</b>	22		
<b>Test Condition:</b>	air dry		<b>Equipment Description:</b>	LDS		
<b>Visual Description:</b>	-		<b>Normal LVDT:</b>	Serial No.:	HLS50/9686	
	Disturbed sample		<b>Shear Load Cell:</b>	Serial No.:	2C202 10K	
	Peak		<b>Vertical LVDT:</b>	Serial No.:	HLS25M4407	
<b>Remarks:</b>	Area correction not applied to normal and shear stress calculation					
<b>Initial Sample Dimensions</b>						
<b>Test No.</b>			2			
<b>Shear box geometry</b>			Rectangular			
<b>Length (mm)</b>			250.00			
<b>Width (mm)</b>			150.00			
<b>Depth (mm)</b>			194.63			
<b>Area (cm<sup>2</sup>)</b>			3.75E-02			
<b>Volume (cm<sup>3</sup>)</b>			7.32E-03			
<b>Weight Volume Relationships</b>						
<b>Sample Type</b>			PEAK			
<b>Dry Mass (g)</b>						
<b>Initial <math>\gamma_{wet}</math> (kN/m<sup>3</sup>)</b>						
<b>Final <math>\gamma_{wet}</math> (kN/m<sup>3</sup>)</b>						
<b>Initial <math>\gamma_{dry}</math> (kN/m<sup>3</sup>)</b>						
<b>Final <math>\gamma_{dry}</math> (kN/m<sup>3</sup>)</b>						
<b>Final water content (%)</b>						
<b>Specific Gravity (assumed)</b>						
<b>Initial Void Ratio, e</b>						
<b>Initial Saturation (%)</b>						
<b>Test Results</b>						
<b>Rate of Deformation (mm/min)</b>			0.83			
<b>Normal Stress (kPa)</b>			250			
<b>Peak Shear Stress (kPa)</b>			307			
<b>Residual Shear Stress (kPa)</b>						
<b>Consolidation Results</b>						
<b>Normal Stress (kPa)</b>			250			
<b>t<sub>90</sub> (Taylor Method) (min)</b>			---			
<b>Calculated t<sub>50</sub> (min)</b>			---			
<b>Change in height <math>\Delta H_c</math> (mm)</b>			---			
		February 19, 2010		BEW		March 9, 2010
TESTED BY	DATE		CHECKED BY		DATE	

## Direct Shear Testing of Soils Under Consolidated Drained Conditions

**Reference**  
ASTM D 3080-04

**Client:** Dundee Precious (Krumovgrad) BV

**Project:** Krumovgrad Gold Project

**Location:** Bulgaria

**Project No.:** 09-1221-3019/5000/3000

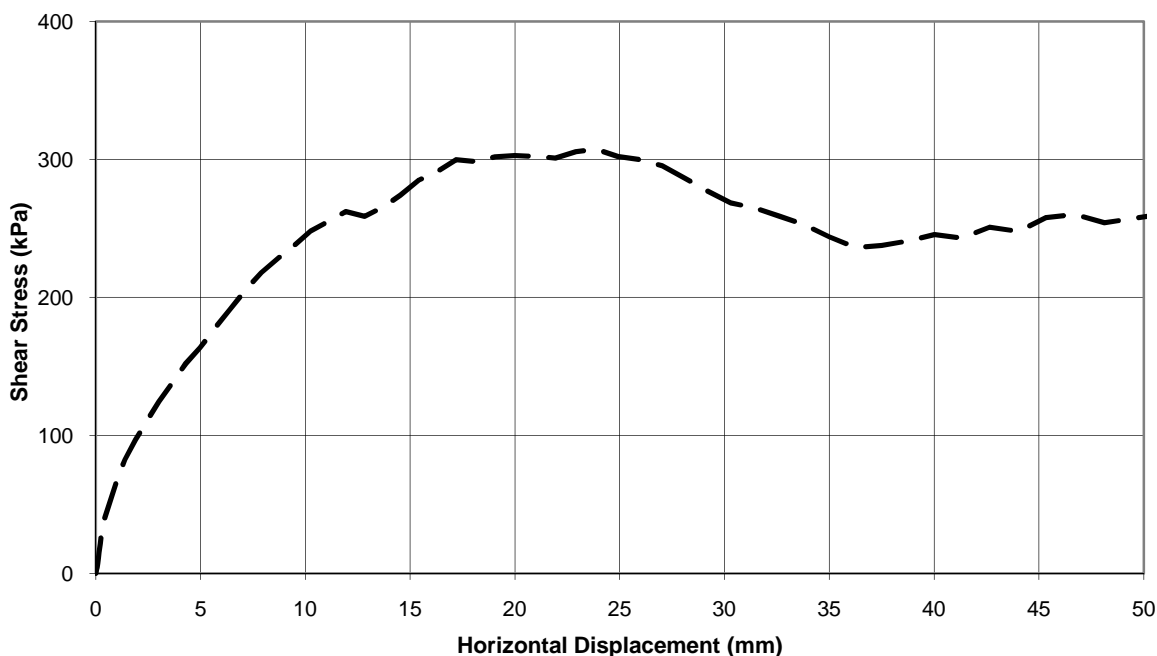
**Sample No.:** n/a

**Sample Location:** n/a - Waste Rock

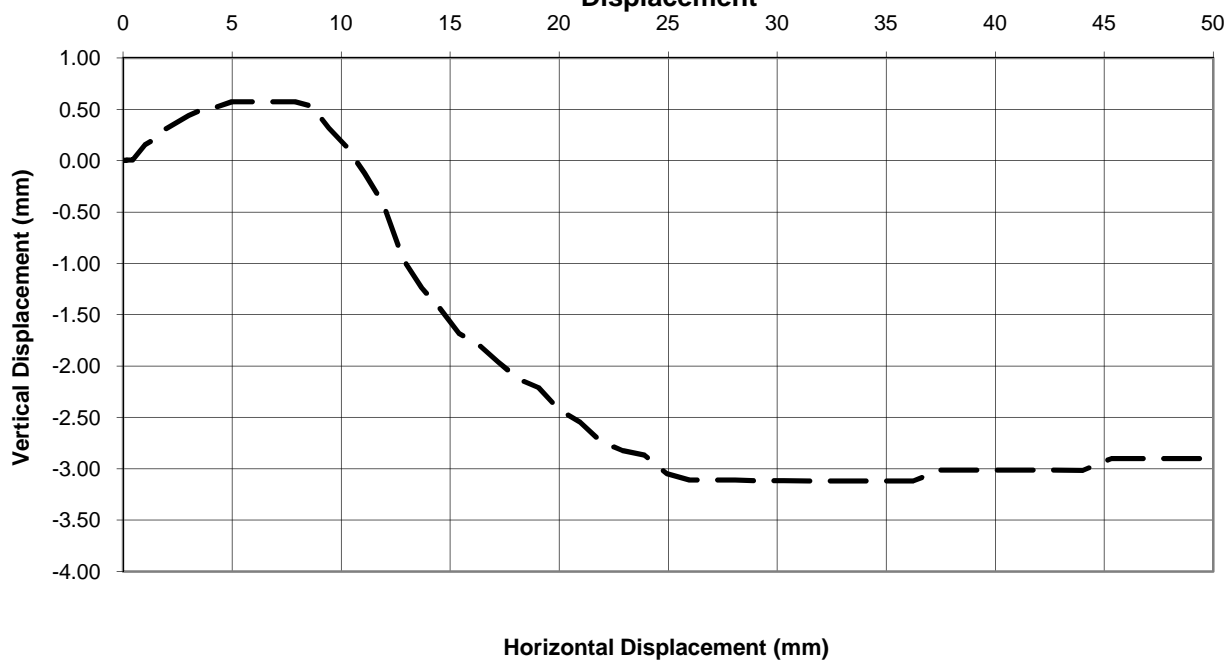
**Depth (m):** n/a

**Lab ID No:** 22

**Shear Stress**



**Displacement**



February 19, 2010

BEW

March 9, 2010

TESTED BY

DATE

CHECKED BY

DATE

## Direct Shear Testing of Soils Under Consolidated Drained Conditions

**Reference**

ASTM D 3080-04

<b>Client:</b>	Dundee Precious (Krumovgrad) BV	<b>Sample No.:</b>	n/a
<b>Project:</b>	Krumovgrad Gold Project	<b>Sample Location:</b>	n/a - Waste Rock
<b>Location:</b>	Bulgaria	<b>Depth (m):</b>	n/a
<b>Project No.:</b>	09-1221-3019/5000/3000	<b>Lab ID No:</b>	22

Normal Stress , kPa		Normal Stress , kPa		PEAK		Normal Stress , kPa	
				Normal Stress , kPa	250		

Horz	Shear	Vert	Horz	Shear	Vert	Horz	Shear	Vert	Horz	Shear	Vert
Disp	Stress		Disp	Stress	Disp	Disp	Stress	Disp	Disp	Stress	Disp
mm	kPa	mm	mm	kPa	mm	mm	kPa	mm	mm	kPa	mm
						0.00	0.0	0.000			
						0.00	0.2	0.002			
						0.02	1.2	0.003			
						0.03	2.5	0.003			
						0.07	4.4	0.003			
						0.10	7.3	0.004			
						0.13	10.8	0.006			
						0.17	15.2	0.005			
						0.22	21.6	0.006			
						0.28	30.2	0.006			
						0.44	41.1	0.006			
						1.01	67.7	0.158			
						1.40	82.4	0.203			
						1.89	96.8	0.303			
						3.01	124.4	0.439			
						3.65	138.2	0.502			
						4.29	152.2	0.524			
						4.99	163.7	0.575			
						5.69	177.6	0.575			
						6.40	191.3	0.575			
						7.13	205.3	0.575			
						7.90	217.9	0.575			
						8.65	227.7	0.530			
						9.44	237.1	0.319			
						10.25	248.1	0.135			
						11.08	255.1	-0.124			
						11.93	262.3	-0.418			
						12.83	258.8	-0.952			
						13.68	265.3	-1.235			
						14.53	274.0	-1.436			
						15.41	285.0	-1.684			
						16.30	291.2	-1.792			
						17.19	299.9	-1.960			
						18.16	298.4	-2.127			
						19.05	301.8	-2.208			
						20.01	302.7	-2.423			

## Direct Shear Testing of Soils Under Consolidated Drained Conditions

**Reference**

ASTM D 3080-04

<b>Client:</b>	Dundee Precious (Krumovgrad) BV	<b>Sample No.:</b>	n/a
<b>Project:</b>	Krumovgrad Gold Project	<b>Sample Location:</b>	n/a - Waste Rock
<b>Location:</b>	Bulgaria	<b>Depth (m):</b>	n/a
<b>Project No.:</b>	09-1221-3019/5000/3000	<b>Lab ID No:</b>	22

Normal Stress , kPa		Normal Stress , kPa		PEAK		Normal Stress , kPa	
				Normal Stress , kPa	250		

Horz	Shear	Vert	Horz	Shear	Vert	Horz	Shear	Vert	Horz	Shear	Vert
Disp	Stress		Disp	Stress	Disp	Disp	Stress	Disp	Disp	Stress	Disp
mm	kPa	mm	mm	kPa	mm	mm	kPa	mm	mm	kPa	mm
						20.96	302.1	-2.546			
						21.93	301.0	-2.740			
						22.90	305.6	-2.823			
						23.90	307.3	-2.867			
						24.93	302.1	-3.049			
						25.97	299.7	-3.110			
						27.03	295.3	-3.110			
						28.07	286.6	-3.111			
						29.17	277.0	-3.118			
						30.30	268.5	-3.117			
						31.45	264.7	-3.118			
						32.59	259.0	-3.119			
						33.78	252.6	-3.119			
						34.99	244.0	-3.119			
						36.24	236.2	-3.118			
						37.50	237.6	-3.013			
						38.75	240.9	-3.013			
						40.02	245.5	-3.013			
						41.33	243.0	-3.014			
						42.64	251.0	-3.014			
						44.01	247.9	-3.015			
						45.33	257.9	-2.900			
						46.71	260.1	-2.901			
						48.12	254.2	-2.901			
						49.58	257.5	-2.901			
						50.91	260.4	-2.901			

	February 19,2010	BEW	March 9, 2010
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