

YIELD LOCUS OF: Eskal300_2kpa-1

ORDER: Hao

Mean normal stress at preshear: SIGMA_{pre,m} = 2034 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	736,8	10,220	0,3232	0,5960	0,3378
2	24	736,8	10,270	0,6464	0,6040	0,4331
3	24	736,8	10,310	0,9696	0,6080	0,5086
4	24	736,8	10,360	1,2928	0,6159	0,5762

Stresses:

Tau_{pre,m} = 2021 PaSIGMA_{pre,m} = 2034 Pa

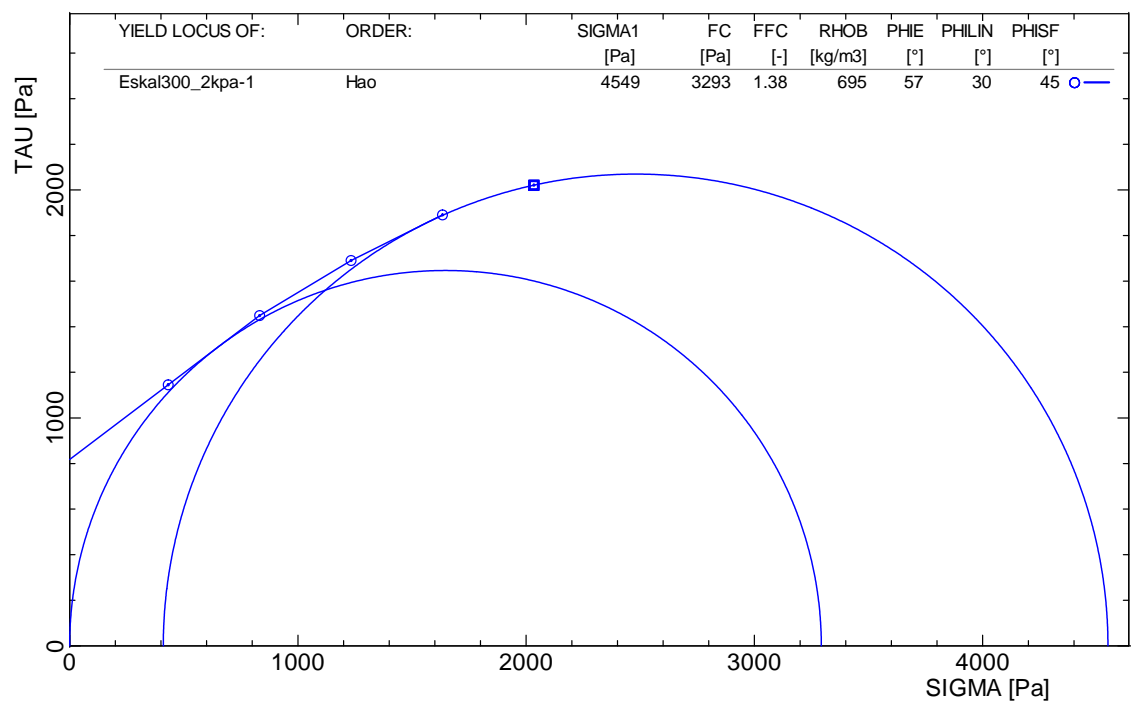
No.	SIGMA _{sh} [Pa]	TAU _{pre} [Pa]	TAU _{sh} [Pa]	TAU _{sh,pr} [Pa]	RHOB [kg/m ³]
1	432	1987	1126	1145	692
2	832	2014	1444	1449	694
3	1233	2027	1696	1690	696
4	1633	2054	1921	1890	698

Parameters of yield locus (flow properties):

SIGMA1 [Pa]	FC [Pa]	FFC [-]	FFRHO [-]	TAU _C [Pa]	RHOB [kg/m ³]	PHIE [°]	PHILIN [°]	PHISF [°]
4549	3293	1,38	0,96	818	695	56,6	30,5	44,8

Approximation of the yield locus: Straight sections

Prorating: on



YIELD LOCUS OF: Eskal300_2kpa-2

ORDER: Hao

Mean normal stress at preshear: SIGMA_{pre,m} = 2036 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	736,0	11,290	0,3232	0,6199	0,3457
2	25	736,0	11,330	0,6464	0,6239	0,4411
3	25	736,0	11,360	0,9696	0,6239	0,5126
4	25	736,0	11,380	1,2928	0,6239	0,5841

Stresses:

Tau_{pre,m} = 2077 PaSIGMA_{pre,m} = 2036 Pa

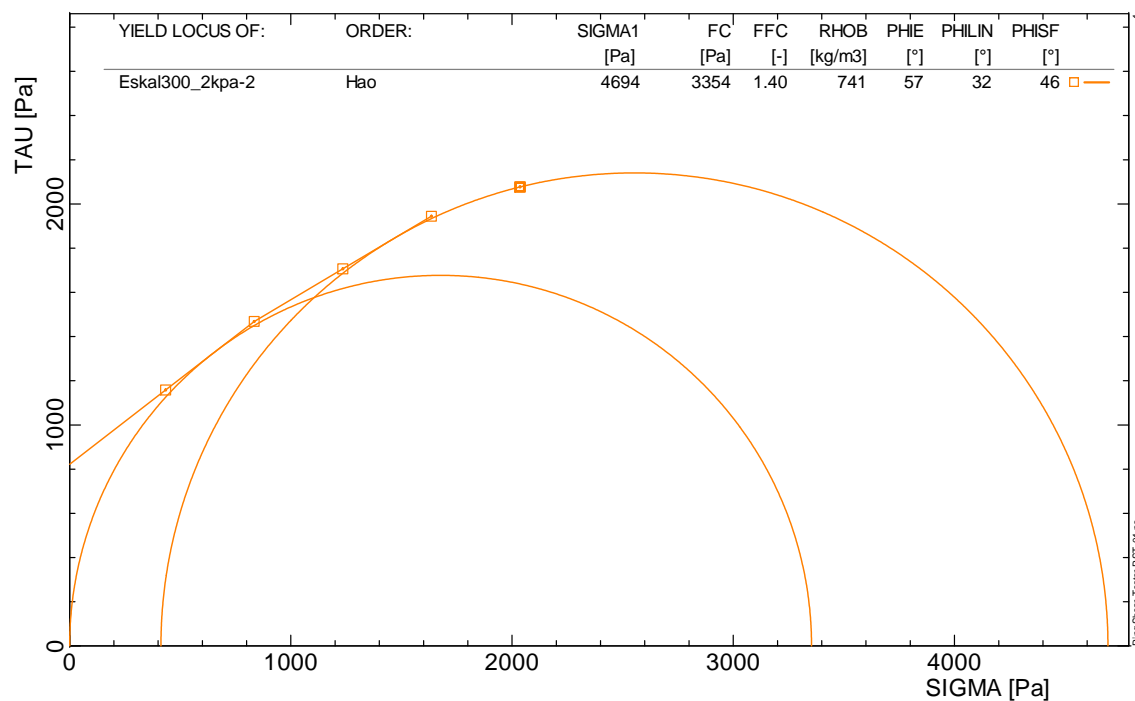
No.	SIGMA _{sh} [Pa]	TAU _{pre} [Pa]	TAU _{sh} [Pa]	TAU _{sh,pr} [Pa]	RHOB [kg/m3]
1	434	2067	1153	1158	738
2	834	2080	1471	1468	740
3	1235	2080	1709	1707	742
4	1635	2080	1948	1945	743

Parameters of yield locus (flow properties):

SIGMA1 [Pa]	FC [Pa]	FFC [-]	FFRHO [-]	TAU _C [Pa]	RHOB [kg/m3]	PHIE [°]	PHILIN [°]	PHISF [°]
4694	3354	1,40	1,04	822	741	57,0	31,9	45,6

Approximation of the yield locus: Straight sections

Prorating: on



YIELD LOCUS OF: Eskal300_2kpa-3

ORDER: Hao

Mean normal stress at preshear: SIGMA_{pre,m} = 2034 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	22	737,1	10,580	0,3232	0,5960	0,3378
2	22	737,1	10,630	0,6464	0,6080	0,4331
3	22	737,1	10,660	0,9696	0,6080	0,5047
4	22	737,1	10,700	1,2928	0,6080	0,5722

Stresses:

Tau_{pre,m} = 2017 PaSIGMA_{pre,m} = 2034 Pa

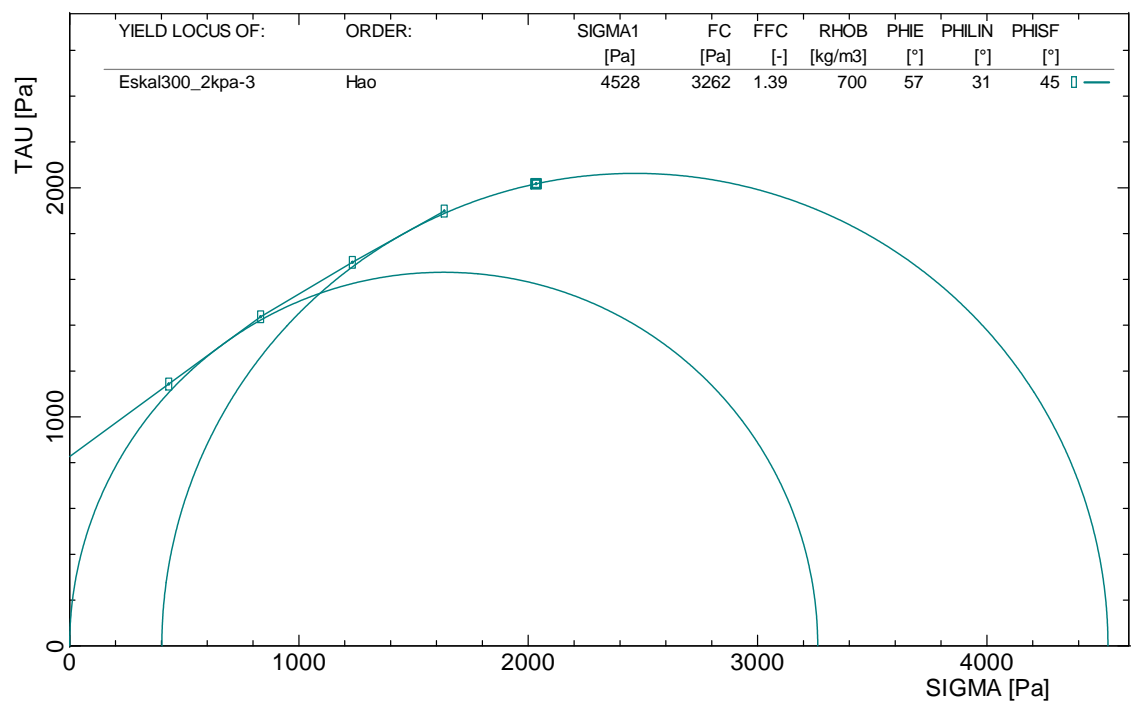
No.	SIGMA _{sh} [Pa]	TAU _{pre} [Pa]	TAU _{sh} [Pa]	TAU _{sh,pr} [Pa]	RHOB [kg/m ³]
1	432	1987	1126	1143	697
2	833	2027	1444	1437	699
3	1233	2027	1683	1675	700
4	1634	2027	1908	1899	702

Parameters of yield locus (flow properties):

SIGMA1 [Pa]	FC [Pa]	FFC [-]	FFRHO [-]	TAU _C [Pa]	RHOB [kg/m ³]	PHIE [°]	PHILIN [°]	PHISF [°]
4528	3262	1,39	0,97	827	700	56,8	31,2	44,8

Approximation of the yield locus: Straight sections

Prorating: on



YIELD LOCUS OF: Eskal300_3kpa-1

ORDER: Hao

Mean normal stress at preshear: $\text{SIGMA}_{\text{pre,m}} = 3031 \text{ Pa}$

Raw data:

 $N_{\text{pre}} = 2,4189 \text{ kg}$

No.	Shear cell	m,tot [g]	Dh [mm]	N,sh [kg]	S,pre [kg]	S,sh [kg]
1	24	736,8	11,100	0,4848	0,9020	0,4689
2	24	736,8	11,150	0,9696	0,9179	0,6239
3	24	736,8	11,180	1,4544	0,9179	0,7431
4	24	736,8	11,200	1,9392	0,9179	0,8464

Stresses:

 $\text{Tau}_{\text{pre,m}} = 3047 \text{ Pa}$ $\text{SIGMA}_{\text{pre,m}} = 3031 \text{ Pa}$

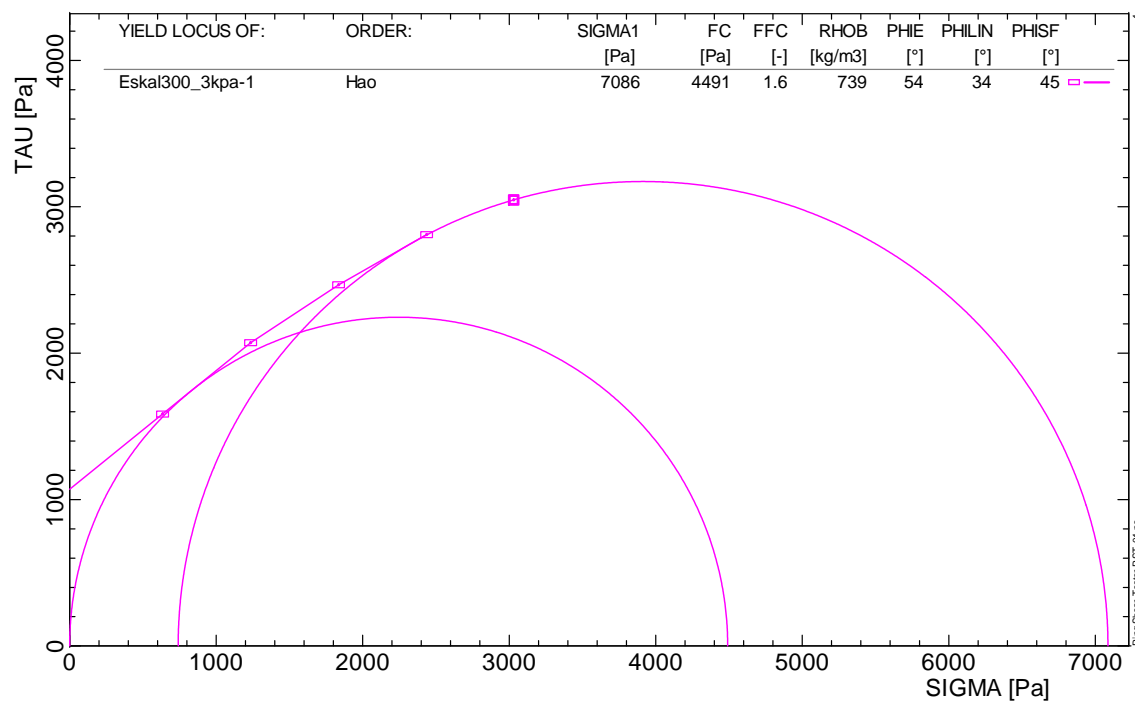
No.	SIGMA,sh [Pa]	TAU,pre [Pa]	TAU,sh [Pa]	TAU,sh,pr [Pa]	RHOB [kg/m3]
1	634	3008	1564	1584	736
2	1235	3061	2080	2071	738
3	1836	3061	2478	2467	740
4	2436	3061	2822	2810	741

Parameters of yield locus (flow properties):

SIGMA1 [Pa]	FC [Pa]	FFC [-]	FFRHO [-]	TAU,C [Pa]	RHOB [kg/m3]	PHIE [°]	PHILIN [°]	PHISF [°]
7086	4491	1,58	1,17	1070	739	54,2	33,8	45,2

Approximation of the yield locus: Straight sections

Prorating: on



YIELD LOCUS OF: Eskal300_3kpa-2

ORDER: Hao

Mean normal stress at preshear: SIGMA_{pre,m} = 3032 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	25	736,0	11,880	0,4848	0,8663	0,4609
2	25	736,0	11,920	0,9696	0,8822	0,6040
3	25	736,0	11,950	1,4544	0,8782	0,7153
4	25	736,0	11,970	1,9392	0,8822	0,8186

Stresses:

Tau_{pre,m} = 2925 PaSIGMA_{pre,m} = 3032 Pa

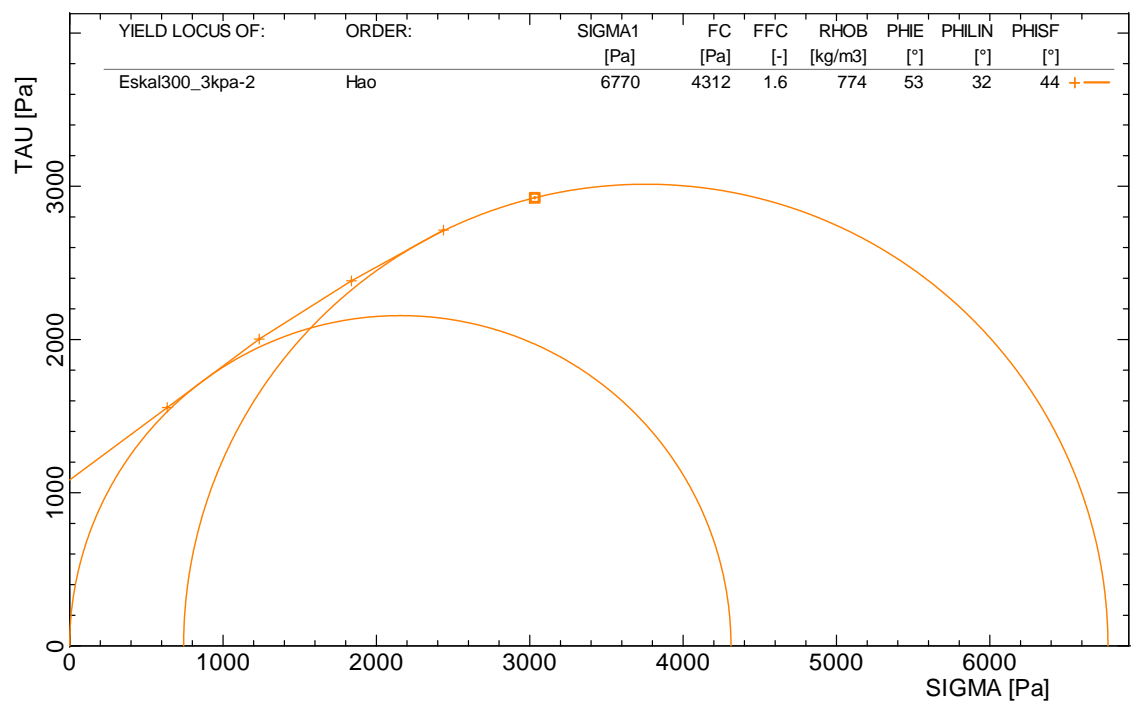
No.	SIGMA _{sh} [Pa]	TAU _{pre} [Pa]	TAU _{sh} [Pa]	TAU _{sh,pr} [Pa]	RHOB [kg/m3]
1	636	2889	1537	1556	771
2	1236	2942	2014	2003	773
3	1837	2928	2385	2382	775
4	2438	2942	2730	2714	776

Parameters of yield locus (flow properties):

SIGMA1 [Pa]	FC [Pa]	FFC [-]	FFRHO [-]	TAU _C [Pa]	RHOB [kg/m3]	PHIE [°]	PHILIN [°]	PHISF [°]
6770	4312	1,57	1,22	1084	774	53,3	32,4	44,0

Approximation of the yield locus: Straight sections

Prorating: on



YIELD LOCUS OF: Eskal300_3kpa-3

ORDER: Hao

Mean normal stress at preshear: SIGMA_{pre,m} = 3031 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	22	737,1	11,300	0,4848	0,8822	0,4609
2	22	737,1	11,350	0,9696	0,9020	0,6119
3	22	737,1	11,400	1,4544	0,9060	0,7312
4	22	737,1	11,420	1,9392	0,8980	0,8424

Stresses:

Tau_{pre,m} = 2991 PaSIGMA_{pre,m} = 3031 Pa

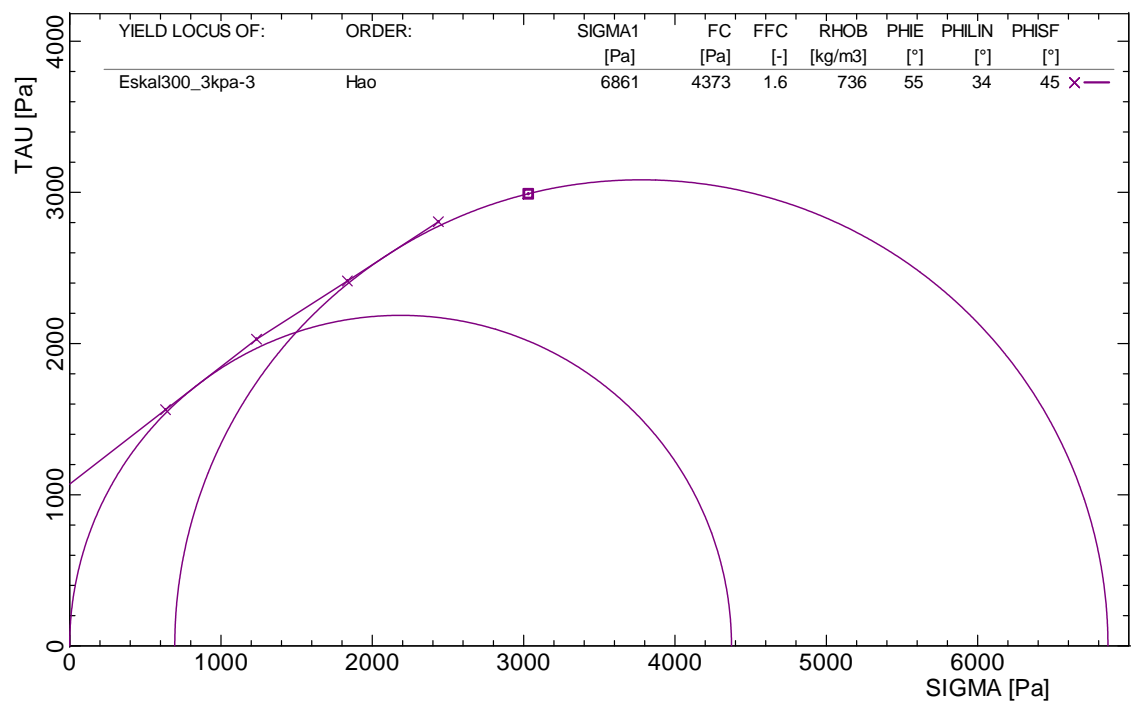
No.	SIGMA _{sh} [Pa]	TAU _{pre} [Pa]	TAU _{sh} [Pa]	TAU _{sh,pr} [Pa]	RHOB [kg/m3]
1	634	2942	1537	1563	733
2	1235	3008	2040	2029	735
3	1836	3021	2438	2414	738
4	2436	2994	2809	2806	739

Parameters of yield locus (flow properties):

SIGMA1 [Pa]	FC [Pa]	FFC [-]	FFRHO [-]	TAU _C [Pa]	RHOB [kg/m3]	PHIE [°]	PHILIN [°]	PHISF [°]
6861	4373	1,57	1,16	1071	736	54,7	34,3	44,6

Approximation of the yield locus: Straight sections

Prorating: on



YIELD LOCUS OF: Eskal300_4kpa-1

ORDER: Hao

Mean normal stress at preshear: SIGMA_{pre,m} = 4033 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	736,8	11,610	0,6464	1,1683	0,5762
2	24	736,8	11,660	1,2928	1,1921	0,7828
3	24	736,8	11,690	1,9392	1,1921	0,9457
4	24	736,8	11,710	2,5805	1,1921	1,0928

Stresses:

Tau_{pre,m} = 3955 PaSIGMA_{pre,m} = 4033 Pa

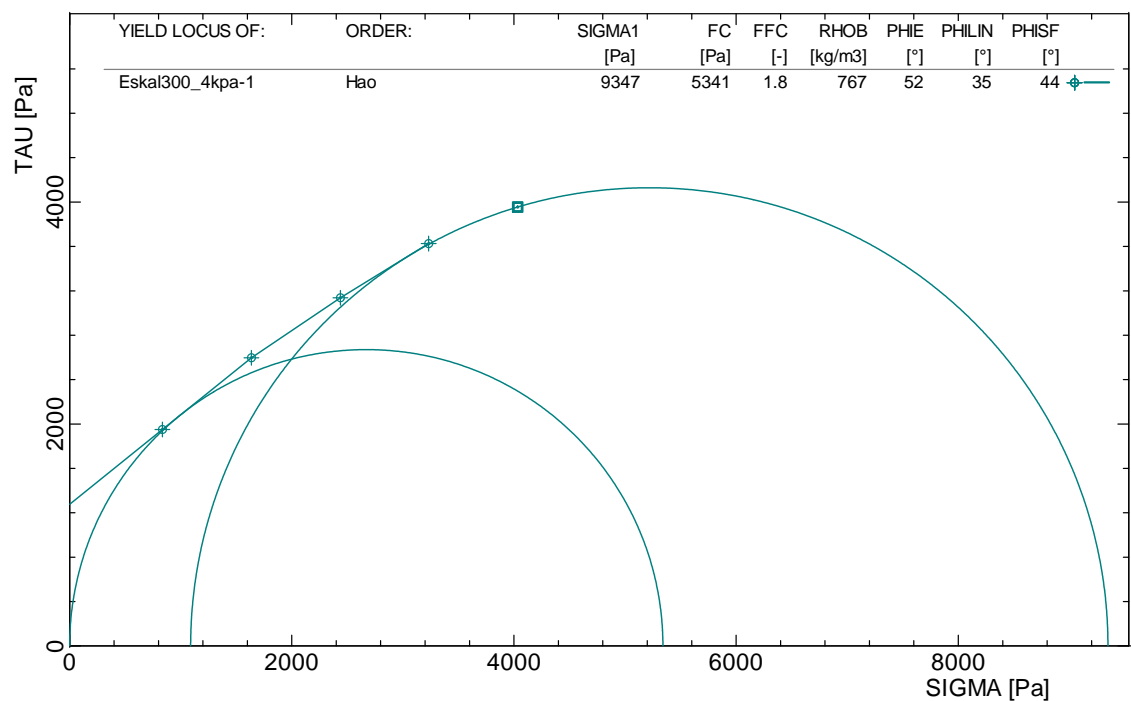
No.	SIGMA _{sh} [Pa]	TAU _{pre} [Pa]	TAU _{sh} [Pa]	TAU _{sh,pr} [Pa]	RHOB [kg/m3]
1	835	3896	1921	1951	764
2	1637	3975	2610	2597	766
3	2438	3975	3153	3138	768
4	3232	3975	3644	3626	769

Parameters of yield locus (flow properties):

SIGMA1 [Pa]	FC [Pa]	FFC [-]	FFRHO [-]	TAU _C [Pa]	RHOB [kg/m3]	PHIE [°]	PHILIN [°]	PHISF [°]
9347	5341	1,75	1,34	1276	767	52,3	34,9	44,4

Approximation of the yield locus: Straight sections

Prorating: on



YIELD LOCUS OF: Eskal300_4kpa-2

ORDER: Hao

Mean normal stress at preshear: SIGMA_{pre,m} = 4035 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	736,0	12,440	0,6464	1,1365	0,5563
2	25	736,0	12,480	1,2928	1,1484	0,7590
3	25	736,0	12,500	1,9392	1,1444	0,9139
4	25	736,0	12,520	2,5805	1,1444	1,0490

Stresses:

Tau_{pre,m} = 3813 PaSIGMA_{pre,m} = 4035 Pa

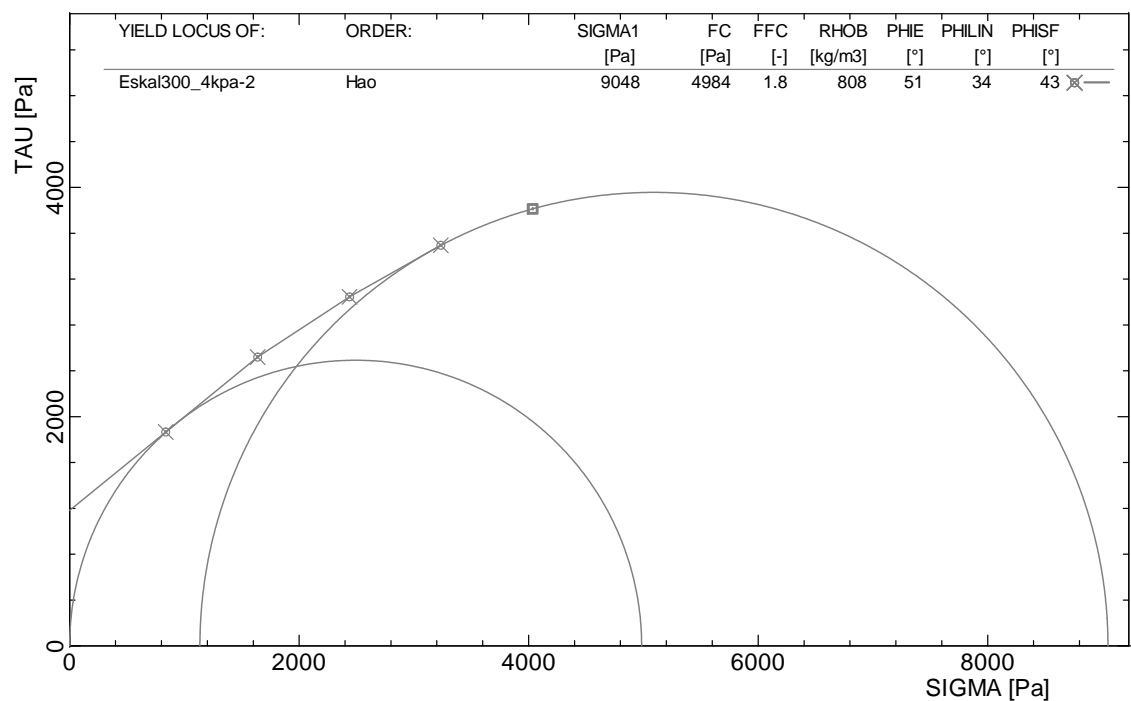
No.	SIGMA _{sh} [Pa]	TAU _{pre} [Pa]	TAU _{sh} [Pa]	TAU _{sh,pr} [Pa]	RHOB [kg/m ³]
1	837	3790	1855	1866	805
2	1638	3829	2531	2520	808
3	2439	3816	3047	3045	809
4	3234	3816	3498	3495	811

Parameters of yield locus (flow properties):

SIGMA1 [Pa]	FC [Pa]	FFC [-]	FFRHO [-]	TAU _C [Pa]	RHOB [kg/m ³]	PHIE [°]	PHILIN [°]	PHISF [°]
9048	4984	1,82	1,47	1183	808	51,0	34,3	43,4

Approximation of the yield locus: Straight sections

Prorating: on



YIELD LOCUS OF: Eskal300_4kpa-3

ORDER: Hao

Mean normal stress at preshear: SIGMA_{pre,m} = 4033 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	22	737,1	11,810	0,6464	1,1325	0,5643
2	22	737,1	11,870	1,2928	1,1444	0,7510
3	22	737,1	11,910	1,9392	1,1484	0,9139
4	22	737,1	11,930	2,5805	1,1444	1,0530

Stresses:

Tau_{pre,m} = 3809 PaSIGMA_{pre,m} = 4033 Pa

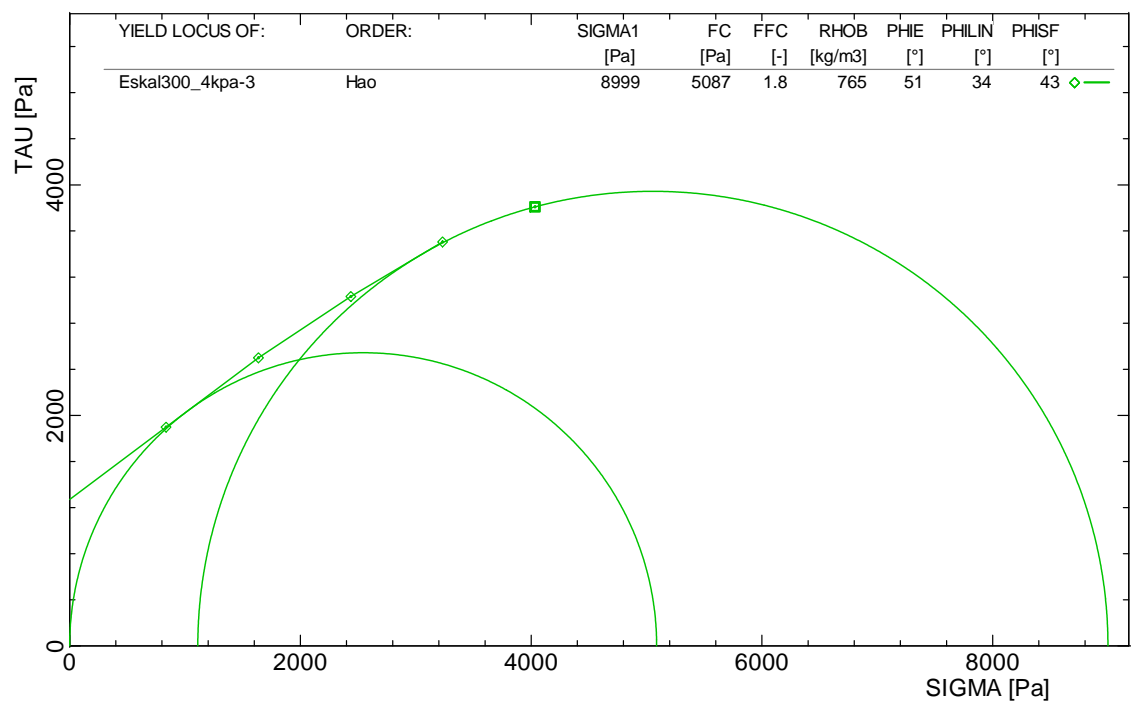
No.	SIGMA _{sh} [Pa]	TAU _{pre} [Pa]	TAU _{sh} [Pa]	TAU _{sh,pr} [Pa]	RHOB [kg/m ³]
1	835	3776	1882	1898	761
2	1636	3816	2504	2500	764
3	2438	3829	3047	3032	766
4	3232	3816	3511	3505	768

Parameters of yield locus (flow properties):

SIGMA1 [Pa]	FC [Pa]	FFC [-]	FFRHO [-]	TAU _C [Pa]	RHOB [kg/m ³]	PHIE [°]	PHILIN [°]	PHISF [°]
8999	5087	1,77	1,35	1271	765	51,3	33,9	43,4

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]
Eskal300_2kpa-1	Hao	4549	3293	1,38	0,96	695
Eskal300_2kpa-2	Hao	4694	3354	1,40	1,04	741
Eskal300_2kpa-3	Hao	4528	3262	1,39	0,97	700
Eskal300_3kpa-1	Hao	7086	4491	1,58	1,17	739
Eskal300_3kpa-2	Hao	6770	4312	1,57	1,22	774
Eskal300_3kpa-3	Hao	6861	4373	1,57	1,16	736
Eskal300_4kpa-1	Hao	9347	5341	1,75	1,34	767
Eskal300_4kpa-2	Hao	9048	4984	1,82	1,47	808
Eskal300_4kpa-3	Hao	8999	5087	1,77	1,35	765

Approximation of the yield loci: Straight sections

Prorating: on

