

YIELD LOCUS OF: Eskal300-0.2kPa

ORDER: HaoShi

Mean normal stress at preshear: $\text{SIGMA}_{\text{pre,m}} = 220 \text{ Pa}$

Raw data:

 $N_{\text{pre}} = 0,4595 \text{ kg}$

No.	Shear cell	m,tot [g]	Dh [mm]	N,sh [kg]	S,pre [kg]	S,sh [kg]
1	1	2679,5	2,600	0,0909	0,3417	0,2106
5	1	2679,5	3,040	0,0909	0,3537	0,2225
2	1	2679,5	2,690	0,1868	0,3417	0,2662
3	1	2679,5	2,870	0,2778	0,3417	0,3020
4	1	2679,5	2,960	0,3686	0,3497	0,3417

Stresses:

 $\text{Tau}_{\text{pre,m}} = 242 \text{ Pa}$ $\text{SIGMA}_{\text{pre,m}} = 220 \text{ Pa}$

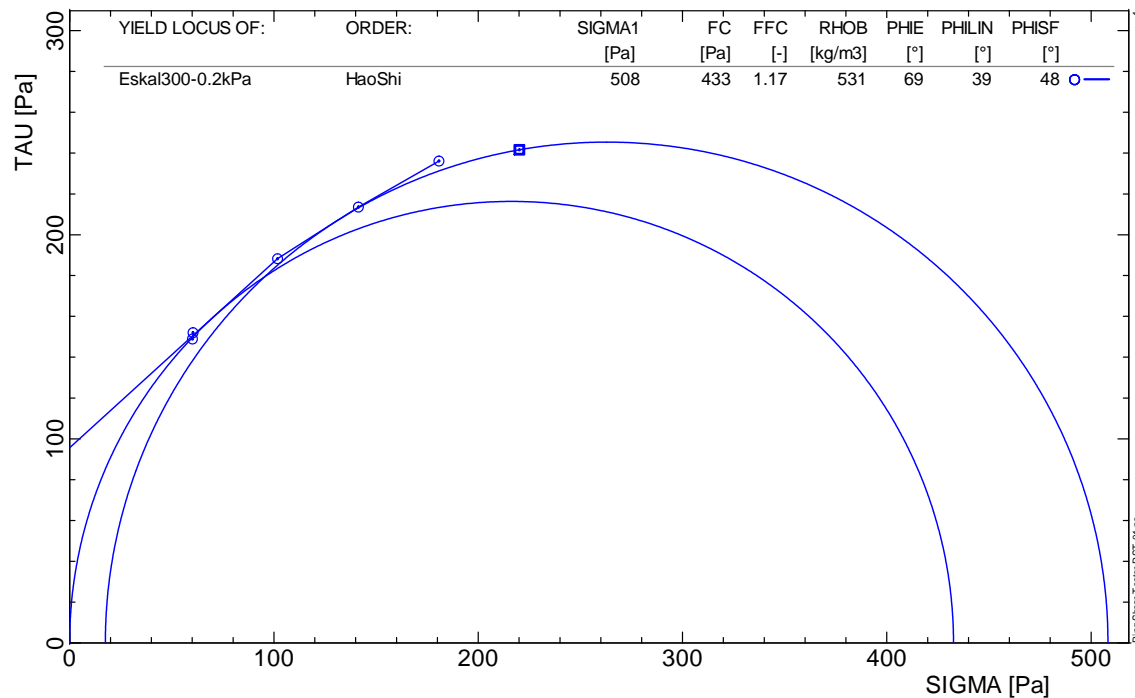
No.	SIGMA,sh [Pa]	TAU,pre [Pa]	TAU,sh [Pa]	TAU,sh,pr [Pa]	RHOB [kg/m3]
1	60	239	147	149	528
5	60	247	156	152	534
2	102	239	186	188	529
3	141	239	211	214	532
4	181	244	239	236	533

Parameters of yield locus (flow properties):

SIGMA1 [Pa]	FC [Pa]	FFC [-]	FFRHO [-]	TAU,C [Pa]	RHOB [kg/m3]	PHIE [°]	PHILIN [°]	PHISF [°]
508	433	1,17	0,62	96	531	69,0	38,6	47,7

Approximation of the yield locus: Straight sections

Prorating: on



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Mean normal stress at preshear: SIGMA_{pre,m} = 220 Pa

Raw data:

N_{pre} = 0,4595 kg

No.	Shear cell	m,tot [g]	Dh [mm]	N,sh [kg]	S,pre [kg]	S,sh [kg]
1	1	2692,1	2,000	0,0909	0,3417	0,2225
5	1	2692,1	2,290	0,0909	0,3497	0,2225
2	1	2692,1	2,090	0,1868	0,3417	0,2702
3	1	2692,1	2,150	0,2778	0,3417	0,3060
4	1	2692,1	2,230	0,3686	0,3497	0,3417

Stresses:

Tau_{pre,m} = 241 PaSIGMA_{pre,m} = 220 Pa

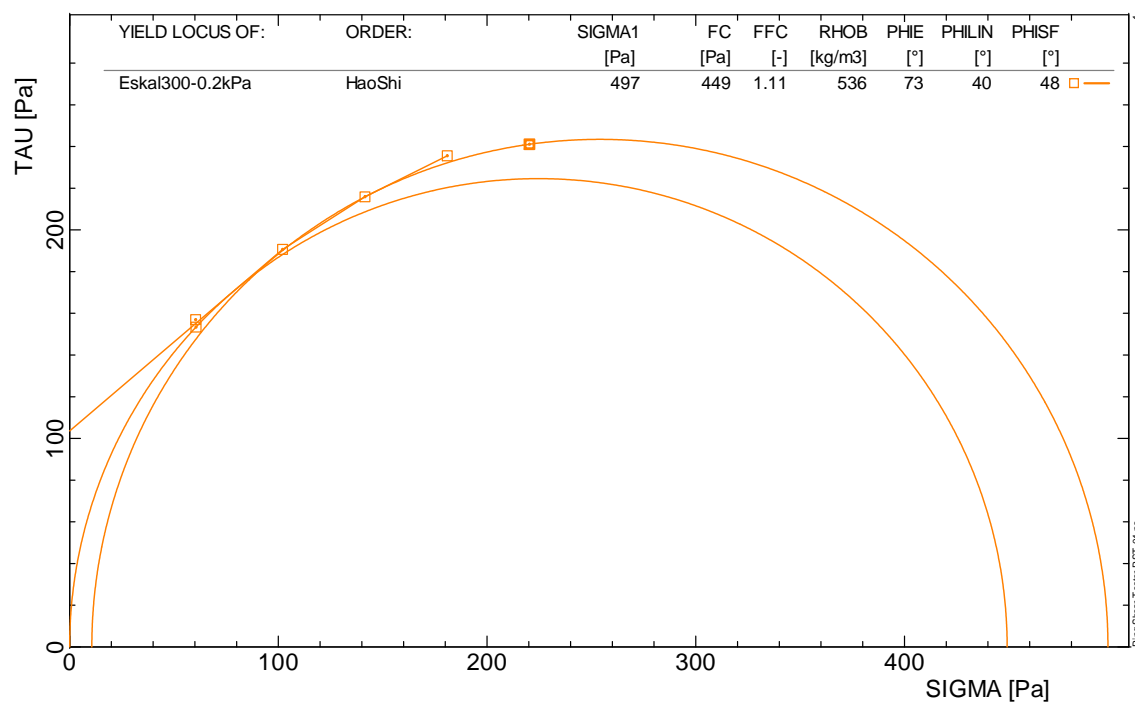
No.	SIGMA _{sh} [Pa]	TAU _{pre} [Pa]	TAU _{sh} [Pa]	TAU _{sh,pr} [Pa]	RHOB [kg/m ³]
1	60	239	156	157	534
5	61	244	156	153	538
2	102	239	189	191	535
3	142	239	214	216	536
4	181	244	239	236	537

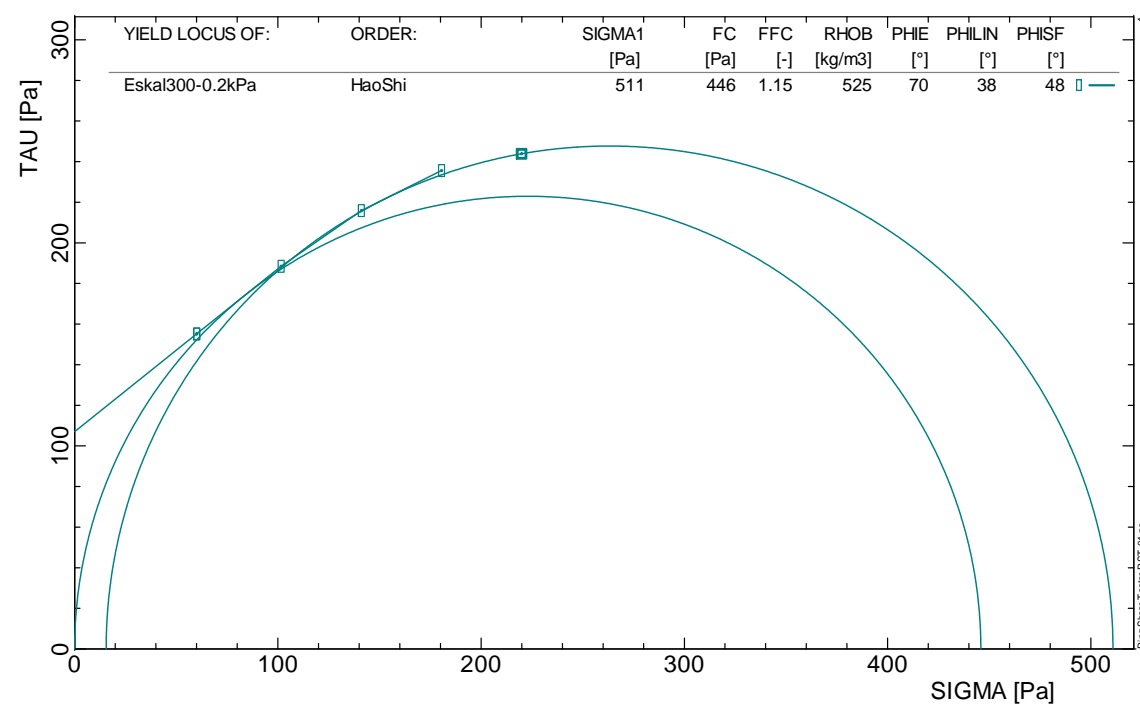
Parameters of yield locus (flow properties):

SIGMA1 [Pa]	FC [Pa]	FFC [-]	FFRHO [-]	TAU _C [Pa]	RHOB [kg/m ³]	PHIE [°]	PHILIN [°]	PHISF [°]
497	449	1,11	0,59	104	536	73,4	39,7	47,6

Approximation of the yield locus: Straight sections

Prorating: on





YIELD LOCUS OF: Eskal300-0.6kPa

ORDER: HaoShi

Mean normal stress at preshear: SIGMA_{pre,m} = 624 Pa

Raw data:

N_{pre} = 1,3837 kg

No.	Shear cell	m,tot [g]	Dh [mm]	N,sh [kg]	S,pre [kg]	S,sh [kg]
1	1	2679,5	7,790	0,2778	0,8980	0,5325
5	1	2679,5	8,020	0,2778	0,9378	0,5484
2	1	2679,5	7,880	0,5555	0,9100	0,6676
3	1	2679,5	7,940	0,8282	0,9259	0,7788
4	1	2679,5	7,980	1,1059	0,9298	0,8822

Stresses:

Tau_{pre,m} = 643 PaSIGMA_{pre,m} = 624 Pa

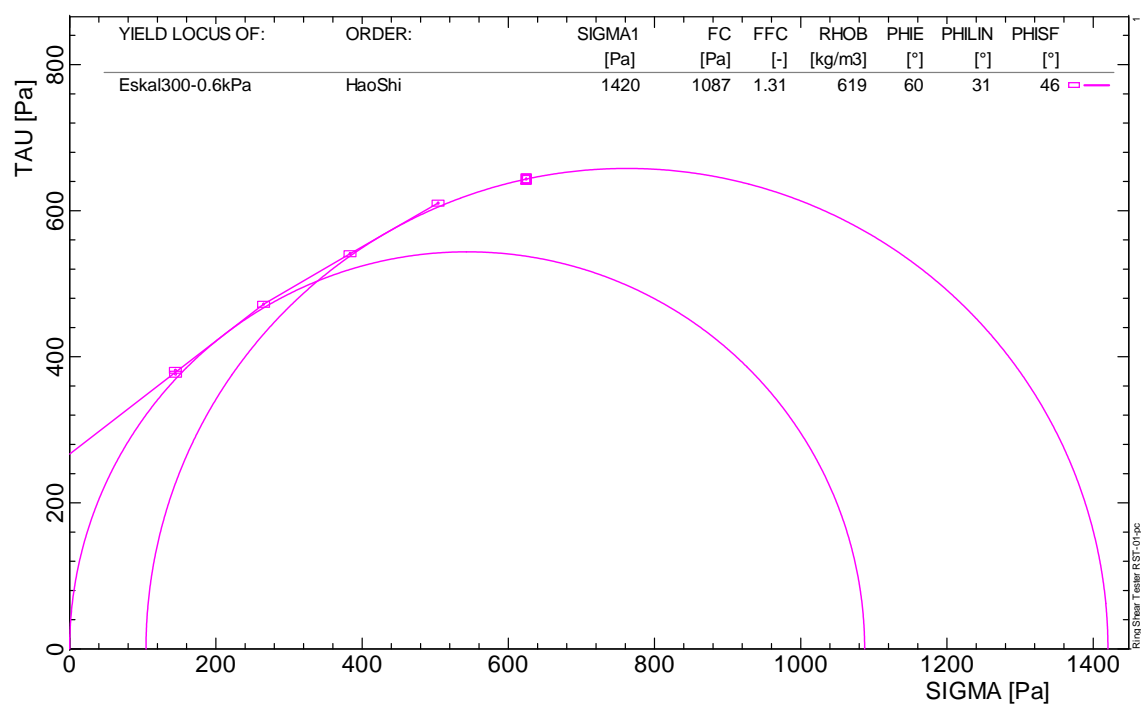
No.	SIGMA _{sh} [Pa]	TAU _{pre} [Pa]	TAU _{sh} [Pa]	TAU _{sh,pr} [Pa]	RHOB [kg/m ³]
1	145	628	372	381	617
5	145	655	383	376	621
2	265	636	467	472	618
3	383	647	544	541	620
4	504	650	617	610	620

Parameters of yield locus (flow properties):

SIGMA1 [Pa]	FC [Pa]	FFC [-]	FFRHO [-]	TAU _C [Pa]	RHOB [kg/m ³]	PHIE [°]	PHILIN [°]	PHISF [°]
1420	1087	1,31	0,81	267	619	59,7	31,5	45,9

Approximation of the yield locus: Straight sections

Prorating: on



YIELD LOCUS OF: Eskal300-0.6kPa

ORDER: HaoShi

Mean normal stress at preshear: SIGMA_{pre,m} = 625 Pa

Raw data:

N_{pre} = 1,3837 kg

No.	Shear cell	m,tot [g]	Dh [mm]	N,sh [kg]	S,pre [kg]	S,sh [kg]
1	1	2692,1	7,100	0,2778	0,9139	0,5404
5	1	2692,1	7,330	0,2778	0,9457	0,5484
2	1	2692,1	7,180	0,5555	0,9298	0,6795
3	1	2692,1	7,230	0,8282	0,9298	0,7828
4	1	2692,1	7,290	1,1059	0,9418	0,8861

Stresses:

Tau_{pre,m} = 652 PaSIGMA_{pre,m} = 625 Pa

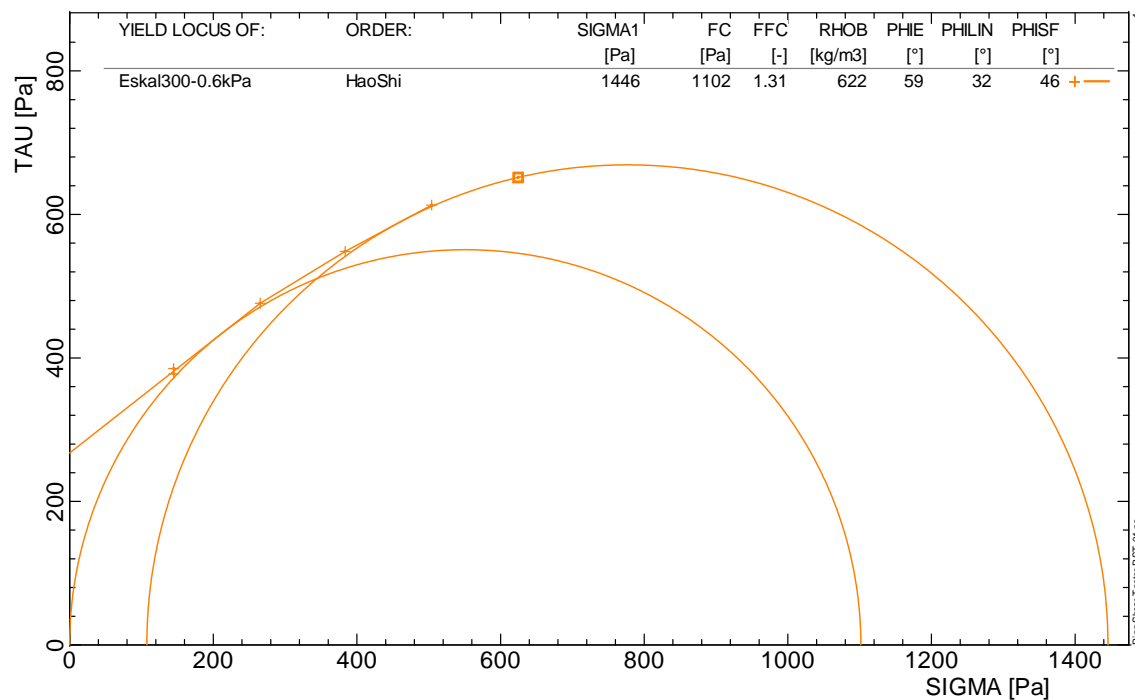
No.	SIGMA _{sh} [Pa]	TAU _{pre} [Pa]	TAU _{sh} [Pa]	TAU _{sh,pr} [Pa]	RHOB [kg/m ³]
1	145	639	378	385	620
5	145	661	383	378	625
2	265	650	475	476	622
3	384	650	547	549	623
4	504	658	619	613	624

Parameters of yield locus (flow properties):

SIGMA1 [Pa]	FC [Pa]	FFC [-]	FFRHO [-]	TAU _C [Pa]	RHOB [kg/m ³]	PHIE [°]	PHILIN [°]	PHISF [°]
1446	1102	1,31	0,82	268	622	59,5	31,6	46,2

Approximation of the yield locus: Straight sections

Prorating: on



YIELD LOCUS OF: Eskal300-0.6kPa

ORDER: HaoShi

Mean normal stress at preshear: SIGMA_{pre,m} = 625 Pa

Raw data:

N_{pre} = 1,3837 kg

No.	Shear cell	m,tot [g]	Dh [mm]	N,sh [kg]	S,pre [kg]	S,sh [kg]
1	1	2696,8	6,760	0,2778	0,9338	0,5444
5	1	2696,8	6,970	0,2778	0,9537	0,5603
2	1	2696,8	6,840	0,5555	0,9418	0,6914
3	1	2696,8	6,880	0,8282	0,9457	0,7947
4	1	2696,8	6,930	1,1059	0,9457	0,8901

Stresses:

Tau_{pre,m} = 660 PaSIGMA_{pre,m} = 625 Pa

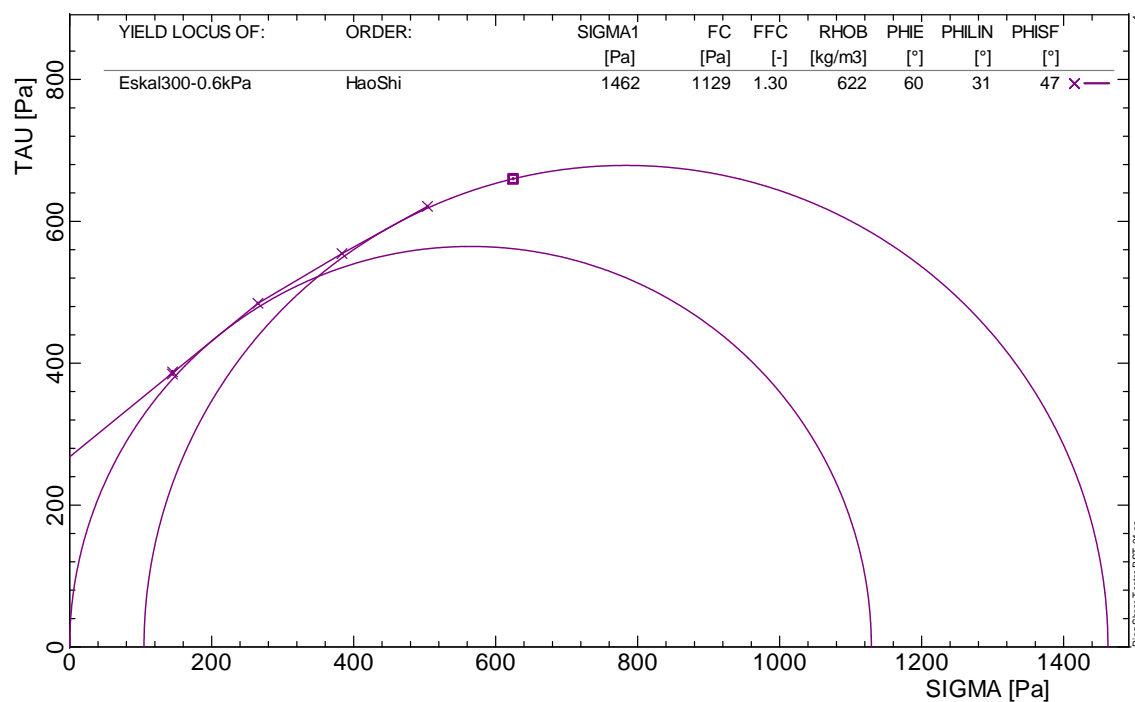
No.	SIGMA _{sh} [Pa]	TAU _{pre} [Pa]	TAU _{sh} [Pa]	TAU _{sh,pr} [Pa]	RHOB [kg/m ³]
1	145	653	381	385	620
5	145	667	392	388	624
2	265	658	483	484	621
3	384	661	555	555	622
4	504	661	622	621	623

Parameters of yield locus (flow properties):

SIGMA1 [Pa]	FC [Pa]	FFC [-]	FFRHO [-]	TAU _C [Pa]	RHOB [kg/m ³]	PHIE [°]	PHILIN [°]	PHISF [°]
1462	1129	1,30	0,81	268	622	60,0	31,4	46,6

Approximation of the yield locus: Straight sections

Prorating: on



YIELD LOCUS OF: Eskal300-1kPa

ORDER: HaoShi

Mean normal stress at preshear: SIGMA,pre,m = 1027 Pa

Raw data:

N,pre = 2,3078 kg

No.	Shear cell	m,tot [g]	Dh [mm]	N,sh [kg]	S,pre [kg]	S,sh [kg]
1	1	2722,8	7,060	0,4595	1,4742	0,7947
4	1	2722,8	7,250	0,4595	1,5179	0,8186
2	1	2722,8	7,160	1,1514	1,4941	1,1365
3	1	2722,8	7,210	1,8432	1,5100	1,4067

Stresses:

Tau,pre,m = 1048 Pa

SIGMA,pre,m = 1027 Pa

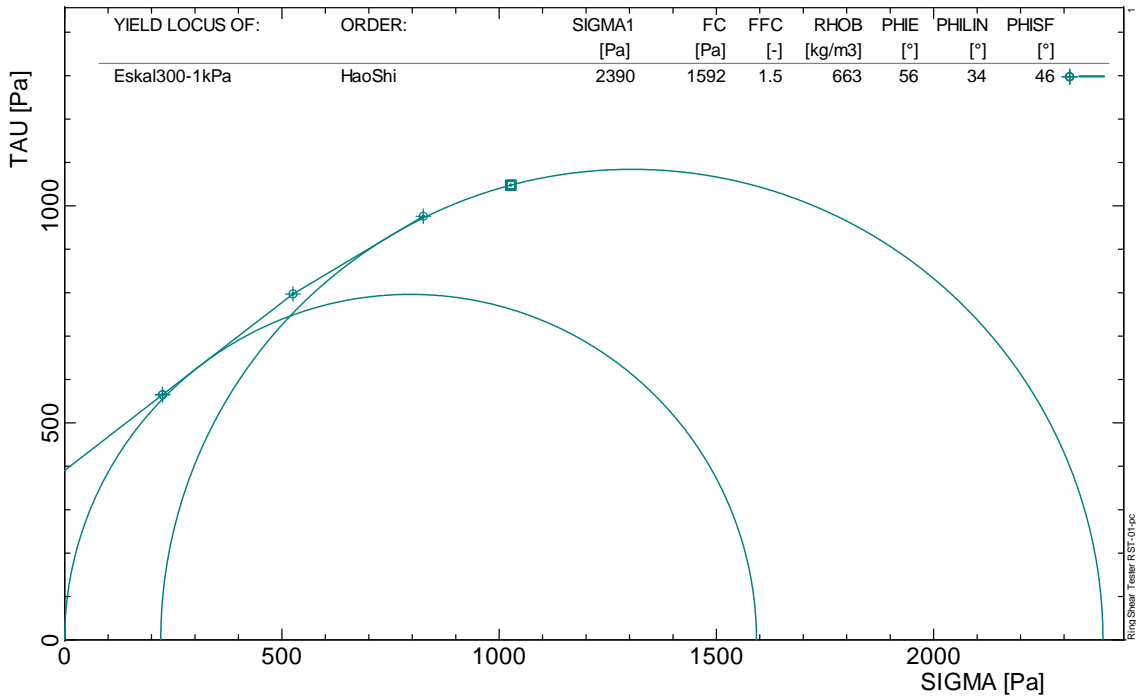
No.	SIGMA,sh [Pa]	TAU,pre [Pa]	TAU,sh [Pa]	TAU,sh,pr [Pa]	RHOB [kg/m3]
1	225	1030	555	565	661
4	225	1061	572	565	665
2	525	1044	794	797	663
3	825	1055	983	976	664

Parameters of yield locus (flow properties):

SIGMA1 [Pa]	FC [Pa]	FFC [-]	FFRHO [-]	TAU,C [Pa]	RHOB [kg/m3]	PHIE [°]	PHILIN [°]	PHISF [°]
2390	1592	1,50	0,99	391	663	56,2	34,4	45,6

Approximation of the yield locus: Straight sections

Prorating: on



YIELD LOCUS OF: Eskal300-1kPa

ORDER: HaoShi

Mean normal stress at preshear: SIGMA_{pre,m} = 1027 Pa

Raw data:

N_{pre} = 2,3078 kg

No.	Shear cell	m,tot [g]	Dh [mm]	N,sh [kg]	S,pre [kg]	S,sh [kg]
1	1	2663,6	11,040	0,4595	1,4464	0,8027
4	1	2663,6	11,230	0,4595	1,5140	0,8345
2	1	2663,6	11,120	1,1514	1,4742	1,1444
3	1	2663,6	11,180	1,8432	1,4941	1,4067

Stresses:

Tau_{pre,m} = 1036 PaSIGMA_{pre,m} = 1027 Pa

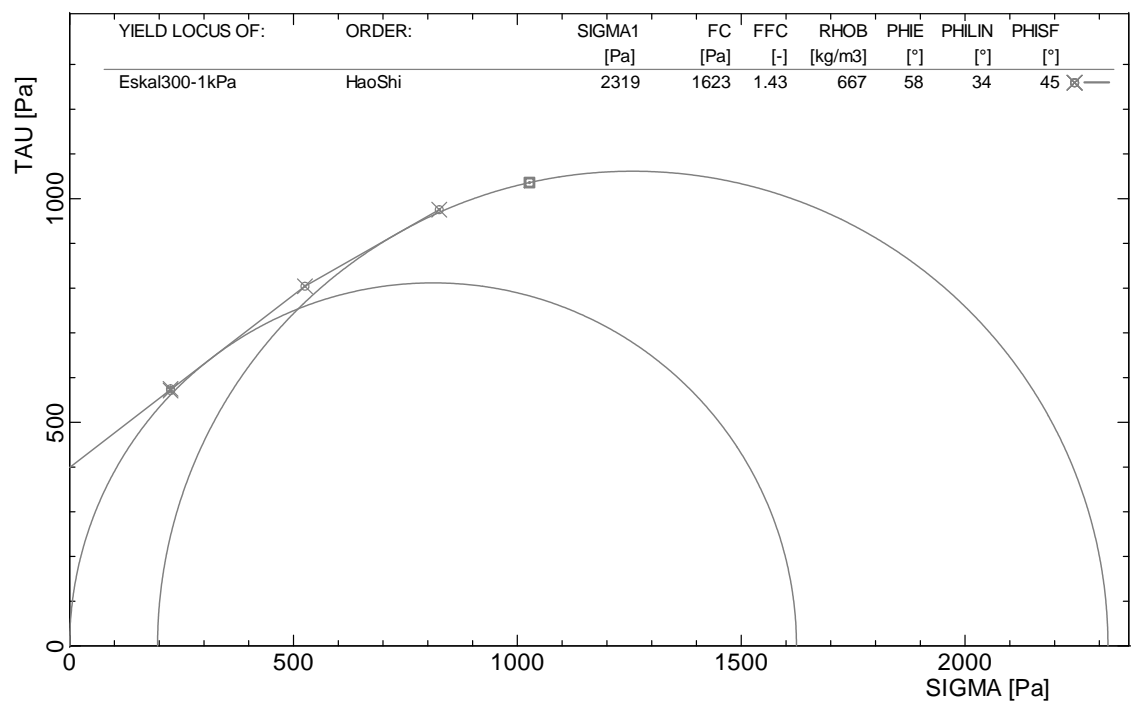
No.	SIGMA _{sh} [Pa]	TAU _{pre} [Pa]	TAU _{sh} [Pa]	TAU _{sh,pr} [Pa]	RHOB [kg/m3]
1	225	1011	561	575	665
4	226	1058	583	571	669
2	526	1030	800	804	667
3	826	1044	983	975	668

Parameters of yield locus (flow properties):

SIGMA1 [Pa]	FC [Pa]	FFC [-]	FFRHO [-]	TAU _C [Pa]	RHOB [kg/m3]	PHIE [°]	PHILIN [°]	PHISF [°]
2319	1623	1,43	0,95	399	667	57,6	34,0	45,2

Approximation of the yield locus: Straight sections

Prorating: on



YIELD LOCUS OF: Eskal300-1kPa

ORDER: HaoShi

Mean normal stress at preshear: SIGMA,pre,m = 1027 Pa

Raw data:

N,pre = 2,3078 kg

No.	Shear cell	m,tot [g]	Dh [mm]	N,sh [kg]	S,pre [kg]	S,sh [kg]
1	1	2672,8	10,320	0,4595	1,4941	0,8265
4	1	2672,8	10,470	0,4595	1,5179	0,8345
2	1	2672,8	10,390	1,1514	1,5060	1,1603
3	1	2672,8	10,430	1,8432	1,4981	1,4226

Stresses:

Tau,pre,m = 1051 Pa

SIGMA,pre,m = 1027 Pa

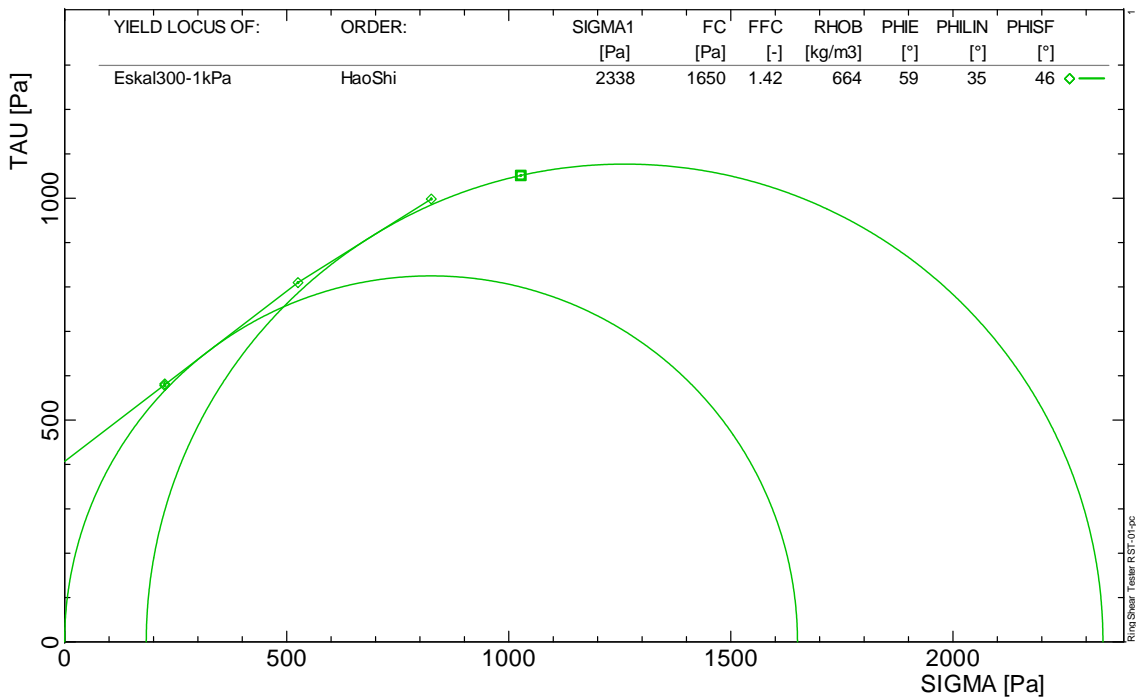
No.	SIGMA,sh [Pa]	TAU,pre [Pa]	TAU,sh [Pa]	TAU,sh,pr [Pa]	RHOB [kg/m3]
1	225	1044	578	582	662
4	225	1061	583	578	665
2	525	1053	811	810	663
3	825	1047	994	998	664

Parameters of yield locus (flow properties):

SIGMA1 [Pa]	FC [Pa]	FFC [-]	FFRHO [-]	TAU,C [Pa]	RHOB [kg/m3]	PHIE [°]	PHILIN [°]	PHISF [°]
2338	1650	1,42	0,94	407	664	58,7	35,3	45,7

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]
Eskal300-0.2kPa	HaoShi	508	433	1,17	0,62	531
Eskal300-0.2kPa	HaoShi	497	449	1,11	0,59	536
Eskal300-0.2kPa	HaoShi	511	446	1,15	0,60	525
Eskal300-0.6kPa	HaoShi	1420	1087	1,31	0,81	619
Eskal300-0.6kPa	HaoShi	1446	1102	1,31	0,82	622
Eskal300-0.6kPa	HaoShi	1462	1129	1,30	0,81	622
Eskal300-1kPa	HaoShi	2390	1592	1,50	0,99	663
Eskal300-1kPa	HaoShi	2319	1623	1,43	0,95	667
Eskal300-1kPa	HaoShi	2338	1650	1,42	0,94	664

Approximation of the yield loci: Straight sections

Prorating: on

