

YIELD LOCUS OF: Eskal150_2kpa-1

ORDER: Hao

Mean normal stress at preshear: SIGMA_{pre,m} = 2064 Pa

Raw data:

N_{pre} = 1,6160 kg

No.	Shear cell	m,tot [g]	Dh [mm]	N,sh [kg]	S,pre [kg]	S,sh [kg]
1	24	951,1	-1,060	0,3232	0,3735	0,1113
2	24	951,1	-0,970	0,6464	0,3775	0,1907
3	24	951,1	-0,840	0,9696	0,3696	0,2662
4	24	951,1	-0,770	1,2928	0,3775	0,3457
5	24	951,1	-0,720	1,6160	0,3854	0,4371

Stresses:

Tau_{pre,m} = 1256 PaSIGMA_{pre,m} = 2064 Pa

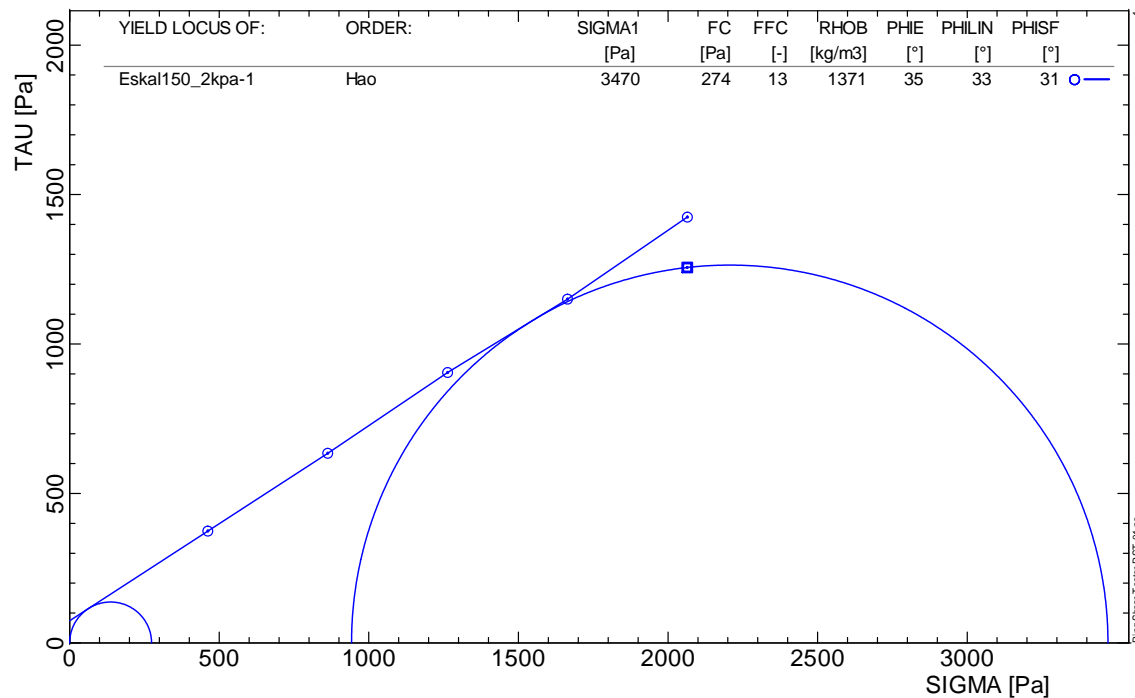
No.	SIGMA _{sh} [Pa]	TAU _{pre} [Pa]	TAU _{sh} [Pa]	TAU _{sh,pr} [Pa]	RHOB [kg/m ³]
1	462	1245	371	374	1361
2	863	1259	636	635	1366
3	1263	1232	888	905	1373
4	1664	1259	1153	1150	1376
5	2065	1285	1457	1425	1379

Parameters of yield locus (flow properties):

SIGMA1 [Pa]	FC [Pa]	FFC [-]	FFRHO [-]	TAU _C [Pa]	RHOB [kg/m ³]	PHIE [°]	PHILIN [°]	PHISF [°]
3470	274	12,68	17,38	74	1371	35,0	33,0	31,3

Approximation of the yield locus: Straight sections

Prorating: on



YIELD LOCUS OF: Eskal150_2kpa-2

ORDER: Hao

Mean normal stress at preshear: SIGMA_{pre,m} = 2066 Pa

Raw data:

N_{pre} = 1,6160 kg

No.	Shear cell	m,tot [g]	Dh [mm]	N,sh [kg]	S,pre [kg]	S,sh [kg]
1	25	944,4	0,320	0,3232	0,4093	0,1152
2	25	944,4	0,380	0,6464	0,4172	0,2027
3	25	944,4	0,420	0,9696	0,3934	0,2861
4	25	944,4	0,470	1,2928	0,4013	0,3696

Stresses:

Tau_{pre,m} = 1351 PaSIGMA_{pre,m} = 2066 Pa

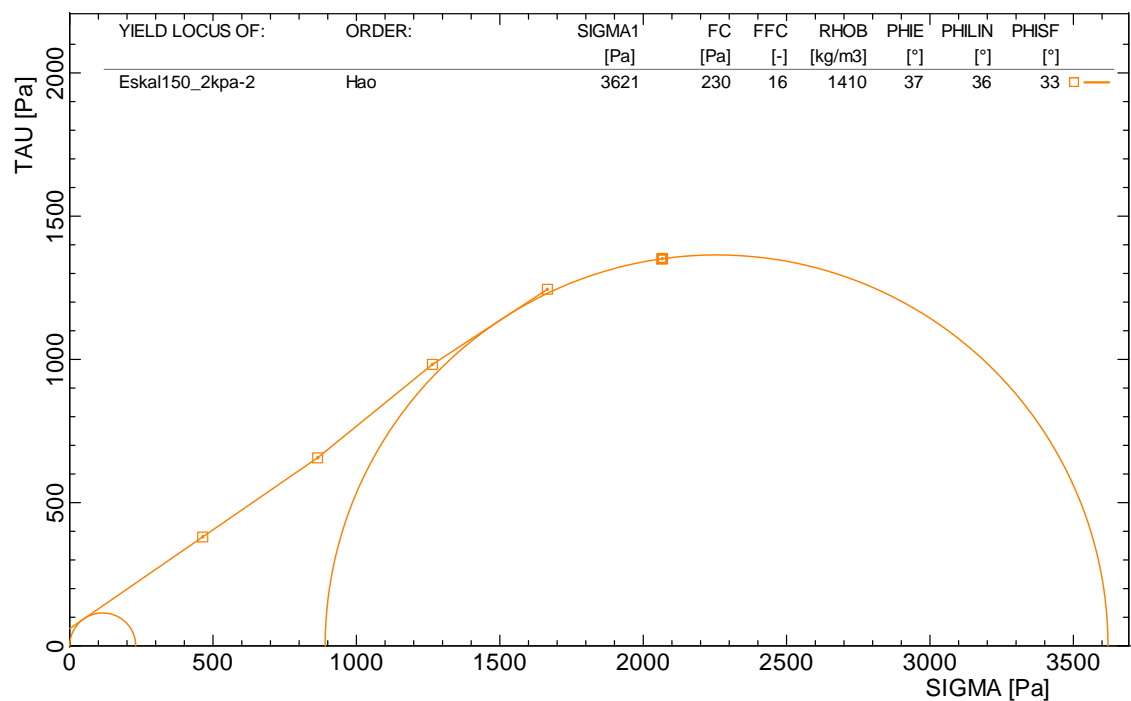
No.	SIGMA _{sh} [Pa]	TAU _{pre} [Pa]	TAU _{sh} [Pa]	TAU _{sh,pr} [Pa]	RHOB [kg/m3]
1	464	1365	384	380	1406
2	865	1391	676	657	1409
3	1265	1312	954	983	1411
4	1666	1338	1232	1245	1414

Parameters of yield locus (flow properties):

SIGMA1 [Pa]	FC [Pa]	FFC [-]	FFRHO [-]	TAU _C [Pa]	RHOB [kg/m3]	PHIE [°]	PHILIN [°]	PHISF [°]
3621	230	15,71	22,16	61	1410	37,2	35,7	33,2

Approximation of the yield locus: Straight sections

Prorating: on



YIELD LOCUS OF: Eskal150_2kpa-3

ORDER: Hao

Mean normal stress at preshear: SIGMA_{pre,m} = 2063 Pa

Raw data:

N_{pre} = 1,6160 kg

No.	Shear cell	m,tot [g]	Dh [mm]	N,sh [kg]	S,pre [kg]	S,sh [kg]
1	21	942,2	-0,490	0,3232	0,3854	0,1113
2	21	942,2	-0,420	0,6464	0,3934	0,1947
3	21	942,2	-0,360	0,9696	0,3775	0,2742
4	21	942,2	-0,290	1,2928	0,3934	0,3616

Stresses:

Tau_{pre,m} = 1292 PaSIGMA_{pre,m} = 2063 Pa

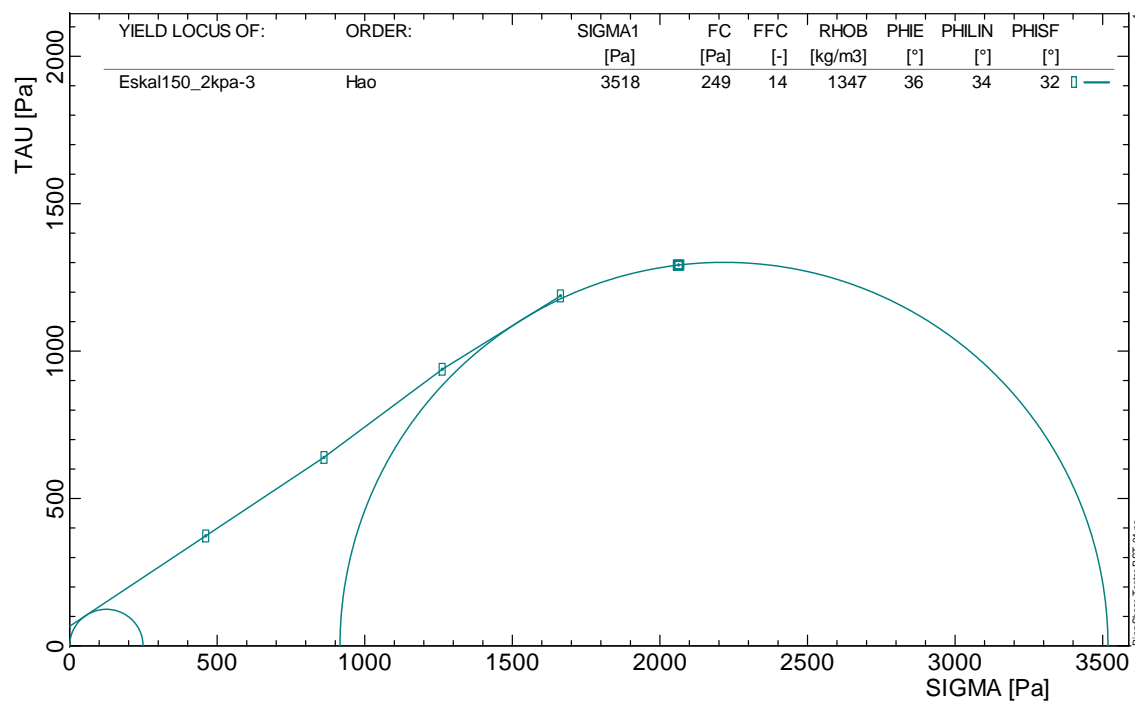
No.	SIGMA _{sh} [Pa]	TAU _{pre} [Pa]	TAU _{sh} [Pa]	TAU _{sh,pr} [Pa]	RHOB [kg/m3]
1	461	1285	371	373	1341
2	862	1312	649	639	1345
3	1262	1259	914	938	1348
4	1663	1312	1206	1187	1352

Parameters of yield locus (flow properties):

SIGMA1 [Pa]	FC [Pa]	FFC [-]	FFRHO [-]	TAU _C [Pa]	RHOB [kg/m3]	PHIE [°]	PHILIN [°]	PHISF [°]
3518	249	14,14	19,04	67	1347	35,9	34,2	32,1

Approximation of the yield locus: Straight sections

Prorating: on



YIELD LOCUS OF: Eskal150_3kpa-1

ORDER: Hao

Mean normal stress at preshear: SIGMA_{pre,m} = 3059 Pa

Raw data:

N_{pre} = 2,4189 kg

No.	Shear cell	m,tot [g]	Dh [mm]	N,sh [kg]	S,pre [kg]	S,sh [kg]
1	24	942,3	-0,190	0,4848	0,5881	0,1550
2	24	942,3	-0,130	0,9696	0,5921	0,2782
3	24	942,3	-0,090	1,4544	0,5603	0,3974
4	24	942,3	-0,040	1,9392	0,5603	0,5205

Stresses:

Tau_{pre,m} = 1918 PaSIGMA_{pre,m} = 3059 Pa

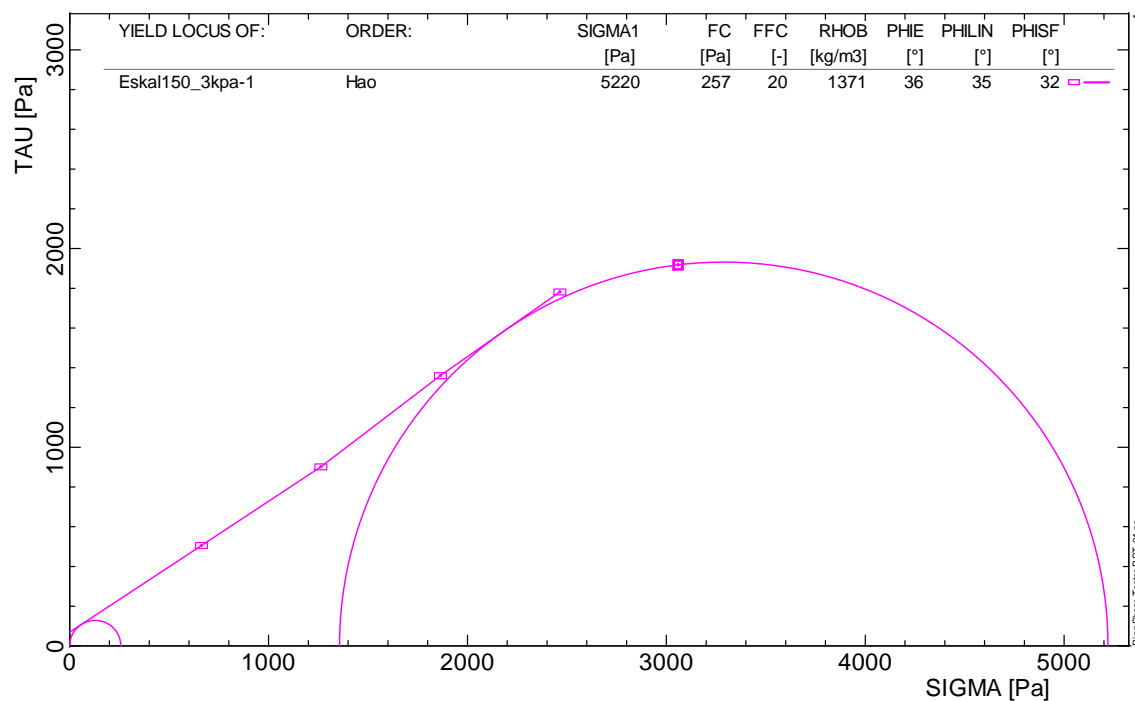
No.	SIGMA _{sh} [Pa]	TAU _{pre} [Pa]	TAU _{sh} [Pa]	TAU _{sh,pr} [Pa]	RHOB [kg/m3]
1	662	1961	517	506	1367
2	1263	1974	928	901	1370
3	1864	1868	1325	1360	1372
4	2465	1868	1736	1782	1375

Parameters of yield locus (flow properties):

SIGMA1 [Pa]	FC [Pa]	FFC [-]	FFRHO [-]	TAU _C [Pa]	RHOB [kg/m3]	PHIE [°]	PHILIN [°]	PHISF [°]
5220	257	20,29	27,82	69	1371	36,0	34,8	32,1

Approximation of the yield locus: Straight sections

Prorating: on



YIELD LOCUS OF: Eskal150_3kpa-2

ORDER: Hao

Mean normal stress at preshear: SIGMA,pre,m = 3059 Pa

Raw data:

N,pre = 2,4189 kg

No.	Shear cell	m,tot [g]	Dh [mm]	N,sh [kg]	S,pre [kg]	S,sh [kg]
1	21	948,3	-0,870	0,4848	0,5285	0,1391
2	21	948,3	-0,790	0,9696	0,5285	0,2543
3	21	948,3	-0,690	1,4544	0,5325	0,3696
4	21	948,3	-0,610	1,9392	0,5444	0,4848

Stresses:

Tau,pre,m = 1779 Pa

SIGMA,pre,m = 3059 Pa

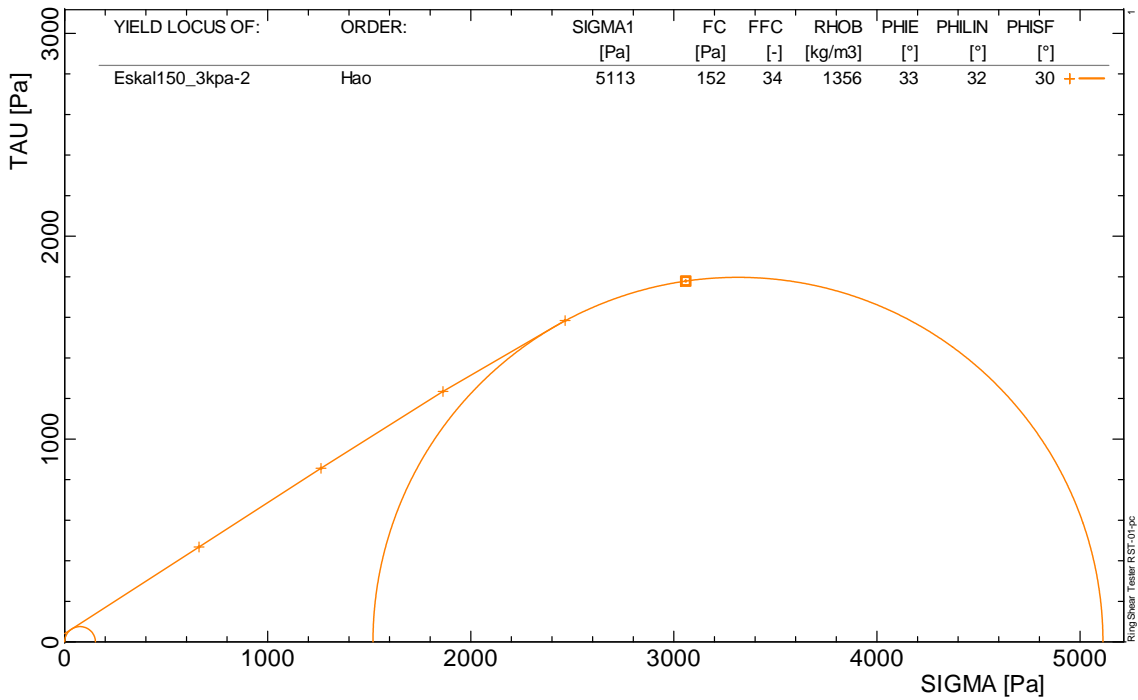
No.	SIGMA,sh [Pa]	TAU,pre [Pa]	TAU,sh [Pa]	TAU,sh,pr [Pa]	RHOB [kg/m3]
1	662	1762	464	468	1349
2	1263	1762	848	856	1354
3	1864	1776	1232	1235	1359
4	2464	1815	1617	1584	1363

Parameters of yield locus (flow properties):

SIGMA1 [Pa]	FC [Pa]	FFC [-]	FFRHO [-]	TAU,C [Pa]	RHOB [kg/m3]	PHIE [°]	PHILIN [°]	PHISF [°]
5113	152	33,75	45,77	41	1356	32,8	32,1	30,2

Approximation of the yield locus: Straight sections

Prorating: on



YIELD LOCUS OF: Eskal150_3kpa-3

ORDER: Hao

Mean normal stress at preshear: SIGMA,pre,m = 3059 Pa

Raw data:

N,pre = 2,4189 kg

No.	Shear cell	m,tot [g]	Dh [mm]	N,sh [kg]	S,pre [kg]	S,sh [kg]
1	24	945,0	-0,370	0,4848	0,5126	0,1351
2	24	945,0	-0,280	0,9696	0,5285	0,2464
3	24	945,0	-0,190	1,4544	0,5325	0,3696
4	24	945,0	-0,110	1,9392	0,5404	0,4927

Stresses:

Tau,pre,m = 1762 Pa

SIGMA,pre,m = 3059 Pa

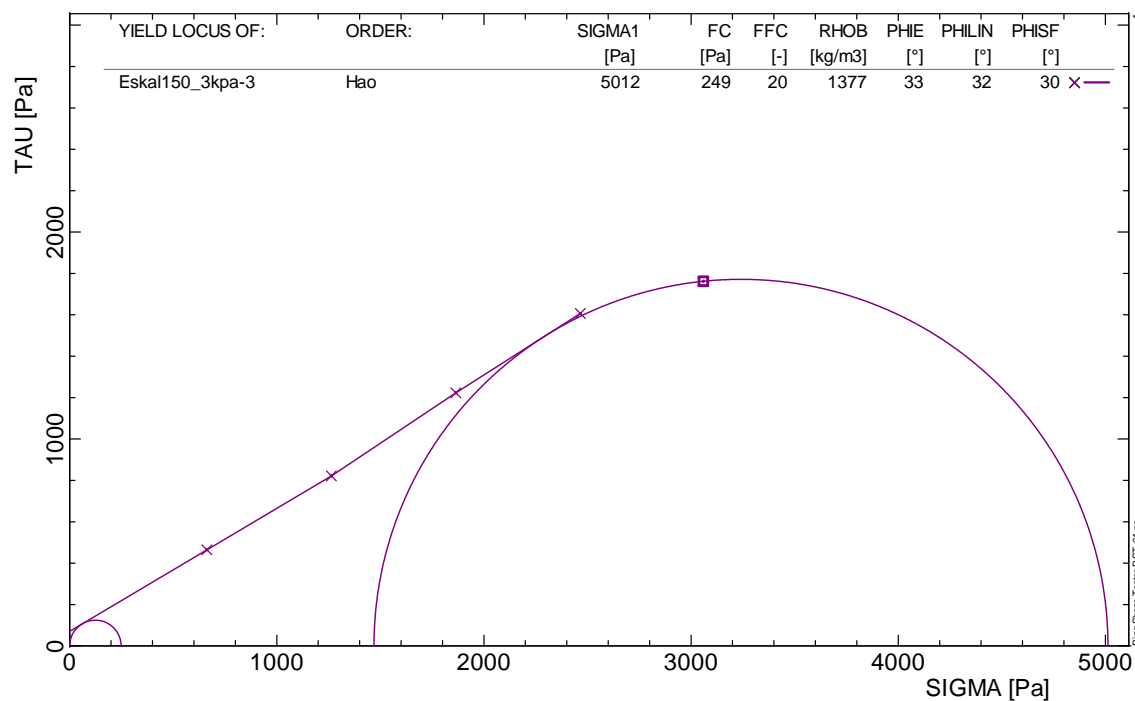
No.	SIGMA,sh [Pa]	TAU,pre [Pa]	TAU,sh [Pa]	TAU,sh,pr [Pa]	RHOB [kg/m3]
1	663	1709	450	464	1370
2	1263	1762	822	822	1375
3	1864	1776	1232	1223	1380
4	2465	1802	1643	1607	1384

Parameters of yield locus (flow properties):

SIGMA1 [Pa]	FC [Pa]	FFC [-]	FFRHO [-]	TAU,C [Pa]	RHOB [kg/m3]	PHIE [°]	PHILIN [°]	PHISF [°]
5012	249	20,17	27,77	71	1377	33,1	31,9	29,9

Approximation of the yield locus: Straight sections

Prorating: on



YIELD LOCUS OF: Eskal150_4kpa-1

ORDER: Hao

Mean normal stress at preshear: SIGMA_{pre,m} = 4062 Pa

Raw data:

N_{pre} = 3,2269 kg

No.	Shear cell	m,tot [g]	Dh [mm]	N,sh [kg]	S,pre [kg]	S,sh [kg]
1	25	943,0	0,270	0,6464	0,7669	0,1868
2	25	943,0	0,350	1,2928	0,7788	0,3537
3	25	943,0	0,390	1,9392	0,7391	0,5126
4	25	943,0	0,440	2,5805	0,7351	0,6676

Stresses:

Tau_{pre,m} = 2517 PaSIGMA_{pre,m} = 4062 Pa

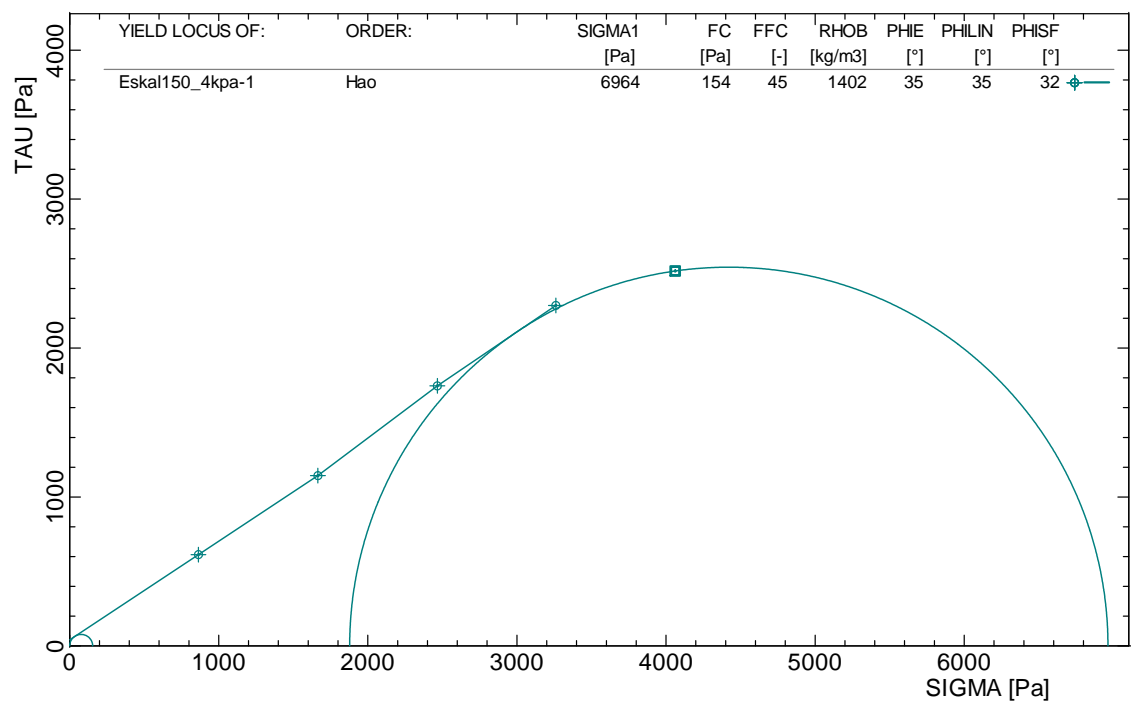
No.	SIGMA _{sh} [Pa]	TAU _{pre} [Pa]	TAU _{sh} [Pa]	TAU _{sh,pr} [Pa]	RHOB [kg/m ³]
1	864	2557	623	613	1396
2	1665	2597	1179	1143	1401
3	2466	2464	1709	1746	1403
4	3261	2451	2226	2286	1406

Parameters of yield locus (flow properties):

SIGMA1 [Pa]	FC [Pa]	FFC [-]	FFRHO [-]	TAU _C [Pa]	RHOB [kg/m ³]	PHIE [°]	PHILIN [°]	PHISF [°]
6964	154	45,08	63,18	42	1402	35,1	34,6	31,8

Approximation of the yield locus: Straight sections

Prorating: on



YIELD LOCUS OF: Eskal150_4kpa-2

ORDER: Hao

Mean normal stress at preshear: SIGMA_{pre,m} = 4061 Pa

Raw data:

N_{pre} = 3,2269 kg

No.	Shear cell	m,tot [g]	Dh [mm]	N,sh [kg]	S,pre [kg]	S,sh [kg]
1	24	942,5	-0,160	0,6464	0,7749	0,2027
2	24	942,5	-0,090	1,2928	0,8027	0,3775
3	24	942,5	-0,030	1,9392	0,7828	0,5484
4	24	942,5	0,040	2,5805	0,7669	0,7033

Stresses:

Tau_{pre,m} = 2607 PaSIGMA_{pre,m} = 4061 Pa

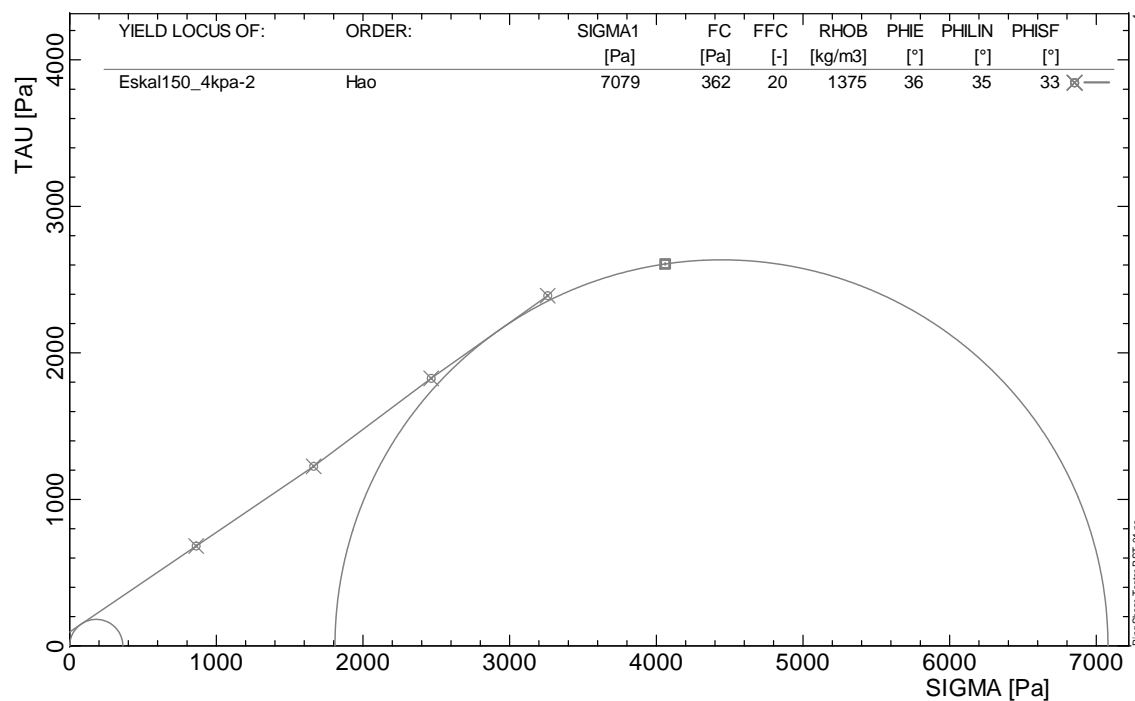
No.	SIGMA _{sh} [Pa]	TAU _{pre} [Pa]	TAU _{sh} [Pa]	TAU _{sh,pr} [Pa]	RHOB [kg/m ³]
1	863	2584	676	682	1369
2	1664	2677	1259	1226	1373
3	2465	2610	1829	1826	1377
4	3260	2557	2345	2391	1380

Parameters of yield locus (flow properties):

SIGMA1 [Pa]	FC [Pa]	FFC [-]	FFRHO [-]	TAU _C [Pa]	RHOB [kg/m ³]	PHIE [°]	PHILIN [°]	PHISF [°]
7079	362	19,53	26,86	96	1375	36,4	35,1	32,7

Approximation of the yield locus: Straight sections

Prorating: on



YIELD LOCUS OF: Eskal150_4kpa-3

ORDER: Hao

Mean normal stress at preshear: SIGMA_{pre,m} = 4061 Pa

Raw data:

N_{pre} = 3,2269 kg

No.	Shear cell	m,tot [g]	Dh [mm]	N,sh [kg]	S,pre [kg]	S,sh [kg]
1	21	952,1	-0,690	0,6464	0,7272	0,1868
2	21	952,1	-0,600	1,2928	0,7391	0,3457
3	21	952,1	-0,540	1,9392	0,7351	0,4967
4	21	952,1	-0,480	2,5805	0,7232	0,6477

Stresses:

Tau_{pre,m} = 2438 PaSIGMA_{pre,m} = 4061 Pa

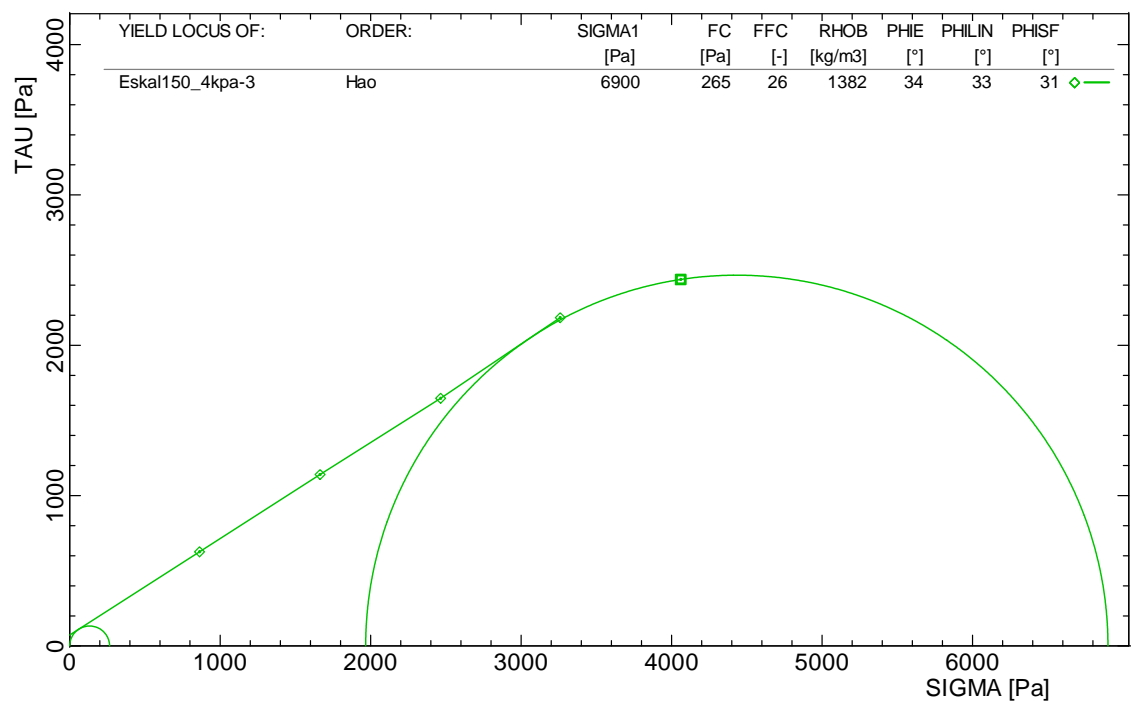
No.	SIGMA _{sh} [Pa]	TAU _{pre} [Pa]	TAU _{sh} [Pa]	TAU _{sh,pr} [Pa]	RHOB [kg/m ³]
1	863	2425	623	626	1376
2	1664	2464	1153	1140	1381
3	2465	2451	1656	1647	1384
4	3260	2411	2160	2183	1387

Parameters of yield locus (flow properties):

SIGMA1 [Pa]	FC [Pa]	FFC [-]	FFRHO [-]	TAU _C [Pa]	RHOB [kg/m ³]	PHIE [°]	PHILIN [°]	PHISF [°]
6900	265	26,01	35,95	72	1382	33,8	32,9	31,0

Approximation of the yield locus: Straight sections

Prorating: on



Flowability (summary of test results for yield loci)

Bulk solid	Order	SIGMA1 [Pa]	FC [Pa]	FFC [-]	FFRHO [-]	RHOB [kg/m3]
Eskal150_2kpa-1	Hao	3470	274	12,68	17,38	1371
Eskal150_2kpa-2	Hao	3621	230	15,71	22,16	1410
Eskal150_2kpa-3	Hao	3518	249	14,14	19,04	1347
Eskal150_3kpa-1	Hao	5220	257	20,29	27,82	1371
Eskal150_3kpa-2	Hao	5113	152	33,75	45,77	1356
Eskal150_3kpa-3	Hao	5012	249	20,17	27,77	1377
Eskal150_4kpa-1	Hao	6964	154	45,08	63,18	1402
Eskal150_4kpa-2	Hao	7079	362	19,53	26,86	1375
Eskal150_4kpa-3	Hao	6900	265	26,01	35,95	1382

Approximation of the yield loci: Straight sections

Prorating: on

