Feng, S., & Vardanega, P. J. (2019). Correlation of the hydraulic conductivity of fine-grained soils with water content ratio using a database. *Environmental Geotechnics*, 6(5), 253–268.
<https://doi.org/10.1680/jenge.18.00166>

Peer reviewed version

Link to published version (if available):
[10.1680/jenge.18.00166](https://doi.org/10.1680/jenge.18.00166)

[Link to publication record in Explore Bristol Research](#)
PDF-document

University of Bristol - Explore Bristol Research

General rights

This document is made available in accordance with publisher policies. Please cite only the published version using the reference above. Full terms of use are available:
<http://www.bristol.ac.uk/red/research-policy/pure/user-guides/ebr-terms/>

This content has not been peer-reviewed or edited by ICE Publishing.
The accuracy and content of this supplementary file is the sole responsibility of the author.

ONLINE SUPPLEMENT

Table S1: Regression result of k (m/s)= aX^b for each soil type

Publication	Sources	w_L	n	$X=e$				$X=e^3/(1+e)$				ΔR^2	ΔRD
				a^*	b^*	R^2	RD	a^*	b^*	R^2	RD		
Sridharan et al. (1986a)	Al-Bentonite	108	5	2.02×10^{-11}	2.6	1	15.1	4.21×10^{-11}	1.06	1	14.5	-0.002	0.59
Benson and Trast (1995)	Alluvial-1	29	15	4.63×10^{-7}	8.36	0.48	71.87	3.02×10^{-6}	3.09	0.48	72.25	0.005	-0.37
Benson and Trast (1995)	Alluvial-2	24	15	5.21×10^{-8}	5.80	0.41	76.76	1.97×10^{-7}	2.15	0.41	76.70	-0.001	0.06
Tavenas et al. (1983b)	B6 clay	34	6	5.38×10^{-10}	2.48	0.92	27.44	1.08×10^{-9}	1.00	0.92	27.74	0.002	-0.30
Sridharan et al. (1986a)	Ba-Bentonite	108	4	3.18×10^{-12}	4.5	1	6.93	1.13×10^{-11}	1.88	1	6.42	-0.001	0.51
Leroueil et al. (1990)	Backebol clay	88	5	4.89×10^{-11}	4.03	0.99	7.98	1.51×10^{-10}	1.70	0.99	8.40	0.001	-0.43
Horpibulsuk et al. (2011)	Bangkok clay-1	71	7	6.12×10^{-11}	4.37	1.00	6.11	2.12×10^{-10}	1.77	0.99	7.27	0.002	-1.17
Horpibulsuk et al. (2011)	Bangkok clay-2	100	7	1.62×10^{-11}	3.92	0.99	7.58	4.93×10^{-11}	1.65	0.99	8.65	0.002	-1.07
Horpibulsuk et al. (2011)	Bangkok clay-3	77	7	4.49×10^{-11}	4.15	0.99	7.60	1.48×10^{-10}	1.70	0.99	8.56	0.002	-0.96
Horpibulsuk et al. (2011)	Bangkok clay-4	105	7	1.83×10^{-11}	3.34	0.98	14.95	4.72×10^{-11}	1.40	0.97	16.02	0.003	-1.08
Raymond (1966)	Bentonite-1	118	28	1.89×10^{-13}	12.58	0.92	28.64	6.36×10^{-12}	5.31	0.92	28.37	-0.002	0.27
Sivapullaiah et al. (2000)	Bentonite-2	344	26	3.86×10^{-13}	3.33	0.97	17.73	9.40×10^{-13}	1.46	0.97	17.55	-0.001	0.18
Towhata et al. (1993)	Bentonite-3	450	9	5.73×10^{-14}	3.16	0.98	13.95	1.36×10^{-13}	1.40	0.97	16.08	0.006	-2.12
Horpibulsuk et al. (2011)	Bentonite-4	131	6	1.46×10^{-12}	4.81	1.00	4.44	5.77×10^{-12}	2.05	1.00	4.79	0.000	-0.34
Horpibulsuk et al. (2011)	Bentonite-5	127	6	2.29×10^{-12}	4.48	0.99	8.22	8.33×10^{-12}	1.89	0.99	9.63	0.003	-1.42
Horpibulsuk et al. (2011)	Bentonite-6	129	6	3.31×10^{-12}	3.86	0.98	12.81	1.03×10^{-11}	1.61	0.98	14.28	0.004	-1.46
Horpibulsuk et al. (2011)	Bentonite-7	102	6	2.25×10^{-12}	5.36	0.98	15.62	1.05×10^{-11}	2.24	0.97	16.90	0.004	-1.28

This content has not been peer-reviewed or edited by ICE Publishing.
The accuracy and content of this supplementary file is the sole responsibility of the author.

Nagaraj et al. (1993)	Bentonite-8	300	6	3.54×10^{-15}	6.38	0.98	13.1	1.35×10^{-14}	2.95	0.98	13.2	0.000	-0.10
Nagaraj et al. (1993)	Black cotton soil-1	84	5	1.36×10^{-11}	6.29	1.00	3.67	8.04×10^{-11}	2.63	1.00	3.88	0.000	-0.21
Nagaraj et al. (1993)	Black cotton soil-2	84	18	1.21×10^{-11}	7.4	0.99	8.26	9.81×10^{-11}	3.04	0.99	8.2	0.000	0.05
Adams et al. (2013)	Boston blue clay	46	11	5.82×10^{-10}	5.18	0.98	13.18	2.31×10^{-9}	2.01	0.98	13.29	0.000	-0.11
Sridharan and Nagaraj (2005)	Brown soil-1	58.5	7	1.37×10^{-10}	5.23	1	3.64	5.88×10^{-10}	2.07	1	4.37	0.001	-0.73
Nagaraj et al. (1993)	Brown soil-2	62	6	1.78×10^{-10}	5.13	1.00	5.35	7.39×10^{-10}	2.03	1.00	5.75	0.000	-0.40
Nagaraj et al. (1994)	Brown soil-3	62	17	1.32×10^{-10}	6.29	0.99	12.1	7.54×10^{-10}	2.5	0.98	12.9	0.002	-0.72
Sridharan et al. (1986a)	Ca-Bentonite	125	5	1.35×10^{-12}	4.95	1	11	5.4×10^{-12}	2.1	1	10.7	-0.001	0.32
Lekha et al. (2003)	Calcium bentonite	97	6	1.37×10^{-10}	2.98	0.99	8.28	3.20×10^{-10}	1.19	0.99	9.83	0.003	-1.55
Mesri and Olson (1971a)	Calcium montmorillonite-1	220	9	9.30×10^{-14}	5.59	0.99	9.00	4.21×10^{-13}	2.46	0.99	7.22	-0.003	1.78
Dolinar (2009)	Calcium montmorillonite-10	129	5	2.47×10^{-12}	6.44	0.98	14.32	1.41×10^{-11}	2.78	0.98	14.51	0.001	-0.19
Mesri and Olson (1971a)	Calcium montmorillonite-2	207	9	8.53×10^{-14}	5.95	0.99	9.57	4.30×10^{-13}	2.61	0.99	7.95	-0.003	1.62
Mesri and Olson (1971a)	Calcium montmorillonite-3	220	8	9.47×10^{-14}	5.89	0.99	7.92	4.76×10^{-13}	2.57	1.00	6.48	-0.002	1.45
Mesri and Olson (1971a)	Calcium montmorillonite-4	205	9	1.14×10^{-13}	6.04	0.99	7.57	5.96×10^{-13}	2.64	1.00	6.06	-0.002	1.51
Mesri and Olson (1971a)	Calcium montmorillonite-5	193	9	1.18×10^{-13}	6.01	0.99	7.72	6.04×10^{-13}	2.64	1.00	5.98	-0.002	1.74
Mesri and Olson (1971a)	Calcium montmorillonite-6	207	9	1.40×10^{-13}	6.02	0.98	12.29	7.10×10^{-13}	2.65	0.99	10.55	-0.004	1.74
Mesri and Olson (1971a)	Calcium montmorillonite-7	189	9	2.25×10^{-13}	5.53	0.99	10.42	1.04×10^{-12}	2.41	0.99	8.59	-0.003	1.83
Mesri and Olson (1971a)	Calcium montmorillonite-8	201	9	1.14×10^{-13}	6.15	0.99	10.22	5.99×10^{-13}	2.70	0.99	8.45	-0.003	1.77
Clennell et al. (1999)	Calcium montmorillonite-9	120	9	8.85×10^{-17}	17.56	0.94	25.27	1.12×10^{-14}	7.50	0.93	25.89	0.003	-0.62
Sridharan and Nagaraj (2005)	Cochin clay	56.4	7	2.59×10^{-10}	5.88	1.00	2.40	1.35×10^{-9}	2.36	1.00	3.04	0.000	-0.64
Chamberlain and Gow (1979)	CRREL clay-1	28	8	7.33×10^{-8}	4.67	0.82	42.87	2.69×10^{-7}	1.87	0.82	42.77	-0.001	0.10
Chamberlain and Gow (1979)	CRREL clay-2	28	11	1.00×10^{-8}	4.58	0.93	26.59	3.62×10^{-8}	1.85	0.93	26.94	0.002	-0.35

This content has not been peer-reviewed or edited by ICE Publishing.
The accuracy and content of this supplementary file is the sole responsibility of the author.

Siddique and Saflullah (1995)	Dhaka clay	40.1	11	1.36×10^{-9}	4.36	1	18.6	4.29×10^{-9}	1.69	1	18.3	-0.001	0.33
Raymond (1966)	Don valley clay	41.2	31	3.06×10^{-10}	1.81	0.33	81.92	5.01×10^{-10}	0.71	0.33	81.82	-0.002	0.10
Bartos (1977)	Dredged material-1	77 [#]	5	1.17×10^{-10}	-3.11	0.17	91.08	4.93×10^{-11}	-1.25	0.17	91.02	-0.001	0.06
Salem and Krizek (1973)	Dredging slurries-1	61	11	1.68×10^{-10}	3.28	0.76	48.59	4.28×10^{-10}	1.32	0.77	47.88	-0.007	0.71
Salem and Krizek (1973)	Dredging slurries-2	71	11	1.11×10^{-10}	2.52	0.54	67.84	2.28×10^{-10}	1.04	0.55	66.94	-0.012	0.91
Chamberlain and Gow (1979)	Ellsworth clay-1	45	14	1.96×10^{-7}	10.54	0.80	44.58	3.66×10^{-6}	4.18	0.80	44.53	0.000	0.04
Chamberlain and Gow (1979)	Ellsworth clay-2	45	16	5.63×10^{-10}	6.53	0.94	24.89	3.60×10^{-9}	2.68	0.94	25.35	0.002	-0.46
Shafiee (2008)	Fat clay: montmorillonite	69	3	2.91×10^{-8}	1.18	0.98	15.50	3.72×10^{-8}	0.43	0.97	15.87	0.001	-0.37
Sanzeni et al. (2013)	Fine grained soil	39 [#]	122	3.79×10^{-9}	4.12	0.15	92.37	1.12×10^{-8}	1.59	0.15	92.33	0.001	0.04
Benson and Trast (1995)	Glacial till-1	27	15	2.13×10^{-9}	2.17	0.11	94.43	3.51×10^{-9}	0.81	0.11	94.38	-0.001	0.05
Benson and Trast (1995)	Glacial till-2	35	14	1.74×10^{-8}	7.31	0.56	66.54	1.04×10^{-7}	2.75	0.55	66.80	0.003	-0.26
Benson and Trast (1995)	Glacial till-3	33	13	8.54×10^{-9}	5.40	0.29	84.13	3.18×10^{-8}	2.03	0.29	84.15	0.000	-0.02
Benson and Trast (1995)	Glacial till-4	31	13	1.12×10^{-7}	8.85	0.56	66.69	9.44×10^{-7}	3.32	0.55	66.87	0.002	-0.17
Benson and Trast (1995)	Glacial till-5	32	15	6.76×10^{-9}	3.87	0.22	88.25	1.73×10^{-8}	1.45	0.22	88.19	-0.001	0.05
Benson and Trast (1995)	Glacio-lacustrine	43	13	3.57×10^{-8}	9.86	0.50	70.41	4.29×10^{-7}	3.75	0.50	70.54	0.002	-0.13
Samarasinghe et al. (1982)	Greyish clay	40.1	12	1.00×10^{-8}	5.74	0.98	14.39	3.70×10^{-8}	2.13	0.98	14.64	0.001	-0.26
Sridharan and Nagaraj (2005)	Illitic soil	73.4	7	2.34×10^{-10}	5.67	0.99	8.43	1.16×10^{-9}	2.36	0.99	8.04	-0.001	0.39
Sridharan et al. (1986a)	Fe-Bentonite	120	5	1.80×10^{-11}	2.95	1	21.6	4.05×10^{-11}	1.25	1	21.6	-0.000	0.07
Mesri and Olson (1971b)	Kaolinite-1	45	19	6.41×10^{-10}	4.66	0.93	26.68	2.43×10^{-9}	1.91	0.93	26.35	-0.002	0.32
Sridharan and Nagaraj (2005)	Kaolinite-2	58.7	7	1.22×10^{-8}	3.84	1	10.6	3.59×10^{-8}	1.55	1	10.5	-0.000	0.02
Horpibulsuk et al.	Kaolinite-3	69	33	5.81×10^{-10}	3.02	0.97	16.69	1.37×10^{-9}	1.25	0.97	16.24	-0.001	0.45

This content has not been peer-reviewed or edited by ICE Publishing.
The accuracy and content of this supplementary file is the sole responsibility of the author.

(2011)													
Pane et al. (1983)	Kaolinite-4	53.6	37	6.63×10^{-10}	3.98	0.93	27.17	2.03×10^{-9}	1.69	0.92	27.41	0.001	-0.24
Horpibulsuk et al. (2011)	Kaolinite-5	54	7	3.98×10^{-10}	1.42	1.00	5.59	5.88×10^{-10}	0.56	1.00	6.21	0.001	-0.62
Horpibulsuk et al. (2011)	Kaolinite-6	78	7	1.74×10^{-10}	2.59	1.00	4.60	3.63×10^{-10}	1.06	1.00	5.35	0.001	-0.74
Horpibulsuk et al. (2011)	Kaolinite-7	59	7	2.52×10^{-10}	1.11	0.99	9.96	3.43×10^{-10}	0.44	0.99	10.23	0.001	-0.28
Horpibulsuk et al. (2011)	Kaolinite-8	81	6	1.53×10^{-10}	2.19	0.99	10.08	2.86×10^{-10}	0.90	0.99	10.50	0.001	-0.42
Sridharan and Nagaraj (2005)	Kaolinite-9	48	7	3.35×10^{-8}	3.52	0.99	9.75	8.93×10^{-8}	1.41	0.99	9.47	-0.001	0.28
Sridharan and Nagaraj (2005)	Kaolinite-10	55	7	1.84×10^{-9}	3.54	1.00	4.65	4.99×10^{-9}	1.44	1.00	5.38	0.001	-0.73
Dolinar (2009)	Kaolinite& Ca-montmorillonite mixture-1	61.3	5	1.84×10^{-10}	4.96	1.00	4.48	7.44×10^{-10}	2.04	1.00	4.75	0.000	-0.27
Dolinar (2009)	Kaolinite& Ca-montmorillonite mixture-2	80.9	5	1.62×10^{-11}	6.48	1.00	3.91	9.86×10^{-11}	2.73	1.00	3.65	0.000	0.25
Sridharan et al. (1986a)	K-Bentonite	233	5	4.12×10^{-12}	2.94	0.97	17.68	9.43×10^{-12}	1.25	0.96	18.87	0.004	-1.19
Shafiee (2008)	Lean clay: Illite with some quartz and feldspar	29.5	3	1.23×10^{-5}	4.68	0.98	15.27	3.86×10^{-5}	1.76	0.98	15.43	0.000	-0.16
Walker and Raymond (1968)	Leda clay-1	36	8	1.65×10^{-10}	4.12	0.99	9.47	5.26×10^{-10}	1.67	0.99	9.93	0.001	-0.45
Raymond (1966)	Leda clay-2	33.4	33	1.52×10^{-9}	3.60	0.94	24.27	4.00×10^{-9}	1.40	0.94	24.44	0.001	-0.17
Sridharan et al. (1986a)	Li-Bentonite	675	5	4.16×10^{-13}	2.50	0.99	7.92	8.01×10^{-13}	1.12	1.00	6.42	-0.002	1.49
Lekha et al. (2003)	Local IIT clay	47	6	8.13×10^{-10}	1.53	0.97	17.68	1.23×10^{-9}	0.60	0.97	18.54	0.003	-0.86
Benson and Trast (1995)	Loess	49	17	2.66×10^{-8}	9.50	0.31	83.32	2.82×10^{-7}	3.59	0.30	83.50	0.003	-0.18
Chandler et al. (1990)	London Clay	85	11	2.82×10^{-11}	4.38	0.5	70	9.08×10^{-11}	1.71	0.5	70	-0.000	0.01
Leroueil et al. (1990)	Louiseville clay-1	68	5	1.03×10^{-10}	3.79	0.99	8.62	3.04×10^{-10}	1.56	0.99	9.75	0.002	-1.13
Tavenas et al. (1983b)	Louiseville clay-2	65	13	7.79×10^{-11}	3.99	0.51	69.73	2.33×10^{-10}	1.70	0.51	69.81	0.001	-0.08
Tavenas et al. (1983a)	Louiseville clay-3	62	5	6.16×10^{-11}	3.91	0.99	8.86	1.85×10^{-10}	1.65	0.99	9.30	0.001	-0.45
Dewhurst et al. (1996)	Marine clay-1	58	12	9.05×10^{-11}	2.19	0.91	30.72	1.48×10^{-10}	0.80	0.90	32.21	0.009	-1.49

This content has not been peer-reviewed or edited by ICE Publishing.
The accuracy and content of this supplementary file is the sole responsibility of the author.

Nagaraj et al. (1994)	Marine clay-2	106	17	3.39×10^{-12}	6.68	0.99	7.43	2.21×10^{-11}	2.81	0.99	7.45	0.000	-0.02
Tan (1989)	Marine clay	80	5	3.10×10^{-11}	11.9	0.69	55.7	8.63×10^{-10}	4.8	0.69	55.7	0.000	0.00
Benson and Trast (1995)	Marine deposit-1	37	16	6.06×10^{-9}	5.84	0.36	80.19	2.54×10^{-8}	2.20	0.35	80.37	0.003	-0.18
Benson and Trast (1995)	Marine sediment-1	53	16	1.76×10^{-9}	5.86	0.26	86.21	7.76×10^{-9}	2.23	0.25	86.35	0.002	-0.14
Benson and Trast (1995)	Marine sediment-2	67	14	1.35×10^{-10}	1.33	0.02	98.98	1.91×10^{-10}	0.51	0.02	98.99	0.000	0.00
Kim et al. (2013)	Marine sediments-1	55.1	5	4.02×10^{-11}	10.67	0.95	23.25	8.12×10^{-10}	4.35	0.95	22.90	-0.002	0.35
Kim et al. (2013)	Marine sediments-2	38.8	7	5.94×10^{-11}	8.60	0.57	65.66	6.70×10^{-10}	3.55	0.57	65.55	-0.001	0.11
Kim et al. (2013)	Marine sediments-3	55.1	5	2.42×10^{-12}	10.41	0.45	74.30	4.55×10^{-11}	4.29	0.44	74.55	0.004	-0.25
Kim et al. (2013)	Marine sediments-4	77	5	2.26×10^{-11}	7.65	0.97	17.50	1.97×10^{-10}	3.18	0.97	17.19	-0.001	0.30
Kim et al. (2013)	Marine sediments-5	60.9	5	1.65×10^{-11}	9.95	0.97	17.93	2.76×10^{-10}	4.07	0.97	18.39	0.002	-0.46
Kim et al. (2013)	Marine sediments-6	68.2	5	6.64×10^{-11}	4.44	0.77	47.85	2.32×10^{-10}	1.84	0.77	47.89	0.000	-0.04
Kim et al. (2013)	Marine sediments-7	69.7	5	3.60×10^{-12}	13.88	0.94	24.43	1.80×10^{-10}	5.72	0.94	24.27	-0.001	0.16
Kim et al. (2013)	Marine sediments-8	50.4	6	3.55×10^{-10}	6.13	0.84	40.18	1.89×10^{-9}	2.40	0.84	40.43	0.002	-0.25
Leroueil et al. (1990)	Matagami clay-1	46	4	2.80×10^{-10}	4.03	1.00	6.31	8.70×10^{-10}	1.67	1.00	6.67	0.000	-0.36
Leroueil et al. (1990)	Matagami clay-2	41	4	4.77×10^{-10}	3.63	0.99	11.88	1.33×10^{-9}	1.49	0.98	12.37	0.001	-0.49
Towhata et al. (1993)	MC clay	70	7	2.27×10^{-10}	2.50	0.97	17.79	4.67×10^{-10}	1.04	0.97	16.24	-0.005	1.55
Sridharan et al. (1986a)	Mg-Bentonite	129	5	4.43×10^{-12}	3.2	1	16.3	1.09×10^{-11}	1.34	1	16.9	0.002	-0.59
Benson and Trast (1995)	Mine spoil	70	14	2.84×10^{-10}	1.49	0.06	96.85	4.34×10^{-10}	0.60	0.07	96.67	-0.003	0.17
Chamberlain and Gow (1979)	Morin clay-1	26	7	5.38×10^{-8}	11.15	0.54	67.96	1.07×10^{-6}	4.35	0.54	67.90	-0.001	0.06
Chamberlain and Gow (1979)	Morin clay-2	26	7	1.29×10^{-9}	3.86	0.97	15.85	3.82×10^{-9}	1.56	0.97	16.50	0.002	-0.64
Sridharan et al. (1986a)	Na-Bentonite	495	5	1.52×10^{-12}	2.34	0.98	13.38	3.05×10^{-12}	1.00	0.98	15.74	0.007	-2.36
Clennell et al. (1999)	Natural clay	55	13	5.29×10^{-9}	10.84	0.98	15.25	9.28×10^{-8}	4.20	0.98	15.47	0.001	-0.22
Raymond (1966)	New liskeard clay	68.6	31	1.91×10^{-10}	1.72	0.22	88.17	3.05×10^{-10}	0.67	0.22	88.30	0.002	-0.12
Sridharan et al. (1986a)	NH4-Bentonite	223	5	2.46×10^{-12}	3.21	0.99	10.65	6.04×10^{-12}	1.36	0.99	11.59	0.002	-0.95
Dolinar (2009)	Poorly crystallized kaolinite	51	5	3.42×10^{-10}	4.54	1.00	4.24	1.23×10^{-9}	1.88	1.00	4.49	0.000	-0.25

This content has not been peer-reviewed or edited by ICE Publishing.
The accuracy and content of this supplementary file is the sole responsibility of the author.

Sridharan and Nagaraj (2005)	Red earth-1	37	7	6.55×10^{-10}	4.79	1	6.05	2.33×10^{-9}	1.85	1	6.81	0.001	-0.76
Sridharan and Nagaraj (2005)	Red earth-2	48	7	2.97×10^{-10}	3.99	0.99	11.40	8.73×10^{-10}	1.56	0.99	11.79	0.001	-0.39
Nagaraj et al. (1993)	Red soil-1	50	6	9.37×10^{-10}	5.7	0.98	14.8	4.36×10^{-9}	2.22	0.98	15.3	0.002	-0.56
Nagaraj et al. (1994)	Red soil-2	50	18	6.17×10^{-10}	6.35	0.97	16.6	3.39×10^{-9}	2.47	0.97	17.4	0.003	-0.78
Tan (1989)	Silty marine clay	108	8	1.64×10^{-10}	2.3	0.98	15.7	3.08×10^{-10}	0.98	0.98	15.7	0.000	0.01
Sivapullaiah et al. (2000)	Silt bentonite mixture-1	56	3	2.15×10^{-10}	3.34	0.99	9.13	5.40×10^{-10}	1.33	0.99	8.88	0.000	0.25
Sivapullaiah et al. (2000)	Silt bentonite mixture-10	112	5	7.12×10^{-11}	1.59	0.68	56.39	1.13×10^{-10}	0.64	0.67	57.76	0.016	-1.37
Sivapullaiah et al. (2000)	Silt bentonite mixture-11	59	6	5.02×10^{-10}	4.05	0.96	20.14	1.56×10^{-9}	1.63	0.96	20.27	0.001	-0.14
Sivapullaiah et al. (2000)	Silt bentonite mixture-12	180	6	9.96×10^{-12}	2.27	0.98	14.19	1.95×10^{-11}	0.95	0.98	15.65	0.004	-1.46
Sivapullaiah et al. (2000)	Silt bentonite mixture-13	228	6	5.02×10^{-12}	2.46	0.98	13.30	1.04×10^{-11}	1.05	0.98	14.85	0.004	-1.55
Sivapullaiah et al. (2000)	Silt bentonite mixture-14	274	6	1.75×10^{-12}	2.73	0.99	9.53	3.76×10^{-12}	1.19	0.99	11.41	0.004	-1.88
Sivapullaiah et al. (2000)	Silt bentonite mixture-2	69	4	1.26×10^{-10}	3.54	1.00	6.59	3.43×10^{-10}	1.44	1.00	7.01	0.001	-0.42
Sivapullaiah et al. (2000)	Silt bentonite mixture-3	82	5	7.65×10^{-11}	2.55	0.96	18.87	1.56×10^{-10}	1.02	0.96	19.83	0.004	-0.96
Sivapullaiah et al. (2000)	Silt bentonite mixture-4	96	5	3.60×10^{-11}	2.84	0.96	19.05	8.05×10^{-11}	1.15	0.96	20.11	0.004	-1.06
Sivapullaiah et al. (2000)	Silt bentonite mixture-5	172	5	4.50×10^{-12}	2.80	0.98	15.74	1.02×10^{-11}	1.18	0.97	17.50	0.006	-1.76
Sivapullaiah et al. (2000)	Silt bentonite mixture-6	224	5	4.17×10^{-12}	2.07	0.95	22.48	7.77×10^{-12}	0.86	0.94	24.36	0.009	-1.88
Sivapullaiah et al. (2000)	Silt bentonite mixture-7	274	4	2.91×10^{-12}	2.26	0.91	29.23	5.74×10^{-12}	0.96	0.90	31.08	0.011	-1.85
Sivapullaiah et al. (2000)	Silt bentonite mixture-8	72	5	1.24×10^{-10}	2.54	0.95	22.22	2.55×10^{-10}	1.03	0.95	22.36	0.001	-0.14
Sivapullaiah et al. (2000)	Silt bentonite mixture-9	98	5	5.03×10^{-11}	3.77	0.88	34.62	1.47×10^{-10}	1.53	0.87	35.36	0.005	-0.74
Clennell et al. (1999)	Silty clay-1	58	9	1.35×10^{-10}	3.03	0.91	30.07	2.84×10^{-10}	1.14	0.90	31.53	0.009	-1.46

This content has not been peer-reviewed or edited by ICE Publishing.
The accuracy and content of this supplementary file is the sole responsibility of the author.

Sridharan and Nagaraj (2005)	Silty clay-2	39	7	2.27×10^{-9}	3.66	1	7.27	6.08×10^{-8}	1.43	1	6.98	-0.000	0.29
Sivapullaiah et al. (2000)	Silty clay-3	51.2	6	6.27×10^{-9}	5.66	0.87	36.13	3.04×10^{-8}	2.27	0.87	36.60	0.003	-0.47
Clennell et al. (1999)	Speswhite kaolin-1	69	8	4.07×10^{-10}	3.01	1.00	3.24	9.50×10^{-10}	1.20	1.00	3.65	0.000	-0.41
Pane and Schiffman (1997)	Speswhite kaolin-2	53	8	5.19×10^{-10}	3.86	0.97	17.60	1.50×10^{-9}	1.67	0.97	16.91	-0.002	0.70
Leroueil et al. (1990)	St Esprit clay-1	74	4	9.00×10^{-11}	3.74	1.00	4.43	2.54×10^{-10}	1.59	1.00	5.01	0.001	-0.58
Leroueil et al. (1990)	St Esprit clay-2	64	5	1.08×10^{-10}	3.77	0.99	7.19	3.09×10^{-10}	1.59	0.99	7.58	0.001	-0.39
Leroueil et al. (1990)	St Esprit clay-3	50	6	1.01×10^{-10}	3.87	1.00	3.42	3.00×10^{-10}	1.62	1.00	3.74	0.000	-0.32
Tavenas et al. (1983b)	St-Alban clay	40.5	8	4.10×10^{-9}	-0.02	0.00	99.94	4.08×10^{-9}	-0.01	0.00	99.94	0.000	0.00
Dolinar (2009)	Well crystallized kaolinite	40.1	5	2.56×10^{-9}	3.94	0.99	8.36	7.64×10^{-9}	1.57	0.99	8.65	0.000	-0.28
Max		675		1.23×10^{-5}	17.56			3.86×10^{-5}	7.50				
Min		24		8.85×10^{-17}	-3.11			1.12×10^{-14}	-1.25				
Averaged						0.85	27.29			0.85	27.53	0.001	-0.24
Total		1358											

Notes:

* a, b is from the regressed equation $k \text{ (m/s)} = aX^b$ where X could be e or $e^3/(1+e)$.

w_L values given in this table for Sanzeni et al. (2013) and Bartos (1977) are derived from averaging the $\ln(w_L)$ values for the soils in the sub-set. NB in the analysis used to generate Eqs. (12)-(14) individual w_L values were used from these two sources

Figure S1: Data comparison for fat clay from Shafiee (2008) with other database sources (Mesri and Olson, (1971a); Clennell et al. (1999) and Dolinar (2009))

Figure S2: Data comparison for lean clay from Shafiee (2008) with other database sources (Sridharan and Nagaraj (2005) and Adams et al. (2013))

Figure S3: k_{sat} -measured versus k_{sat} -predicted ($w_L < 50\%$)

Figure S4: k_{sat} -measured versus k_{sat} -predicted ($w_L \geq 50\%$)

Figure S5: k_{sat} -measured versus k_{sat} -predicted (above the A-line)

Figure S6: k_{sat} -measured versus k_{sat} -predicted (below the A-line)

Figure S7: k_{sat} -measured versus k_{sat} -predicted (consolidation test)

Figure S8: k_{sat} -measured versus k_{sat} -predicted (falling head test)

Figure S9: k_{sat} -measured versus k_{sat} -predicted (constant head test)

Figure S10: k_{sat} -measured versus k_{sat} -predicted (flow pump test)

Figure S11: k_{sat} -measured versus k_{sat} -predicted (undisturbed samples)

Figure S12: k_{sat} -measured versus k_{sat} -predicted (disturbed samples)

References

- Adams, A. L., Germaine, J. T., Flemings, P. B., and Day-Stirrat, R. J. (2013). Stress induced permeability anisotropy of Resedimented Boston Blue Clay. *Water Resources Research*, 49(10): 6561–6571. <https://doi.org/10.1002/wrcr.20470>
- Al-Tabbaa, A. and Wood, D. M. (1987). Some measurements of the permeability of kaolin. *Géotechnique*, 37(4): 499–514. <https://doi.org/10.1680/geot.1987.37.4.499>
- Bartos, M. J. (1977). Classification and Engineering Properties of Dredged Material. Technical Report D-77-18. Washington, DC.
- Benson, C. H., and Trast, J. M. (1995). Hydraulic conductivity of thirteen compacted clays. *Clays and Clay Minerals*, 43(6): 669–681. <https://doi.org/10.1346/CCMN.1995.0430603>

- Chamberlain, E. J., and Gow, A. J. (1979). Effect of freezing and thawing on the permeability and structure of soils. *Developments in Geotechnical Engineering*, 26(C): 73–92. <https://doi.org/10.1016/B978-0-444-41782-4.50012-9>
- Chandler, R. J., Leroueil, S., and Trenter, N. A. (1990). Measurements of the permeability of London Clay using a self-boring permeameter. *Géotechnique*, 40(1): 113–124. <https://doi.org/10.1680/geot.1990.40.1.113>
- Clennell, M. B., Dewhurst, D. N., Brown, K. M., and Westbrook, G. K. (1999). Permeability anisotropy of consolidated clays. *Muds and Mudstones: Physical and Fluid Flow Properties* (A. C. Aplin, A. J. Fleet and J. H. S. Macquaker (eds)), 158: 79–96. <https://doi.org/10.1144/GSL.SP.1999.158.01.07>
- Dewhurst, D. N., Brown, K. M., Clennell, M. B., and Westbrook, G. K. (1996). A comparison of the fabric and permeability anisotropy of consolidated and sheared silty clay. *Engineering Geology*, 42(4): 253–267. [https://doi.org/10.1016/0013-7952\(95\)00089-5](https://doi.org/10.1016/0013-7952(95)00089-5)
- Dolinar, B. (2009). Predicting the hydraulic conductivity of saturated clays using plasticity-value correlations. *Applied Clay Science*, 45(1–2): 90–94. <https://doi.org/10.1016/j.clay.2009.04.001>
- Horpibulsuk, S., Yangsukkaseam, N., Chinkulkijniwat, A., and Du, Y. J. (2011). Compressibility and permeability of Bangkok clay compared with kaolinite and bentonite. *Applied Clay Science*, 52(1–2): 150–159. <https://doi.org/10.1016/j.clay.2011.02.014>
- Kim, H.-S., Cho, G.-C., Lee, J. Y., and Kim, S.-J. (2013). Geotechnical and geophysical properties of deep marine fine-grained sediments recovered during the second Ulleung Basin Gas Hydrate expedition, East Sea, Korea. *Marine and Petroleum Geology*, 47: 56–65. <https://doi.org/10.1016/j.marpetgeo.2013.05.009>
- Lekha, K. R., Krishnaswamy, N. R., and Basak, P. (2003). Consolidation of Clays for Variable Permeability and Compressibility. *Journal of Geotechnical and Geoenvironmental Engineering*, 129(11): 1001–1009. <https://doi.org/10.1061/%28ASCE%291090-0241%282003%29129%3A11%281001%29>
- Leroueil, S., Bouclin, G., Tavenas, F., Bergeron, L. and Rochelle, P. La. (1990). Permeability anisotropy of natural clays as a function of strain. *Canadian Geotechnical Journal*, 27(5): 568–579. <https://doi.org/10.1139/t90-072>
- Nagaraj, T.S., Pandian, N.S., and Narashimha Raju, P. S. R. (1993). Stress state-permeability relationships for fine-grained soils. *Géotechnique*, 43(2): 333–336. <https://doi.org/10.1680/geot.1993.43.2.333>
- Nagaraj, T.S., Pandian, N.S., and Narashimha Raju, P. S. R. (1994). Stress state-permeability relations for overconsolidated clays. *Géotechnique*, 44(2): 349–352. <https://doi.org/10.1680/geot.1994.44.2.349>
- Mesri, G. and Olson, R. E. (1971a). Consolidation Characteristics of Montmorillonite. *Géotechnique*, 21(4): 341–352. <https://doi.org/10.1680/geot.1971.21.4.341>
- Mesri, G. and Olson, R. E. (1971b). Mechanisms Controlling the Permeability of Clays. *Clays and Clay Minerals*, 19(3): 151–158. <https://doi.org/10.1346/CCMN.1971.0190303>
- Pane, V. and Schiffman, R. L. (1997). The permeability of clay suspensions. *Géotechnique*, 47(2): 273–288. <https://doi.org/10.1680/geot.1997.47.2.273>

- Pane, V., Croce, P., Znidarcic, D., Ko, H.-Y., Olsen, H. W. and Schiffman, R. L. (1983). Effects of consolidation on permeability measurements for soft clay. *Géotechnique*, 33(1): 67–72. <https://doi.org/10.1680/geot.1983.33.1.67>
- Raymond, G. P. (1966). Laboratory Consolidation of Some Normally Consolidated Soils. *Canadian Geotechnical Journal*, 3(4): 217–234. <https://doi.org/10.1139/t66-026>
- Salem, A. M. and Krizek, R. J. (1973). Consolidation characteristics of dredging slurries. *Journal of the Waterways Harbors and Coastal Engineering Division (ASCE)*, 99(4): 439–457.
- Samarasinghe, A. M., Huang, Y. H., and Drnevich, V. P. (1982). Permeability and consolidation of normally consolidated soils. *Journal of the Geotechnical Engineering Division*, 108(6): 835–850.
- Sanzeni, A., Colleselli, F., and Grazioli, D. (2013). Specific Surface and Hydraulic Conductivity of Fine-Grained Soils. *Journal of Geotechnical and Geoenvironmental Engineering*, 139(10): 1828–1832. [https://doi.org/10.1061/\(ASCE\)GT.1943-5606.0000892](https://doi.org/10.1061/(ASCE)GT.1943-5606.0000892)
- Shafiee, A. (2008). Permeability of compacted granule-clay mixtures. *Engineering Geology*, 97(3–4): 199–208. <https://doi.org/10.1016/j.enggeo.2008.01.002>
- Siddique, A., and Saflullah, A. M. M. (1995). Permeability characteristics of reconstituted Dhaka clay. *Journal of the Civil Engineering Division*, 23(1), 103–115.
- Sivapullaiah, P. V., Sridharan, A., and Stalin, V. K. (2000). Hydraulic conductivity of bentonite-sand mixtures. *Canadian Geotechnical Journal*, 37(2): 406–413. <https://doi.org/10.1139/t99-120>
- Sridharan, A., and Nagaraj, H. B. (2005). Hydraulic conductivity of remolded fine-grained soils versus index properties. *Geotechnical and Geological Engineering*, 23(1): 43–60. <https://doi.org/10.1007/s10706-003-5396-x>
- Sridharan, A., Rao, S. M. and Murthy, N. S. (1986a). Compressibility behaviour of homoionized bentonites. *Géotechnique*, 36(4): 551–564. <https://doi.org/10.1680/geot.1986.36.4.551>
- Tan, S. A. (1989). A simple automatic falling-head permeameter. *Soils and Foundations*, 29(1): 161–164. <https://doi.org/10.3208/sandf1972.29.161>
- Tavenas, F., Leblond, P., Jean, P. and Leroueil, S. (1983a). The permeability of natural soft clays. Part I: Methods of laboratory measurement. *Canadian Geotechnical Journal*, 20(4): 629–644. <https://doi.org/10.1139/t83-072>
- Tavenas, F., Jean, P., Leblond, P. and Leroueil, S. (1983b). The permeability of natural soft clays. Part II: Permeability characteristics. *Canadian Geotechnical Journal*, 20(4): 645–660. <https://doi.org/10.1139/t83-073>
- Towhata, I., Kuntiwattanaku, P., Seko, I. and Ohishi, K. (1993). Volume Change of Clays Induced by Heating as Observed in Consolidation Tests. *Soils and Foundations*, 33(4): 170–183. https://doi.org/10.3208/sandf1972.33.4_170
- Walker, L. K. and Raymond, G. P. (1968). the prediction of consolidation rate in a cemented clay. *Canadian Geotechnical Journal*, 5(4): 192–216. <https://doi.org/10.1139/t68-022>