# KUAT TARIK

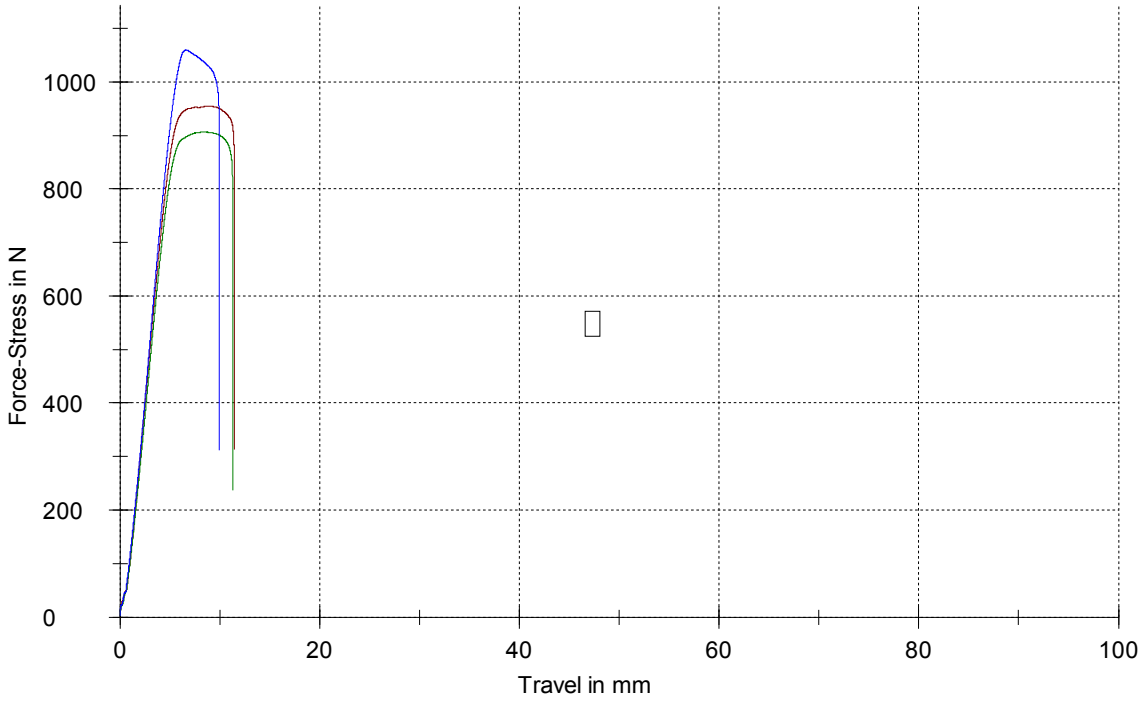
## Parameter table:

| | |
|---|---|
| Headline | : KUAT TARIK |
| Customer | : 581/IV/18 |
| Tester | : L TRIYONO |
| Material | : SPECIMEN 3D PRINTING PETG |
| Test standard | : ASTM D 638 |
| Evaluat. method | : M (Automatic A, B or C) |
| Specimen holders | : |
| Extensometer | : |
| Load cell | : |

## Results:

| Legends | Nr | Fmax Lm kgf | Measurement travel end mm |
|---|---|---|---|
| | 1 | 97,327 | 11,49 |
| | 2 | 92,409 | 11,29 |
| | 3 | 108,099 | 9,98 |

## Series graph:



# KUAT TARIK

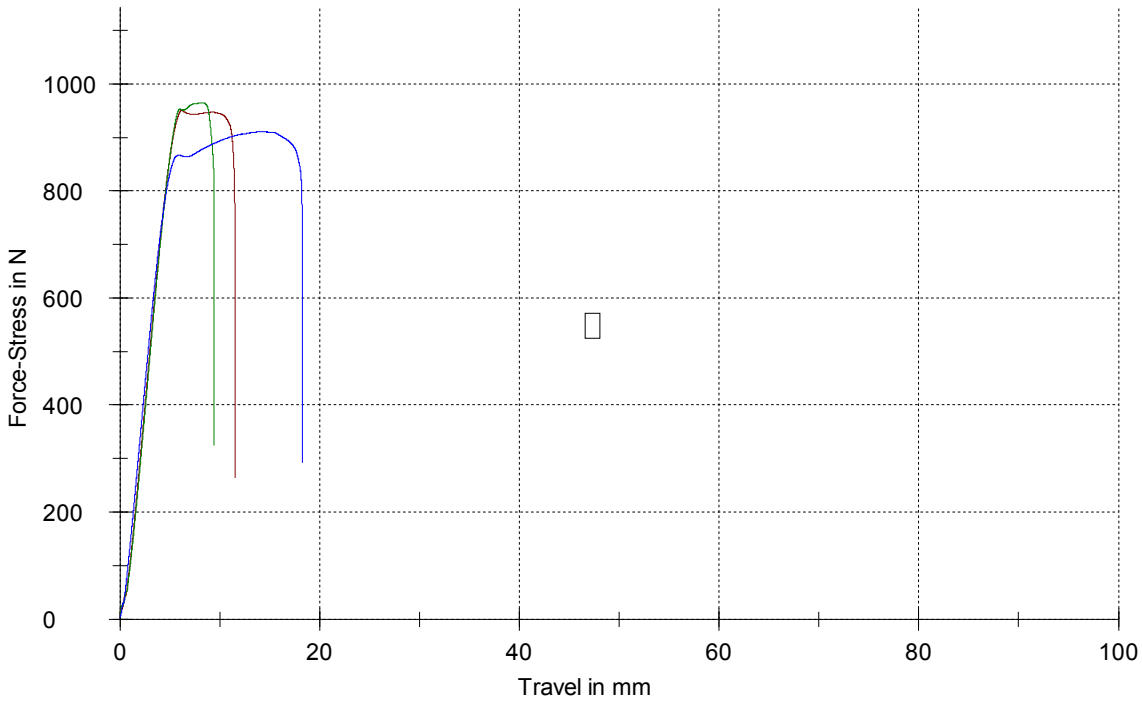
## Parameter table:

| | |
|---|---|
| Headline | : KUAT TARIK |
| Customer | : 582/IV/18 |
| Tester | : L TRIYONO |
| Material | : SPECIMEN 3D PRINTING PETG |
| Test standard | : ASTM D 638 |
| Evaluat. method | : M (Automatic A, B or C) |
| Specimen holders | : |
| Extensometer | : |
| Load cell | : |

## Results:

| Legends | Nr | Fmax Lm kgf | Measurement travel end mm |
|---|---|---|---|
| | 1 | 96,984 | 11,52 |
| | 2 | 98,418 | 9,44 |
| | 3 | 92,906 | 16,46 |

## Series graph:



# KUAT TARIK

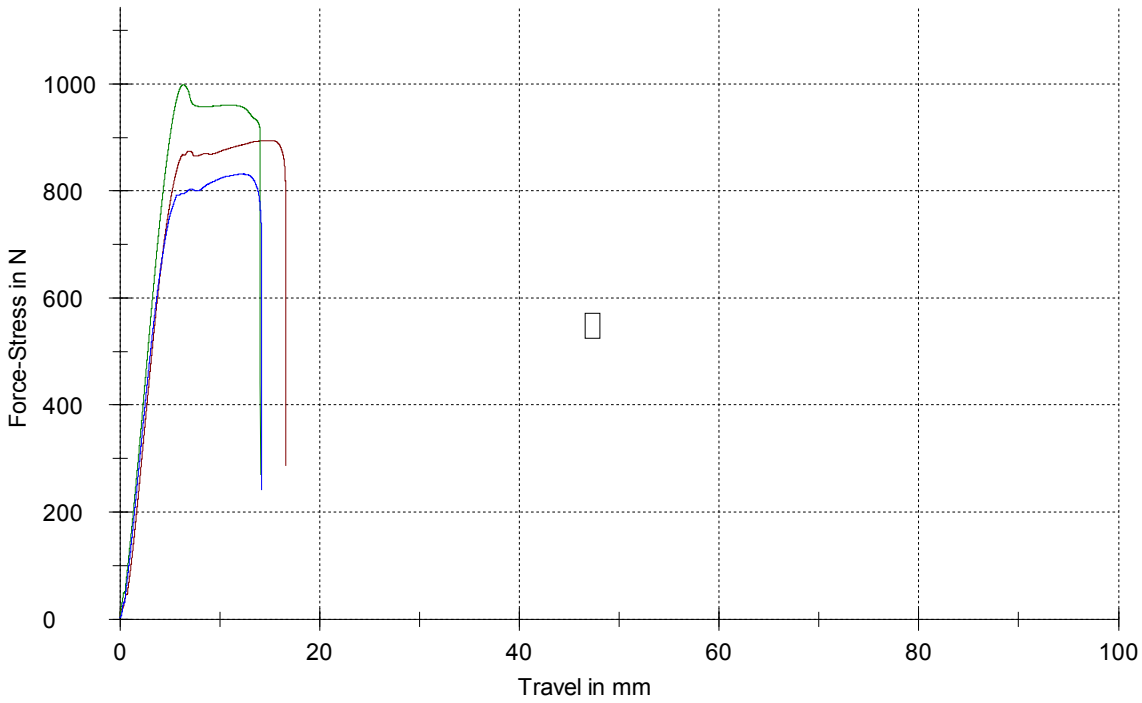
## Parameter table:

| | |
|---|---|
| Headline | : KUAT TARIK |
| Customer | : 583/IV/18 |
| Tester | : L TRIYONO |
| Material | : SPECIMEN 3D PRINTING PETG |
| Test standard | : ASTM D 638 |
| Evaluat. method | : M (Automatic A, B or C) |
| Specimen holders | : |
| Extensometer | : |
| Load cell | : |

## Results:

| Legends | Nr | Fmax Lm kgf | Measurement travel end mm |
|---|---|---|---|
| | 1 | 91,145 | 16,63 |
| | 2 | 101,857 | 14,08 |
| | 3 | 84,787 | 12,78 |

## Series graph:



# KUAT TARIK

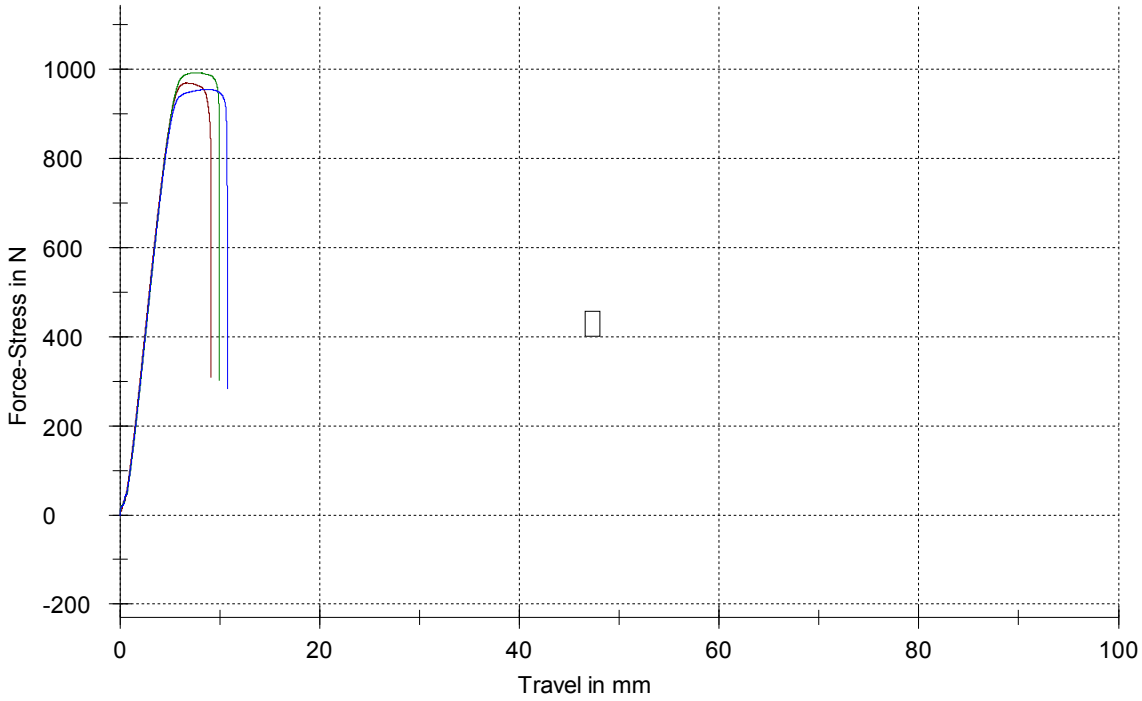
## Parameter table:

| | |
|---|---|
| Headline | : KUAT TARIK |
| Customer | : 584/IV/18 |
| Tester | : L TRIYONO |
| Material | : SPECIMEN 3D PRINTING PETG |
| Test standard | : ASTM D 638 |
| Evaluat. method | : M (Automatic A, B or C) |
| Specimen holders | : |
| Extensometer | : |
| Load cell | : |

## Results:

| Legends | Nr | Fmax Lm kgf | Measurement travel end mm |
|---|---|---|---|
| | 1 | 98,762 | 9,15 |
| | 2 | 101,062 | 8,99 |
| | 3 | 97,265 | 9,70 |

## Series graph:



# KUAT TARIK

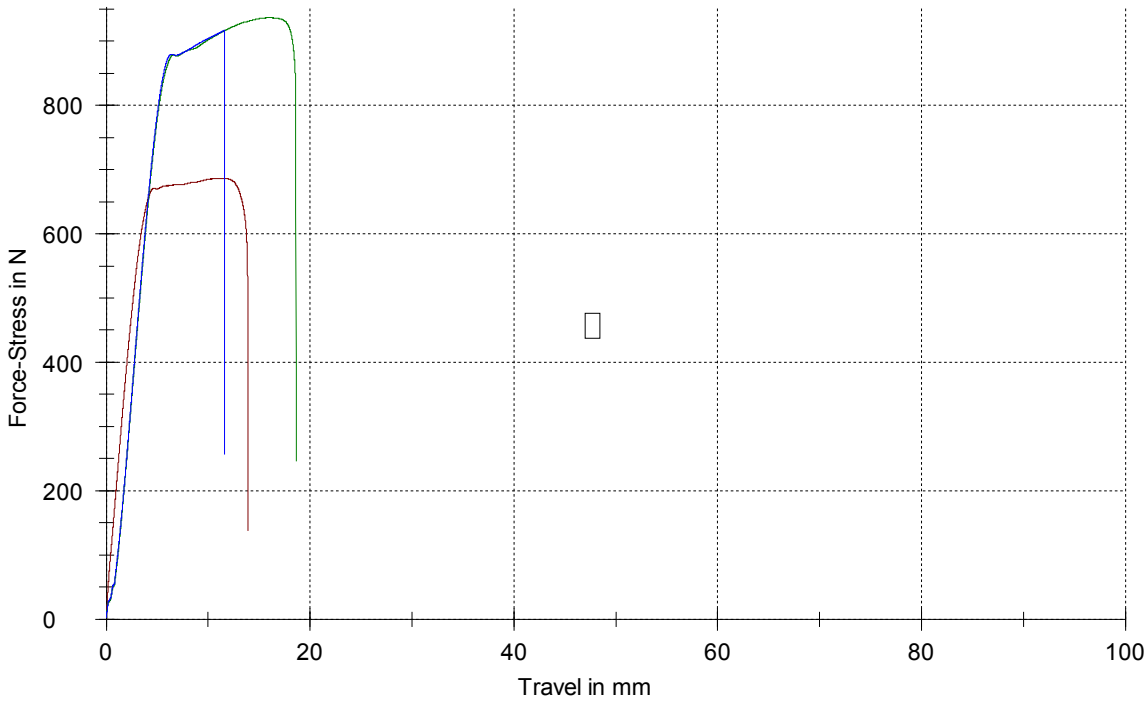
## Parameter table:

| | |
|---|---|
| Headline | : KUAT TARIK |
| Customer | : 585/IV/18 |
| Tester | : L TRIYONO |
| Material | : SPECIMEN 3D PRINTING PETG |
| Test standard | : ASTM D 638 |
| Evaluat. method | : M (Automatic A, B or C) |
| Specimen holders | : |
| Extensometer | : |
| Load cell | : |

## Results:

| Legends | Nr | Fmax Lm kgf | Measurement travel end mm |
|---|---|---|---|
| | 1 | 69,948 | 13,89 |
| | 2 | 95,496 | 18,62 |
| | 3 | 93,513 | 11,59 |

## Series graph:



# KUAT TARIK

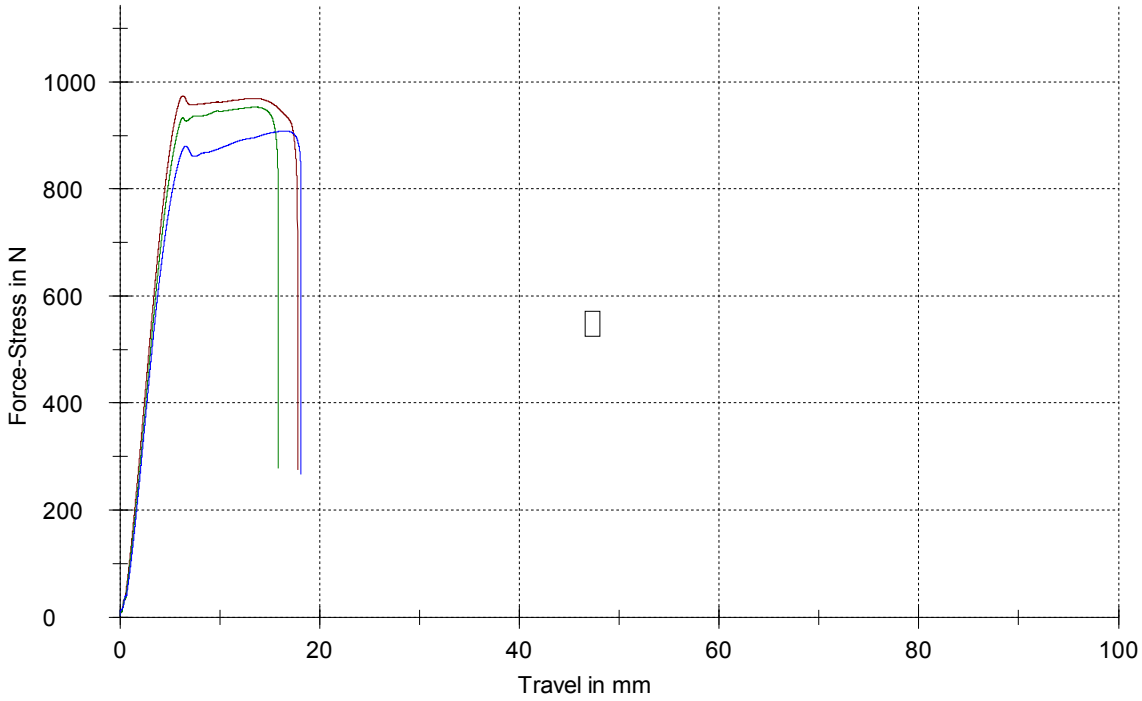
## Parameter table:

| | |
|---|---|
| Headline | : KUAT TARIK |
| Customer | : 586/IV/18 |
| Tester | : L TRIYONO |
| Material | : SPECIMEN 3D PRINTING PETG |
| Test standard | : ASTM D 638 |
| Evaluat. method | : M (Automatic A, B or C) |
| Specimen holders | : |
| Extensometer | : |
| Load cell | : |

## Results:

| Legends | Nr | Fmax Lm kgf | Measurement travel end mm |
|---|---|---|---|
| | 1 | 99,298 | 16,02 |
| | 2 | 97,172 | 15,85 |
| | 3 | 92,644 | 18,14 |

## Series graph:



# KUAT TARIK

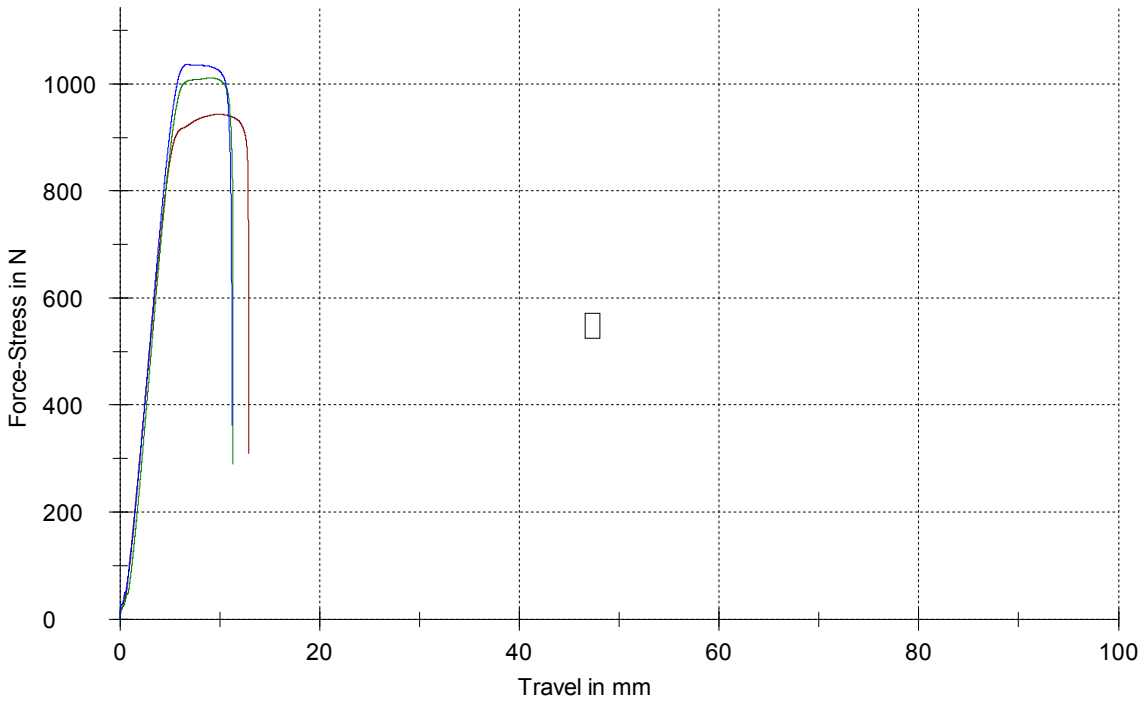
## Parameter table:

| | |
|---|---|
| Headline | : KUAT TARIK |
| Customer | : 587/IV/18 |
| Tester | : L TRIYONO |
| Material | : SPECIMEN 3D PRINTING PETG |
| Test standard | : ASTM D 638 |
| Evaluat. method | : M (Automatic A, B or C) |
| Specimen holders | : |
| Extensometer | : |
| Load cell | : |

## Results:

| Legends | Nr | Fmax Lm kgf | Measurement travel end mm |
|---|---|---|---|
| | 1 | 96,251 | 12,90 |
| | 2 | 103,100 | 11,32 |
| | 3 | 105,687 | 11,21 |

## Series graph:



# KUAT TARIK

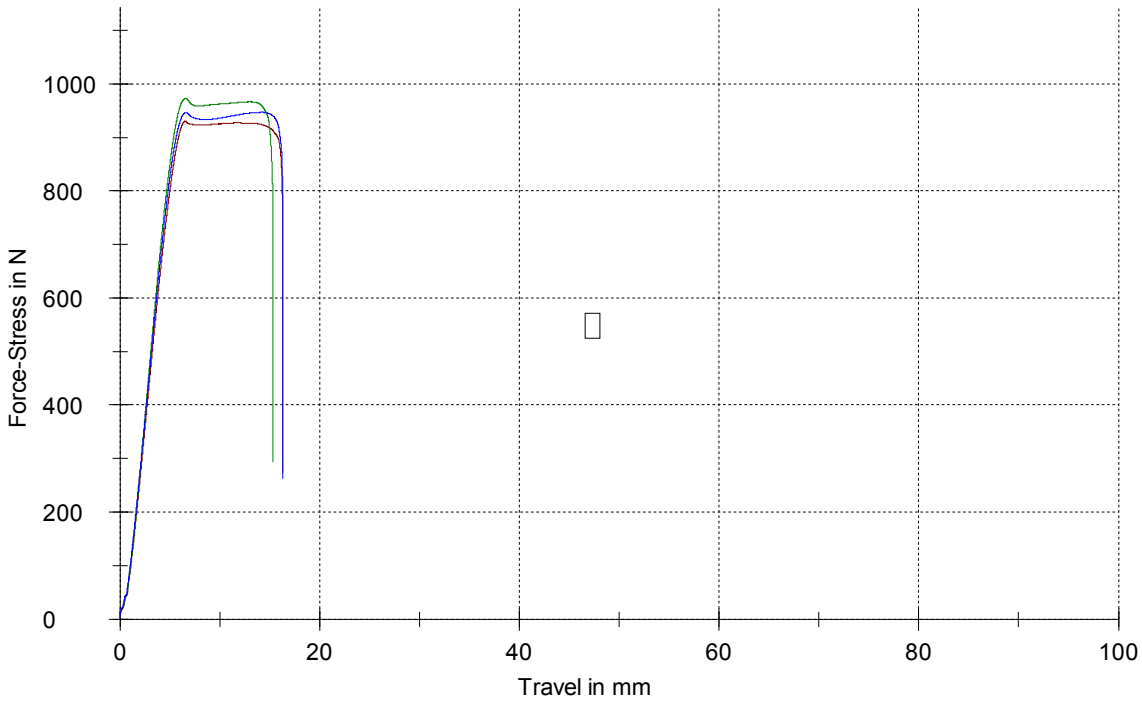
## Parameter table:

| | |
|---|---|
| Headline | : KUAT TARIK |
| Customer | : 588/IV/18 |
| Tester | : L TRIYONO |
| Material | : SPECIMEN 3D PRINTING PETG |
| Test standard | : ASTM D 638 |
| Evaluat. method | : M (Automatic A, B or C) |
| Specimen holders | : |
| Extensometer | : |
| Load cell | : |

## Results:

| Legends | Nr | Fmax Lm kgf | Measurement travel end mm |
|---|---|---|---|
| | 1 | 94,906 | 16,29 |
| | 2 | 99,216 | 15,36 |
| | 3 | 96,580 | 16,30 |

## Series graph:



# KUAT TARIK

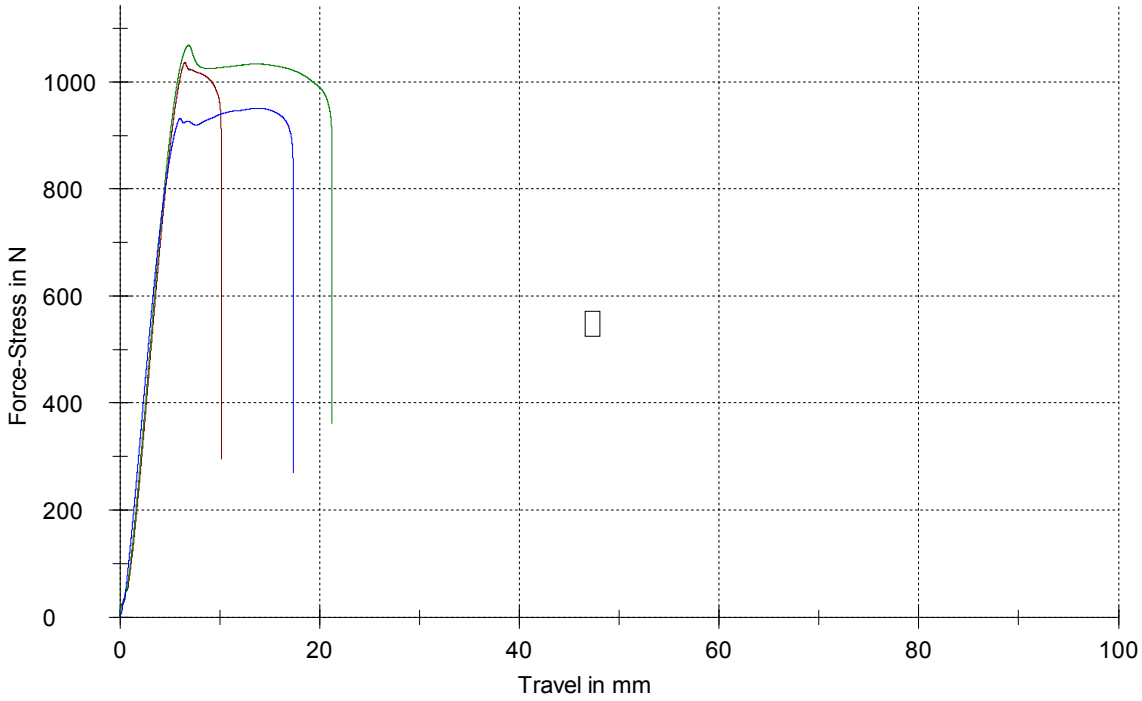
## Parameter table:

| | |
|---|---|
| Headline | : KUAT TARIK |
| Customer | : 589/IV/18 |
| Tester | : L TRIYONO |
| Material | : SPECIMEN 3D PRINTING PETG |
| Test standard | : ASTM D 638 |
| Evaluat. method | : M (Automatic A, B or C) |
| Specimen holders | : |
| Extensometer | : |
| Load cell | : |

## Results:

| Legends | Nr | Fmax Lm kgf | Measurement travel end mm |
|---|---|---|---|
| | 1 | 105,657 | 10,21 |
| | 2 | 108,969 | 19,16 |
| | 3 | 96,978 | 15,64 |

## Series graph:



# KUAT TARIK

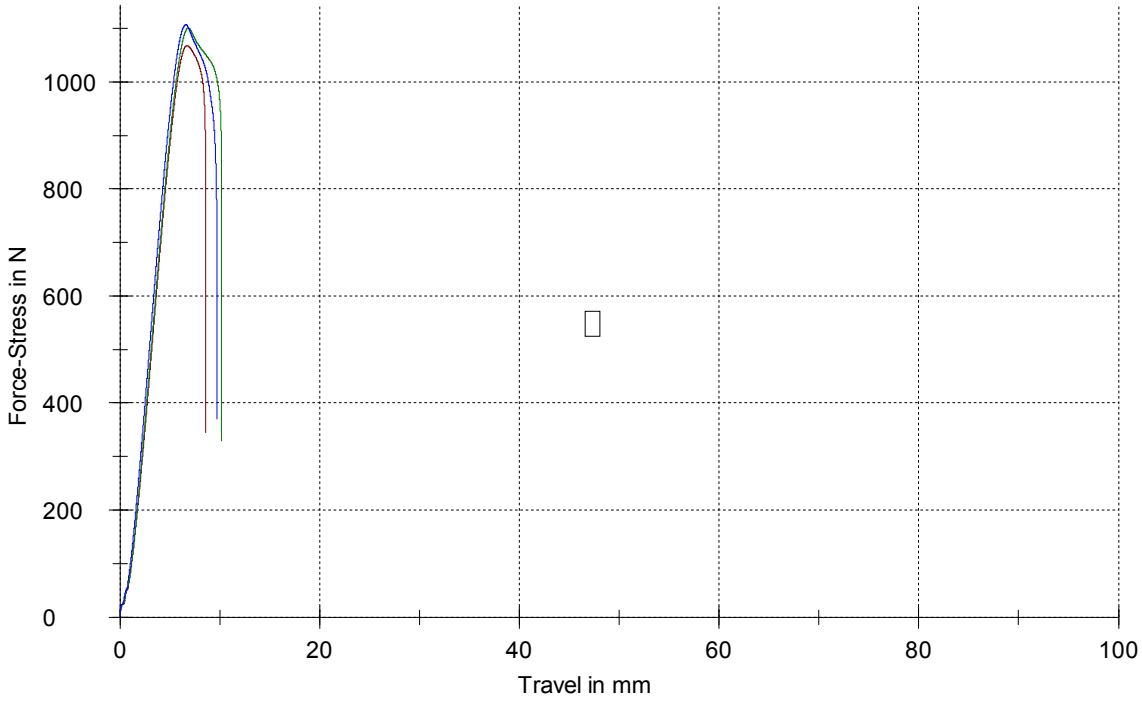
## Parameter table:

| | |
|---|---|
| Headline | : KUAT TARIK |
| Customer | : 1117UKKP-PLASTIK/VI/18 |
| Tester | : L.TRIYONO |
| Material | : SPECIMEN PETG 3D PRINTING |
| Test standard | : ASTM D 638 |
| Evaluat. method | : M (Automatic A, B or C) |
| Specimen holders | : |
| Extensometer | : |
| Load cell | : |

## Results:

| Legends | Nr | Fmax Lm kgf | Measurement travel end mm |
|---|---|---|---|
| | 1 | 108,906 | 8,58 |
| | 2 | 112,252 | 10,20 |
| | 3 | 112,925 | 9,75 |

## Series graph:



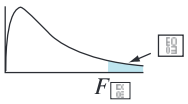



**TABLE 8**

Percentage points of the $F$ distribution ($df_2$ between 1 and 6)

| | | $df_1$ | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| $df_2$ | $\alpha$ | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | .25 | 5.83 | 7.50 | 8.20 | 8.58 | 8.82 | 8.98 | 9.10 | 9.19 | 9.26 | 9.32 |
| | .10 | 39.86 | 49.50 | 53.59 | 55.83 | 57.24 | 58.20 | 58.91 | 59.44 | 59.86 | 60.19 |
| | .05 | 161.4 | 199.5 | 215.7 | 224.6 | 230.2 | 234.0 | 236.8 | 238.9 | 240.5 | 241.9 |
| | .025 | 647.8 | 799.5 | 864.2 | 899.6 | 921.8 | 937.1 | 948.2 | 956.7 | 963.3 | 968.6 |
| | .01 | 4052 | 5000 | 5403 | 5625 | 5764 | 5859 | 5928 | 5981 | 6022 | 6056 |
| 2 | .25 | 2.57 | 3.00 | 3.15 | 3.23 | 3.28 | 3.31 | 3.34 | 3.35 | 3.37 | 3.38 |
| | .10 | 8.53 | 9.00 | 9.16 | 9.24 | 9.29 | 9.33 | 9.35 | 9.37 | 9.38 | 9.39 |
| | .05 | 18.51 | 19.00 | 19.16 | 19.25 | 19.30 | 19.33 | 19.35 | 19.37 | 19.38 | 19.40 |
| | .025 | 38.51 | 39.00 | 39.17 | 39.25 | 39.30 | 39.33 | 39.36 | 39.37 | 39.39 | 39.40 |
| | .01 | 98.50 | 99.00 | 99.17 | 99.25 | 99.30 | 99.33 | 99.36 | 99.37 | 99.39 | 99.40 |
| | .005 | 198.5 | 199.0 | 199.2 | 199.2 | 199.3 | 199.3 | 199.4 | 199.4 | 199.4 | 199.4 |
| | .001 | 998.5 | 999.0 | 999.2 | 999.2 | 999.3 | 999.3 | 999.4 | 999.4 | 999.4 | 999.4 |
| 3 | .25 | 2.02 | 2.28 | 2.36 | 2.39 | 2.41 | 2.42 | 2.43 | 2.44 | 2.44 | 2.44 |
| | .10 | 5.54 | 5.46 | 5.39 | 5.34 | 5.31 | 5.28 | 5.27 | 5.25 | 5.24 | 5.23 |
| | .05 | 10.13 | 9.55 | 9.28 | 9.12 | 9.01 | 8.94 | 8.89 | 8.85 | 8.81 | 8.79 |
| | .025 | 17.44 | 16.04 | 15.44 | 15.10 | 14.88 | 14.73 | 14.62 | 14.54 | 14.47 | 14.42 |
| | .01 | 34.12 | 30.82 | 29.46 | 28.71 | 28.24 | 27.91 | 27.67 | 27.49 | 27.35 | 27.23 |
| | .005 | 55.55 | 49.80 | 47.47 | 46.19 | 45.39 | 44.84 | 44.43 | 44.13 | 43.88 | 43.69 |
| | .001 | 167.0 | 148.5 | 141.1 | 137.1 | 134.6 | 132.8 | 131.6 | 130.6 | 129.9 | 129.2 |
| 4 | .25 | 1.81 | 2.00 | 2.05 | 2.06 | 2.07 | 2.08 | 2.08 | 2.08 | 2.08 | 2.08 |
| | .10 | 4.54 | 4.32 | 4.19 | 4.11 | 4.05 | 4.01 | 3.98 | 3.95 | 3.94 | 3.92 |
| | .05 | 7.71 | 6.94 | 6.59 | 6.39 | 6.26 | 6.16 | 6.09 | 6.04 | 6.00 | 5.96 |
| | .025 | 12.22 | 10.65 | 9.98 | 9.60 | 9.36 | 9.20 | 9.07 | 8.98 | 8.90 | 8.84 |
| | .01 | 21.20 | 18.00 | 16.69 | 15.98 | 15.52 | 15.21 | 14.98 | 14.80 | 14.66 | 14.55 |
| | .005 | 31.33 | 26.28 | 24.26 | 23.15 | 22.46 | 21.97 | 21.62 | 21.35 | 21.14 | 20.97 |
| | .001 | 74.14 | 61.25 | 56.18 | 53.44 | 51.71 | 50.53 | 49.66 | 49.00 | 48.47 | 48.05 |
| 5 | .25 | 1.69 | 1.85 | 1.88 | 1.89 | 1.89 | 1.89 | 1.89 | 1.89 | 1.89 | 1.89 |
| | .10 | 4.06 | 3.78 | 3.62 | 3.52 | 3.45 | 3.40 | 3.37 | 3.34 | 3.32 | 3.30 |
| | .05 | 6.61 | 5.79 | 5.41 | 5.19 | 5.05 | 4.95 | 4.88 | 4.82 | 4.77 | 4.74 |
| | .025 | 10.01 | 8.43 | 7.76 | 7.39 | 7.15 | 6.98 | 6.85 | 6.76 | 6.68 | 6.62 |
| | .01 | 16.26 | 13.27 | 12.06 | 11.39 | 10.97 | 10.67 | 10.46 | 10.29 | 10.16 | 10.05 |
| | .005 | 22.78 | 18.31 | 16.53 | 15.56 | 14.94 | 14.51 | 14.20 | 13.96 | 13.77 | 13.62 |
| | .001 | 47.18 | 37.12 | 33.20 | 31.09 | 29.75 | 28.83 | 28.16 | 27.65 | 27.24 | 26.92 |
| 6 | .25 | 1.62 | 1.76 | 1.78 | 1.79 | 1.79 | 1.78 | 1.78 | 1.78 | 1.77 | 1.77 |
| | .10 | 3.78 | 3.46 | 3.29 | 3.18 | 3.11 | 3.05 | 3.01 | 2.98 | 2.96 | 2.94 |
| | .05 | 5.99 | 5.14 | 4.76 | 4.53 | 4.39 | 4.28 | 4.21 | 4.15 | 4.10 | 4.06 |
| | .025 | 8.81 | 7.26 | 6.60 | 6.23 | 5.99 | 5.82 | 5.70 | 5.60 | 5.52 | 5.46 |
| | .01 | 13.75 | 10.92 | 9.78 | 9.15 | 8.75 | 8.47 | 8.26 | 8.10 | 7.98 | 7.87 |
| | .005 | 18.63 | 14.54 | 12.92 | 12.03 | 11.46 | 11.07 | 10.79 | 10.57 | 10.39 | 10.25 |
| | .001 | 35.51 | 27.00 | 23.70 | 21.92 | 20.80 | 20.03 | 19.46 | 19.03 | 18.69 | 18.41 |

# Program Studi Teknik Mesin

## Lembar Persetujuan Naskah Publikasi dan Abstrak Tugas Akhir (TA)

| | |
|---|---|
| Judul TA: | Analisis Pengaruh Parameter Proses 3D-*Printing* Material *Polyethlene Terephtalate Glycol* Terhadap Respon Akurasi Dimensi dan Kekuatan Tarik Menggunakan Metode Taguchi |
| Judul Naskah Publikasi: | Analisis Pengaruh Parameter Proses 3D-*Printing* Material *Polyethlene Terephtalate Glycol* Terhadap Respon Akurasi Dimensi dan Kekuatan Tarik Menggunakan Metode Taguchi |
| Nama Mahasiswa: | Ryan Fachzuri Hidayat |
| NIM: | 20140130039 |
| Pembimbing 1: | Ir. Aris Widyo Nugroho, M.T., Ph.D |
| Pembimbing 2: | Cahyo Budiyantoro, S.T., M.Sc., IPM |

Hal yang dimintakan pesetujuan *:

| | | | |
|---|---|---|---|
| ☑ Abstrak berbahasa Indonesia | ☑ Naskah Publikasi | ☐ ..... | ☐ ..... |
| ☑ Abstrak berbahasa Inggris | ☐ ..... | ☐ ..... | ☐ ..... |

**beri tanda √ di kotak yang sesuai*

*Tanda Tangan*

*Nama Mahasiswa* Ryan Fachzuri Hidayat *Tanggal* 27/7 2018

**Persetujuan Dosen Pembimbing dan Program Studi**

☑ Disetujui

*Tanda Tangan*

*Dosen Pembimbing* Aris Widyo Nugroho, M.T., Ph.D *Tanggal* 28/7 2018

*Tanda Tangan*

*Ketua/Sekretaris Program Studi* Berli P Kamiel., Ph.D *Tanggal* 01/08/2018

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