Moisture Content

Location			Job ref.			
			Borehole/Pit no.			
Soil description			Sample No.			
			Depth			m
Test method BS1377: Part 2: 1990: 3.2			Date			
Related Test						
Specimen Ref.						
Container No.						
Mass of wet soil + container (m_2) g						
Mass of dry soil + container (m_3) g						
Mass of Container (m_1) g						
Mass of Moisture ($m_2 - m_3$) g						
Mass of dry Soil ($m_3 - m_1$) g						
Moisture Content $w = \frac{(m_2 - m_3)}{(m_3 - m_1)}$ %						

	Operator	Checked	Approved

Form 2A

Saturation moisture content of Chalk

Location		Job ref.	
		Borehole/Pit no.	
Soil description		Sample No.	
		Depth	m
Test method BS1377: Part 2: 1990: 3.3		Date	

Density							
Specimen no.							
Mass of Specimen (m_s)	g						
Mass of specimen + filler + wax (m_w)	g						
Mass of Wax (m_w - m_s)	g						
Density of Wax (p_p)	Mg/m^3						
suspended in water	g						
Volume of Specimen (V_s) = (m_w - m_g) - ((m_w - m_s)/P_p)	cm^3						
Bulk Density	Mg/m^3						

Moisture Content							
Container No.							
Mass of wet soil + container (m_2)	g						
Mass of dry soil + container (m_3)	g						
Mass of Container (m_1)	g						
Mass of Moisture (m_2 - m_3)	g						
Mass of dry Soil (m_3 - m_1)	g						
Moisture Content $w = \frac{(m_2 - m_3)}{(m_3 - m_4)}$	%						

Dry Density	Mg/m^3						
Saturation moisture content (ws)	%						

	Operator	Checked	Approved

Form 2B

BS 1377 : Part 2 : 1990

Liquid limit (cone penetrometer) and plastic limit

Location		Job ref.	
		BH No	
Soil description		Smple No	
		Depth	m
Test method BS1377: Part 2: 1990: 4.3/4.4		Date	

Plastic Limit Test No		1	2	3	4	Average
Container no.						
Mass of wet soil + container	g					
Mass of dry soil + container	g					
Mass of Container	g					
Mass of Moisture	g					
Mass of dry Soil	g					
Moisture Content	%					

Liquid Limit Test No.		1	2	3	4
Initial dial guage reading	mm				
Final dial gauge reading	mm				
Average penetration	mm				
Container no.					
Mass of wet soil + container	g				
Mass of dry soil + contaier	g				
Mass of container	g				
Mass of moisture	g				
Mass of Dry Soil	g				
Moisture Content	%				

Sample Preparation *

as received
washed on 425 um sieve
air dried at ..... deg C
oven dried at ..... deg C
not known
proportion retained
on 425um sieve ..... %

Liquid Limit %

Plastic Limit %

Plasticity Index

Delete as appropriate

Operator	Checked	Approved

Form 2C

Liquid limit (casagrande method) and plastic limit

Location	Job ref.	
	BH No	
Soil description	Sample No.	
	Depth	m
Test method BS1377: Part 2: 1990: 4.5/4.6	Date	

Plastic Limit Test No.		1	2	3	4	Average
Container no.						
Mass of wet soil + container	g					
Mass of dry soil + container	g					
Mass of Container	g					
Mass of Moisture	g					
Mass of dry Soil	g					
Moisture Content	%					

Liquid Limit Test No.		1	2	3	4	5
Number of Bumps						
Container no.						
Mass of wet soil + container	g					
Mass of dry soil + contaier	g					
Mass of container	g					
Mass of moisture	g					
Mass of Dry Soil	g					
Moisture Content	%					

Sample Preparation *

as received
washed on 425 um sieve
air dried at ..... deg C
oven dried at ..... deg C
not known
proportion retained
on 425um sieve ..... %

Liquid Limit %

Plastic Limit %

Plasticity Index

Delete as appropriate

Operator	Checked	Approved

Form 2D

Shrinkage limit (cylindrical specimen)

Location		Job ref.	
		Borehole/Pit no.	
Soil description		Sample No.	
		Depth	m
Test method BS1377: Part 2: 1990: 6.3		Date	

Initial Condition

Immersion Tank:		Specimen		Mass g	
Diameter Dmm		Length mm		Volume cm3	
Volume Factor PiD^2 / 4000		Diameter mm		Density Mg/m3	

Test Data

Measurement no.									
Date									
Time									
	Zero	mm							
Readings	with sample	mm							
	difference	mm							
	Volume	mm							
Specimen	mass	mm							
	density	mm							
Volume per 100g dry soil		cm3							
Moisture content		%							

Proportion Retained on 425 um sieve.....%

Shrikage Ratio

Shrinkage Limit

Operator	Checked	Apprved

Form 2E

Shrinkage limit (disc specimen)

Location		Job ref.	
		Borehole/Pit no.	
Soil description		Sample No.	
		Depth	m
Test method BS1377: Part 2: 1990: 6.4		Date	

TEST DATA

Specimen reference							
Shrinkage dish no.							
Mass of wet soil + dish	m3	g					
Mass of dish	m3	g					
Mass of wet soil	m1 = m3 - m2	g					
Mass of dry soil + dish	m4	g					
Mass of dry soil	md = m4 - m2	g					
Initial Moisture content	$w1 = \frac{(m1 - md)}{md} * 100$	%					
shrinkage dish	V1.	mL					
displaced by dry soil	Vd.	mL					
Volume of shrinkage	V1 - Vd	mL					
Shrinkage limit	$Ws = W1 - \frac{(V1 - Vd)}{md} * 100$	%					
Shrinkage Ratio	$Rs = \frac{md}{Vd}$						
Given moisture content	W	%					
Volumetric Shrinkage	$Vs = \frac{W - Ws}{Rs}$						

DATA FOR SHRINKAGE CURVE

Measurement No.			1	2	3	4	5	6
Mass of soil pat	m	g						
Volume of soil pat	V	mL						
Volume per 100 g of dry soil	$U = \frac{(V)}{md} * 100$							
Moisture content	$w = \frac{(m - md)}{md} * 100$	%						

Proportion Retained on 425 um sieve.....%

Shrinkage limit

Shrinkage ratio

Volumetric shrinkage

Optor	Checked	Apprd

Form 2F

Linear Shrinkage

Location		Job ref.	
		Borehole/Pit no.	
Soil description		Sample No.	
		Depth	m
Test method BS1377: Part 2: 1990: 6.5		Date	

TEST DATA

Specimen reference							
Percentage passing 425 um sieve							
Initial Length	Lo	mm					
Oven-dried length	Ld	mm					
Linear shrinkage	$100*(1-\frac{Ld}{Lo})$	%					

	Operator	Checked	Approved

Form 2G

Density by immersion in water

Location	Job ref.	
	Borehole/Pit no.	
Soil description	Sample No.	
	Depth	m
Test method BS1377: Part 2: 1990: 7.3	Date	

Density of wax used (Pp) =	Mg/m3						
Sample refernce							
Mass of Soil sample(ms)	g						
Mass of specimen after filling air voids(mf)	g						
Mass of specimen after Waxing (mw)	g						
Mass of Wax (mp=mw - mf)	g						
suspended in water (mg)	g						
Volume of Specimen (Vs) = (mw - mg) - ((mp)/Pp)	cm3						
Bulk Density p = Ms/Vs	Mg/m3						

Moisture Content						
Moisture Content Container No.						
Moisture Content (w)	%					
Dry Density pd = 100p/(100+w)	Mg/m3					

	Operator	Checked	Approved

Form 2H

Density by water displacement

Location		Job ref.	
		Borehole/Pit no.	
Soil description		Sample No.	
		Depth	m
Test method BS1377: Part 2: 1990: 7.4		Date	

Density of wax used (Pp) =	Mg/m3						
Sample refernce							
Mass of Soil sample(ms)	g						
Mass of specimen after filling air voids(mf)	g						
Mass of specimen after Waxing (mw)	g						
Mass of Wax (mp=mw - mf)	g						
Mass of receiver + displaced water (m2)	g						
Mass of receiver empty (m1)	g						
Volume of Specimen (Vs) = (mw - mg) - ((mp)/Pp)	cm3						
Bulk Density p = Ms/Vs	Mg/m3						

Moisture Content						
Moisture Content Container No.						
Moisture Content (w)	%					
Dry Density pd = 100p/(100+w)	Mg/m3					

	Operator	Checked	Approved

Form 2J

Particle Density (gas jar)

Location		Job ref.	
		Borehole/Pit no.	
Soil description		Sample No.	
		Depth	m
Test method BS1377: Part 2: 1990: 8.2		Date	

Method of preparation							
Sample refernce		1	1	1	1	1	1
Mass of gas jar, plate,soil and water (m3)	g						
Mass of gas jar, plate and soil (m2)	g						
Mass of gas jar,plate and water (m4)	g						
Mass of gas jar and plate (m1)	g						
Mass of soil (m2-m1)	g						
Mass of water in full jar (m4-m1)	g						
Mass of water used (m3-m2)	g						
Volume of soil particles (m4-m1)-(m3-m2)	mL						
Particle Density ps = (m2-m1)/(m4-m1)-(m3-m2)	Mg/m3						
Average Value	Mg/m3						

	Operator	Checked	Approved

Form 2K

Density by immersion in water

Location				Job ref.			
				Borehole/Pit no.			
Soil description				Sample No.			
				Depth		m	
Test method BS1377: Part 2: 1990: 8.3/8.4				Date			
Method of preparation							
Small/large pyknometer							
Specimen refernce							
Mass of bottle,soil and water (m3)	g						
Mass of bottle and soil (m2)	g						
Mass of bottle full of water (m4)	g						
Mass of bottle (m1)	g						
Mass of soil (m2-m1)	g						
Mass of water in full bottle (m4-m1)	g						
Mass of water used (m3-m2)	g						
Volume of soil particles (m4-m1)-(m3-m2)	mL						
Particle Density ps = (m2-m1)/(m4-m1)-(m3-m2	Mg/m3						
Average Value ps	Mg/m3						
	Operator			Checked		Approved	
						Form 2L	

BS 1377 : Part 2 : 1990

Particle size distribution (sieving)

Location		Job ref.	
		Borehole/Pit no.	
Soil description		Sample No.	
		Depth	m
Test method	BS1377: Part 2: 1990: 9.2/9.3/9.4	Date	17-Oct-09

Initial dry mass m1 g

BS test sieve	Mass retained g		Percentage retained (m/m1)*100	Cumulative percentage passing
	actual	corrected m		
75 mm	6	36	66	96
63 mm	7	37	67	97
50 mm	8	38	68	98
37.5 mm	9	39	69	99
28 mm	10	40	70	100
20 mm	11	41	71	101
Passing 20 mm m2	12	42	72	102
Total (Check with m1)	13	43	73	103
riffled m3	14	44	74	104
riffled and washed m4	15	45	75	105
Correction factor (m2/m3)	16	46	76	106
14 mm	17	47	77	107
10 mm	18	48	78	108
6.3 mm	19	49	79	109
Passing 6.3 mm m5	20	50	80	110
Total (Check with m4)	21	51	81	111
riffled m6	22	52	82	112
Correction factor (m2 / m5) * (m5/m6)	23	53	83	113
5 mm	24	54	84	114
3.35 mm	25	55	85	115
2 mm	26	56	86	116
1.18 mm	27	57	87	117
600 um	28	58	88	118
425 um	29	59	89	119
300 um	30	60	90	120
212 um	31	61	91	121
150 um	32	62	92	122
63 um	33	63	93	123
Passing 63 um mf or me	34	64	94	124
Total (check with m6)	35	65	95	125

*Delete as appropriate

	Operator	Checked	Approved

Form 2M

BS 1377 : Part 2 : 1990

Particle Size Distribution (Pipette Sedimentation)

Location		Job ref.	
		Borehole/Pit no.	
Soil description		Sample No.	
		Depth	m
Test method	BS1377: Part 2: 1990: 9.7	Date	
Method of preparation			

CALIBRATION

Pipette No.		
Volume of pipette Vp		mL

SAMPLE DATA

Dry mass of soil		g
Particle density measured/assumed *		Mg/m3
Viscosity of water.....C *		mPa.s
D = 0.005531 * sqrt((n*Hr)/(ps-1)t)		mm*

PRETREATMENT*

Pretreated with			
Initial dry mass of sample	mo	g	
Dry mass after pretreatmer	m	g	
Pretreatment loss	mo-m	g	
		%	

$$K = \frac{(W1 \text{ etc} - Wr) * 100}{m}$$

At 25deg C, D = 0.05221*sqrt((ps-1)t)

TEST DATA

Pipette sample ref.								only	
Date									
Time									
Elapsed Time	min								
Temperature	degC								
Bottle No.									
Mass of bottle + solids	g								
Mass of bottle	g								
Mass of solids in Vp m1 etc.	g							mr	
Mass of solids in 500 mL W1 etc.	g							Wr	
Mass of soil in 500 mL W1 etc,-Wr	g								
Particle diameter	mm								
Percentage finer than D	%								

*Delete as appropriate

	Operator	Checked	Approved

Form 2P

BS 1377 : Part 2 : 1990

Particle Size Distribution (Hydrometer Sedimentation)

Location		Job ref.	
		Borehole/Pit no.	
Soil description		Sample No.	
		Depth	m
Test method	BS1377: Part 2: 1990: 9.6	Date	

Method of preparation

CALIBRATION AND SAMPLE DATA **PRETREATMENT***

Hydrometer no.			Pretreated with		
Meniscus correction	C_m		Initial dry mass of sample	mo	g
Reading in dispersant	Ro		Dry mass after pretreatment	m	g
Calibration equation	hr = ... - ..... Rh		Pretreatment loss	mo-m	g
Dry mass of soil	m	g			%

Particle Density

measured/assumed * ps Mg/m3

Viscosity of water.....C * mPa.s

D = 0.005531*sqrt(n*Hr)/(ps-1)t mm

K = ((100*ps)/(m*(ps-1))/Rd%

TEST DATA

Date	Time	Elapsed	Temp. T	Reading	Rn'+Cm	Effective	Particle	Rh'-Ro'	Percentage finer

*Delete as appropriate

	Operator	Checked	Approved

Form 2Q