

LAMPIRAN

DATA PENGUJIAN KUAT TARIK

NO	TEGANGAN (MPa)			REGANGAN			MODULUS ELASTISITAS (MPa)		
	CaCO ₃ 5%	CaCO ₃ 15%	CaCO ₃ 25%	CaCO ₃ 5%	CaCO ₃ 15%	CaCO ₃ 25%	CaCO ₃ 5%	CaCO ₃ 15%	CaCO ₃ 25%
1	24,659	24,455	22,042	0,356	0,200	0,074	69,267	122,275	297,865
2	21,910	24,898	21,884	1,694	0,184	0,057	12,934	135,315	383,930
3	25,924	24,199	23,108	0,748	0,336	0,080	34,658	72,021	288,850
4	21,065	24,922	22,460	2,128	0,207	0,120	9,899	120,396	187,167
5	20,174	24,509	23,561	2,128	0,189	0,258	9,480	129,677	91,322
<i>MIN</i>	20,174	24,199	21,884	0,356	0,184	0,057	9,480	72,021	91,322
<i>MAX</i>	25,924	24,922	23,561	2,128	0,336	0,258	69,267	135,315	383,930
<i>AVERAGE</i>	22,746	24,597	22,611	1,411	0,223	0,118	27,248	115,937	249,827
<i>STDV</i>	2,444	0,309	0,711	0,816	0,064	0,082	25,701	25,264	112,766

PENGUKURAN SPESIMEN MULTIPURPOSE 3 TITIK DENGAN KANDUNGAN FILLER CaCO₃ 5%

	1	2	3	Jumlah (mm)	Rata-rata(mm)		1	2	3	Jumlah (mm)	Rata-rata (mm)	A (mm ²)
	(mm)	(mm)	(mm)				(mm)	(mm)	(mm)			
TEBAL	4,01	4,01	4,01	12,030	4,010	LEBAR	10,01	10,02	10,05	30,080	10,027	40,207
	4,01	4,02	4,01	12,040	4,013		10,06	10,00	10,04	30,100	10,033	40,267
	4,01	4,01	4,04	12,060	4,020		10,08	9,97	9,97	30,020	10,007	40,227
	4,00	4,04	4,04	12,080	4,027		9,97	9,97	9,98	29,920	9,973	40,159
	4,01	4,01	4,01	12,030	4,010		10,11	10,10	9,98	30,190	10,063	40,354

PENGUKURAN SPESIMEN MULTIPURPOSE 3 TITIK DENGAN KANDUNGAN FILLER CaCO₃ 15%

TEBAL	1 (mm)	2 (mm)	3 (mm)	Jumlah (mm)	Rata-rata (mm)	LEBAR	1 (mm)	2 (mm)	3 (mm)	Jumlah (mm)	Rata-rata (mm)	A (mm ²)
	4,00	4,02	4,03	12,050	4,017		10,05	10,09	10,09	30,230	10,077	40,475
	4,00	4,00	4,00	12,000	4,000		10,09	9,95	10,04	30,080	10,027	40,107
	4,03	4,00	4,02	12,050	4,017		10,09	9,96	9,95	30,000	10,000	40,167
	4,03	4,00	4,03	12,060	4,020		9,96	9,96	10,00	29,920	9,973	40,093
	4,05	4,04	4,01	12,100	4,033		10,00	9,97	9,97	29,940	9,980	40,253

PENGUKURAN SPESIMEN MULTIPURPOSE 3 TITIK DENGAN KANDUNGAN FILLER CaCO₃ 25%

TEBAL	1 (mm)	2 (mm)	3 (mm)	Jumlah (mm)	Rata-rata (mm)	LEBAR	1 (mm)	2 (mm)	3 (mm)	Jumlah (mm)	Rata-rata (mm)	A (mm ²)
	4,00	4,05	4,00	12,050	4,017		9,98	9,96	9,94	29,880	9,960	40,006
	4,00	4,01	4,00	12,010	4,003		9,95	9,98	9,99	29,920	9,973	39,927
	4,00	4,00	4,00	12,000	4,000		10,01	9,96	9,95	29,920	9,973	39,893
	4,00	4,04	4,05	12,090	4,030		9,92	9,97	9,92	29,810	9,937	40,045
	4,00	4,00	4,05	12,050	4,017		9,94	9,94	9,96	29,840	9,947	39,952

TAKIKAN**PP +CaCO3 5%**

No Spesimen	Cos α (°)	Hasil	Cos β (°)	Hasil	A (cm ²)	R cm	W (N)	Energi (joule)	Impact Strength (J/cm ²)
1	157	-0,92050485	156	-0,9135455	0,32	83	9,81	5,66654885	17,70796516
2	157	-0,92050485	155	-0,9063078	0,32	83	9,81	11,55967739	36,12399184
3	157	-0,92050485	155	-0,9063078	0,32	83	9,81	11,55967739	36,12399184
4	157	-0,92050485	156	-0,9135455	0,32	83	9,81	5,66654885	17,70796516
5	157	-0,92050485	156	-0,9135455	0,32	83	9,81	5,66654885	17,70796516
6	157	-0,92050485	156	-0,9135455	0,32	83	9,81	5,66654885	17,70796516
7	157	-0,92050485	155	-0,9063078	0,32	83	9,81	11,55967739	36,12399184
8	157	-0,92050485	155	-0,9063078	0,32	83	9,81	11,55967739	36,12399184
9	157	-0,92050485	155	-0,9063078	0,32	83	9,81	11,55967739	36,12399184
10	157	-0,92050485	155	-0,9063078	0,32	83	9,81	11,55967739	36,12399184
AVERAGE	157	-0,92050485	155,4	-0,9092029	0,32	83	9,81	9,202425973	28,75758116
MIN	157	-0,92050485	155	-0,9135455	0,32	83	9,81	5,66654885	17,70796516
MAX	157	-0,92050485	156	-0,9063078	0,32	83	9,81	11,55967739	36,12399184
STDV	0	1,17028E-16	0,5164	0,003737517	0	0	0	3,043198491	9,509995284

PP+CaCO3 15%									
No Spesimen	Cos α (°)	Hasil	Cos β (°)	Hasil	A (cm ²)	R cm	W (N)	Energi (joule)	Impact Strength (J/cm ²)
1	157	- 0,920504853	155	- 0,906307787	0,32	83	9,81	11,55967739	36,12399184
2	157	- 0,920504853	155	- 0,906307787	0,32	83	9,81	11,55967739	36,12399184
3	157	- 0,920504853	156	- 0,913545458	0,32	83	9,81	5,66654885	17,70796516
4	157	- 0,920504853	156	- 0,913545458	0,32	83	9,81	5,66654885	17,70796516
5	157	- 0,920504853	155	- 0,906307787	0,32	83	9,81	11,55967739	36,12399184
6	157	- 0,920504853	155	- 0,906307787	0,32	83	9,81	11,55967739	36,12399184
7	157	- 0,920504853	155	- 0,906307787	0,32	83	9,81	11,55967739	36,12399184
8	157	- 0,920504853	155	- 0,906307787	0,32	83	9,81	11,55967739	36,12399184
9	157	- 0,920504853	155	- 0,906307787	0,32	83	9,81	11,55967739	36,12399184
10	157	- 0,920504853	155	- 0,906307787	0,32	83	9,81	11,55967739	36,12399184
AVERAGE	157	- 0,920504853	155,2	- 0,907755321	0,32	83	9,81	10,38105168	32,4407865
MIN	157	-0,92050485	155	-0,9135455	0,32	83	9,81	5,66654885	17,70796516
MAX	157	-0,92050485	156	-0,9063078	0,32	83	9,81	11,55967739	36,12399184
STDV	0	1,17028E-16	0,42164	0,00305167	5,9E-17	0	0	2,484761163	7,764878634

TAKIKAN									
PP+CaCO ₃ 25%									
No Spesimen	Cos α (°)	Hasil	Cos β (°)	Hasil	A (cm ²)	R cm	W (N)	Energi (joule)	Impact Strength (J/cm ²)
1	157	- 0,920504853	156	- 0,913545458	0,32	83	9,81	5,66654885	17,70796516
2	157	- 0,920504853	155	- 0,906307787	0,32	83	9,81	11,55967739	36,12399184
3	157	- 0,920504853	155	- 0,906307787	0,32	83	9,81	11,55967739	36,12399184
4	157	- 0,920504853	156	- 0,913545458	0,32	83	9,81	5,66654885	17,70796516
5	157	- 0,920504853	155	- 0,906307787	0,32	83	9,81	11,55967739	36,12399184
6	157	- 0,920504853	155	- 0,906307787	0,32	83	9,81	11,55967739	36,12399184
7	157	- 0,920504853	155	- 0,906307787	0,32	83	9,81	11,55967739	36,12399184
8	157	- 0,920504853	156	- 0,913545458	0,32	83	9,81	5,66654885	17,70796516
9	157	- 0,920504853	155	- 0,906307787	0,32	83	9,81	11,55967739	36,12399184
10	157	- 0,920504853	155	- 0,906307787	0,32	83	9,81	11,55967739	36,12399184
AVERAGE	157	- 0,920504853	155,3	- 0,908479088	0,32	83	9,81	9,791738826	30,59918383
MIN	157	-0,92050485	155	-0,9135455	0,32	83	9,81	5,66654885	17,70796516
MAX	157	-0,92050485	156	-0,9063078	0,32	83	9,81	11,55967739	36,12399184
STDV	0	1,17028E-16	0,48305	0,003496127	0	0	0	2,846651528	8,895786026

Data pengujian impak tanpa takikan spesimen PP+CaCO₃ 5%

No Spesimen	Cos α (°)	Hasil	Cos β (°)	Hasil	A (cm ²)	R cm	W (N)	Energi (joule)	Impact Strength (J/cm ²)
1	157	- 0,920504853	149	- 0,857167301	0,4	83	9,81	51,57133558	128,9283389
2	157	- 0,920504853	150	- 0,866025404	0,4	83	9,81	44,3588023	110,8970058
3	157	- 0,920504853	144	- 0,809016994	0,4	83	9,81	90,7767595	226,9418987
4	157	- 0,920504853	148	- 0,848048096	0,4	83	9,81	58,99646549	147,4911637
5	157	- 0,920504853	145	- 0,819152044	0,4	83	9,81	82,52449781	206,3112445
6	157	- 0,920504853	143	-0,79863551	0,4	83	9,81	99,22967548	248,0741887
7	157	- 0,920504853	145	- 0,819152044	0,4	83	9,81	82,52449781	206,3112445
8	157	- 0,920504853	148	- 0,848048096	0,4	83	9,81	58,99646549	147,4911637
9	157	- 0,920504853	149	- 0,857167301	0,4	83	9,81	51,57133558	128,9283389
10	157	- 0,920504853	149	- 0,857167301	0,4	83	9,81	51,57133558	128,9283389
AVERAGE	157	- 0,920504853	147	- 0,837958009	0,4	83	9,81	67,21211706	168,0302927
MIN	157	-0,92050485	143	-0,8660254	0,4	83	9,81	44,3588023	110,8970058
MAX	157	-0,92050485	150	-0,7986355	0,4	83	9,81	99,22967548	248,0741887
STDV	0	1,17028E-16	2,49444	0,024012864	0	0	0	19,55199456	48,8799864

Data pengujian impact tanpa takikan spesimen PP+CaCO₃ 15%

No Spesimen	Cos α (°)	Hasil	Cos β (°)	Hasil	A (cm ²)	R cm	W (N)	Energi (joule)	Impact Strength (J/cm ²)
1	157	0,920504853	152	0,882947593	0,4	83	9,81	30,58024829	76,45062073
2	157	0,920504853	148	0,848048096	0,4	83	9,81	58,99646549	147,4911637
3	157	0,920504853	152	0,882947593	0,4	83	9,81	30,58024829	76,45062073
4	157	0,920504853	152	0,882947593	0,4	83	9,81	30,58024829	76,45062073
5	157	0,920504853	152	0,882947593	0,4	83	9,81	30,58024829	76,45062073
6	157	0,920504853	151	0,874619707	0,4	83	9,81	37,36106268	93,40265671
7	157	0,920504853	150	0,866025404	0,4	83	9,81	44,3588023	110,8970058
8	157	0,920504853	150	0,866025404	0,4	83	9,81	44,3588023	110,8970058
9	157	0,920504853	149	0,857167301	0,4	83	9,81	51,57133558	128,9283389
10	157	0,920504853	149	0,857167301	0,4	83	9,81	51,57133558	128,9283389
AVERAGE	157	0,920504853	150,5	0,870084358	0,4	83	9,81	41,05387971	102,6346993
MIN	157	-0,92050485	148	-0,8829476	0,4	83	9,81	30,58024829	76,45062073
MAX	157	-0,92050485	152	-0,8480481	0,4	83	9,81	58,99646549	147,4911637
STDV	0	1,17028E-16	1,50923	0,013058281	0	0	0	10,6324445	26,58111126

Data pengujian impak tanpa takikan spesimen PP+CaCO₃ 25%






No Spesimen	Cos α (°)	Hasil	Cos β (°)	Hasil	A (cm ²)	R cm	W (N)	Energi (joule)	Impact Strength (J/cm ²)
1	157	- 0,920504853	154	- 0,898794046	0,4	83	9,81	17,67759051	44,19397627
2	157	- 0,920504853	152	- 0,882947593	0,4	83	9,81	30,58024829	76,45062073
3	157	- 0,920504853	152	- 0,882947593	0,4	83	9,81	30,58024829	76,45062073
4	157	- 0,920504853	151	- 0,874619707	0,4	83	9,81	37,36106268	93,40265671
5	157	- 0,920504853	152	- 0,882947593	0,4	83	9,81	30,58024829	76,45062073
6	157	- 0,920504853	152	- 0,882947593	0,4	83	9,81	30,58024829	76,45062073
7	157	- 0,920504853	153	- 0,891006524	0,4	83	9,81	24,01842464	60,04606159
8	157	- 0,920504853	152	- 0,882947593	0,4	83	9,81	30,58024829	76,45062073
9	157	- 0,920504853	150	- 0,866025404	0,4	83	9,81	44,3588023	110,8970058
10	157	- 0,920504853	152	- 0,882947593	0,4	83	9,81	30,58024829	76,45062073
AVERAGE	157	- 0,920504853	152	- 0,882813124	0,4	83	9,81	30,68973699	76,72434247
MIN	157	- 0,92050485	150	-0,898794	0,4	83	9,81	17,67759051	44,19397627
MAX	157	- 0,92050485	154	-0,8660254	0,4	83	9,81	44,3588023	110,8970058
STDV	0	1,17028E-16	1,05409	0,00863835	0	0	0	7,033603662	17,58400915

KUAT TARIK

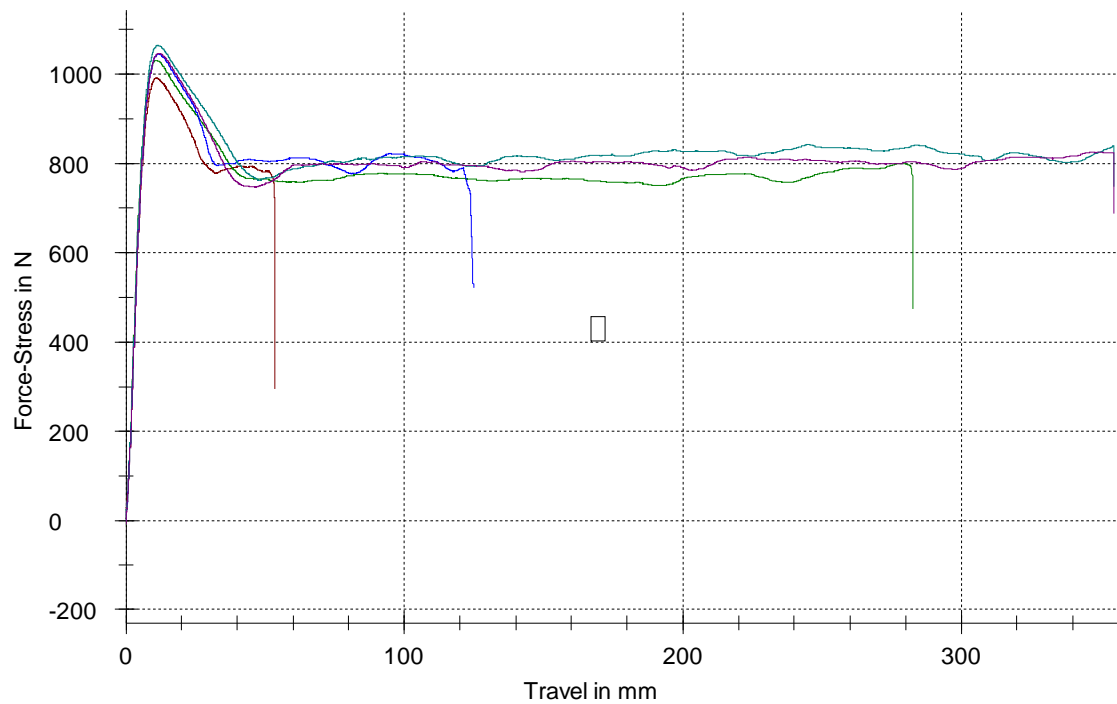
Parameter table:

Headline	: KUAT TARIK	Evaluat. method	: M (Automatic A, B or C)
Customer	: 1067/III/17	Specimen holders:	
Tester	: L Triyono	Extensometer	:
Material	: PP CaCO3 5%	Load cell	:
Test standard	: ISO 527-1B		

Results:

Legends	Nr	Fmax Lm kgf	Measurement travel end mm
	1	101.064	53.47
	2	89.934	254.20
	3	106.305	112.33
	4	86.234	319.34
	5	82.987	319.33

Series graph:



Statistics:






Series n = 5	Fmax Lm kgf	Measurement travel end mm
\bar{x}	93.305	211.73
s	9.963	122.36
v	10.68	57.79

KUAT TARIK

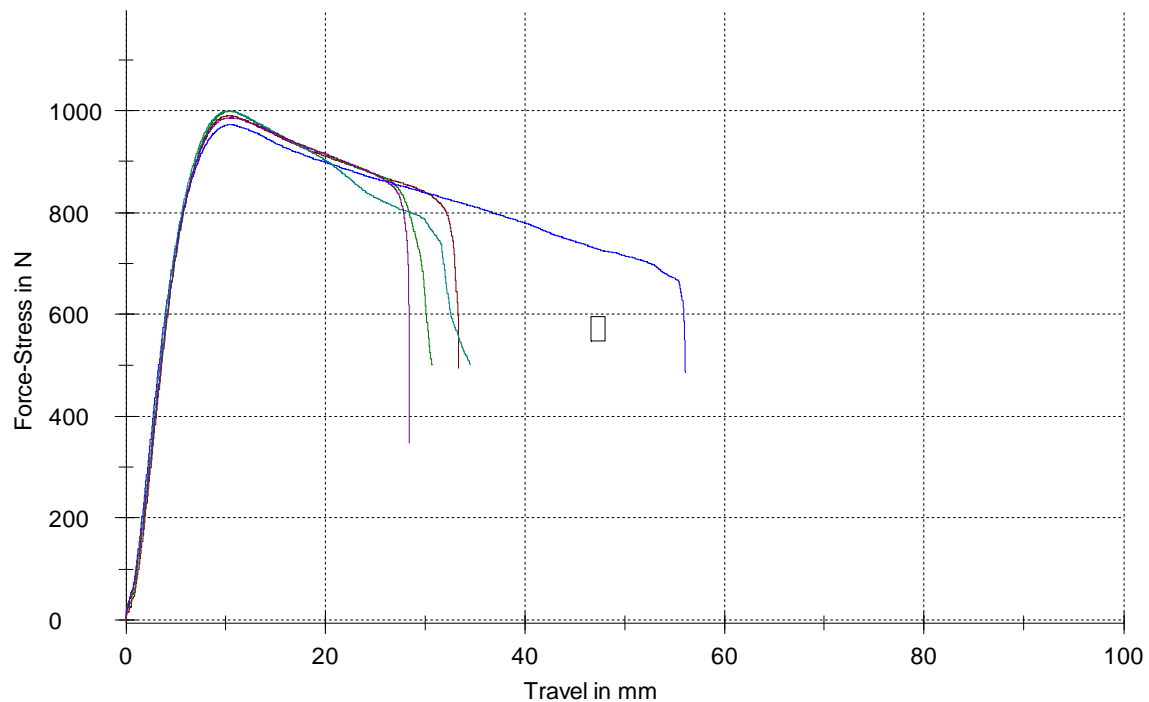
Parameter table:

Headline	: KUAT TARIK	Evaluat. method	: M (Automatic A, B or C)
Customer	: 694/III/17	Specimen holders:	
Tester	: L Triyono	Extensometer	:
Material	: PP + CaCO3 15%	Load cell	:
Test standard	: ISO 527 1B		

Results:

Legends	Nr	Fmax Lm kgf	Measurement travel end mm
	1	100.900	30.07
	2	101.791	27.60
	3	99.082	50.50
	4	101.855	31.06
	5	100.565	28.41

Series graph:



Statistics:






Series n = 5	Fmax Lm kgf	Measurement travel end mm
\bar{x}	100.838	33.53
s	1.130	9.58
v	1.12	28.59

KUAT TARIK

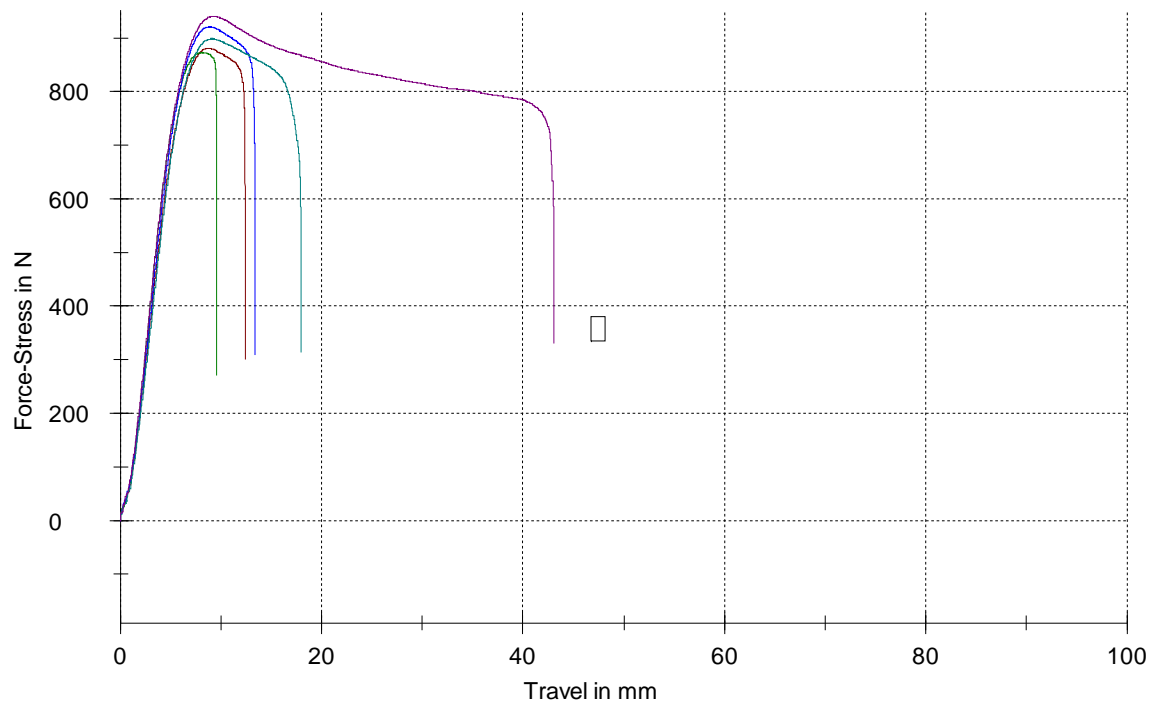
Parameter table:

Headline	: KUAT TARIK	Evaluat. method	: M (Automatic A, B or C)
Customer	: 1069/IV/17	Specimen holders:	
Tester	: L Triyono	Extensometer	:
Material	: PP + CaCO3	Load cell	:
Test standard	: ISO 527 - 1b		

Results:

Legends	Nr	Fmax Lm kgf	Measurement travel end mm
	1	89.888	11.15
	2	89.069	8.66
	3	93.972	12.09
	4	91.685	18.02
	5	95.955	38.76

Series graph:



Statistics:

Series n = 5	Fmax Lm kgf	Measurement travel end mm
\bar{x}	92.114	17.74
s	2.855	12.25
v	3.10	69.04