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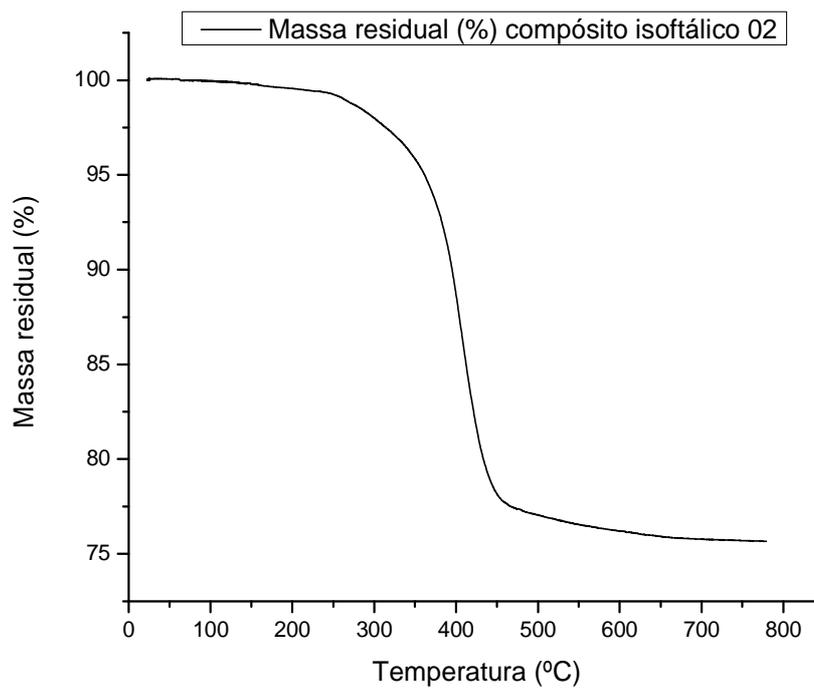
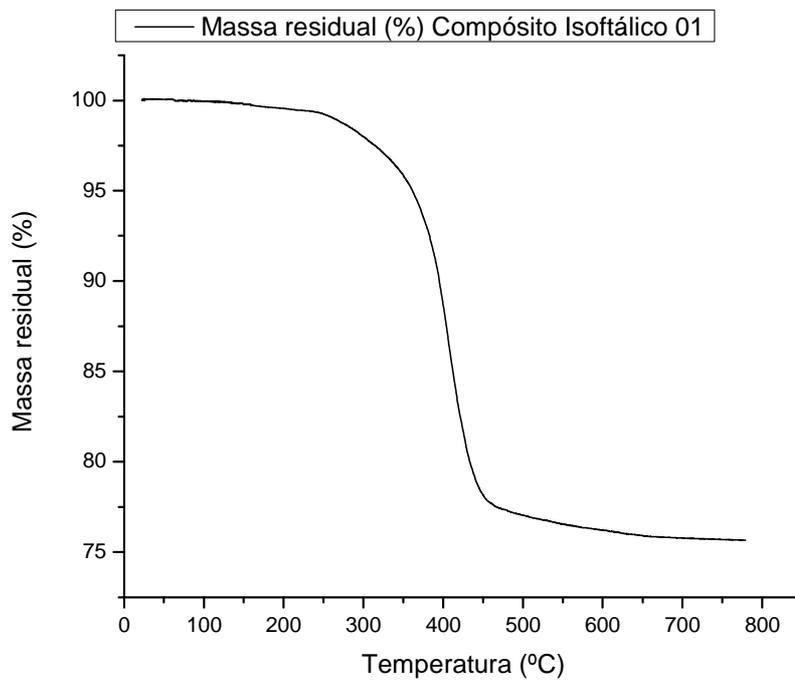
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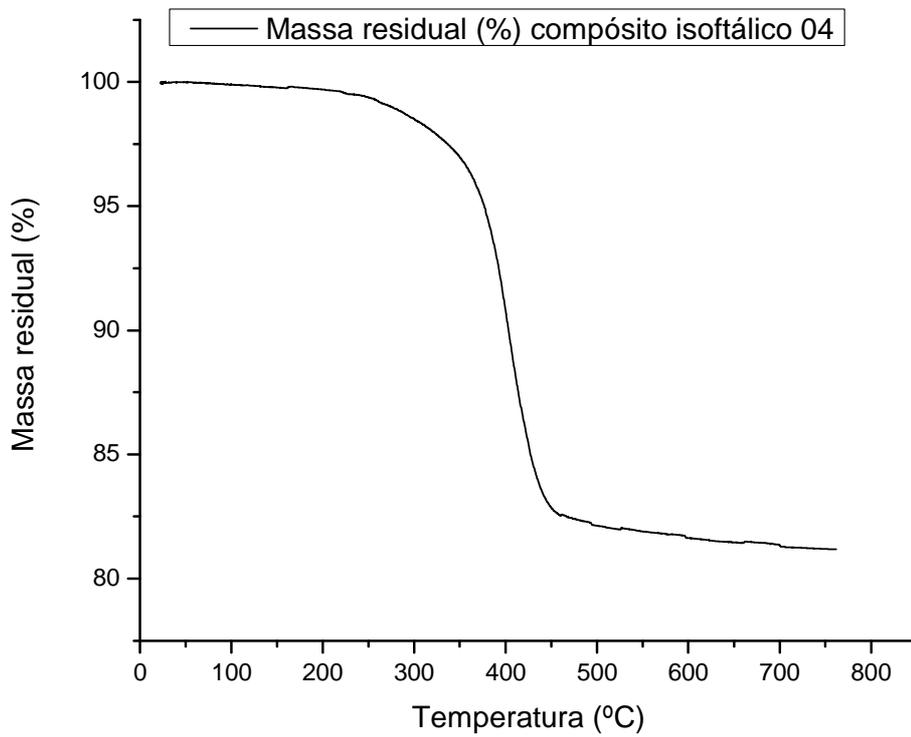
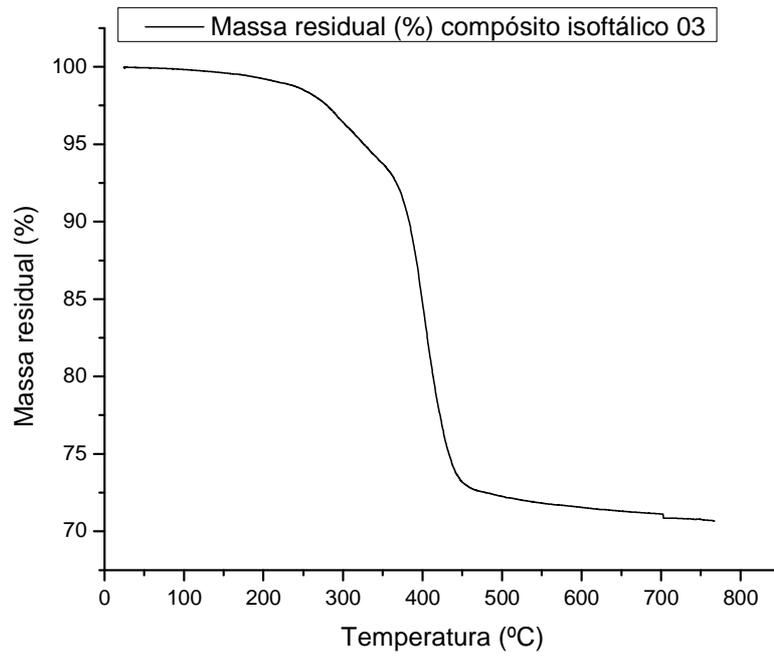
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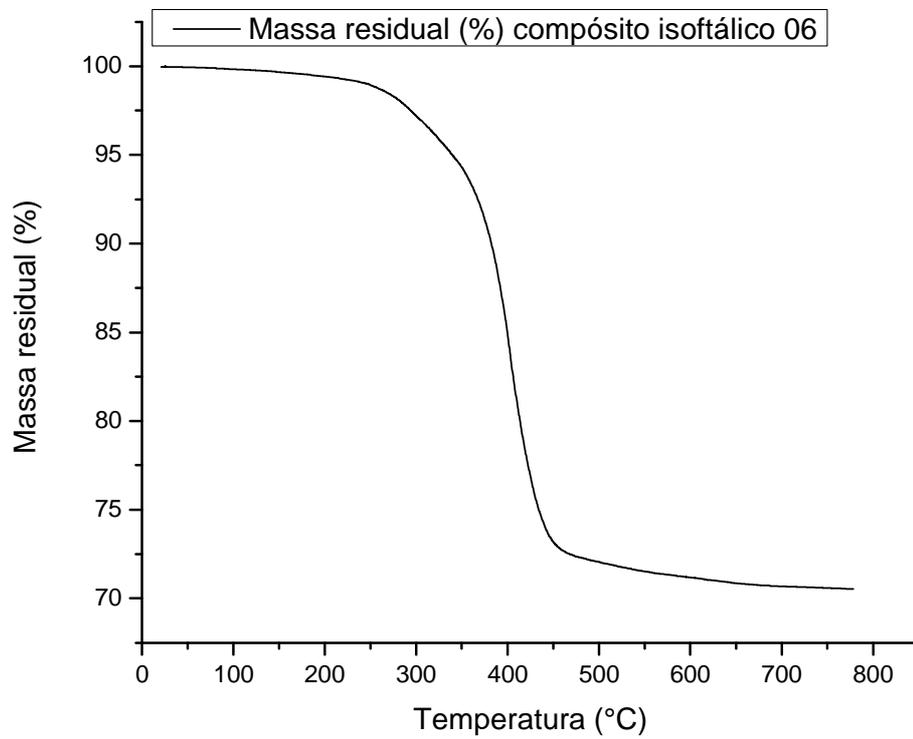
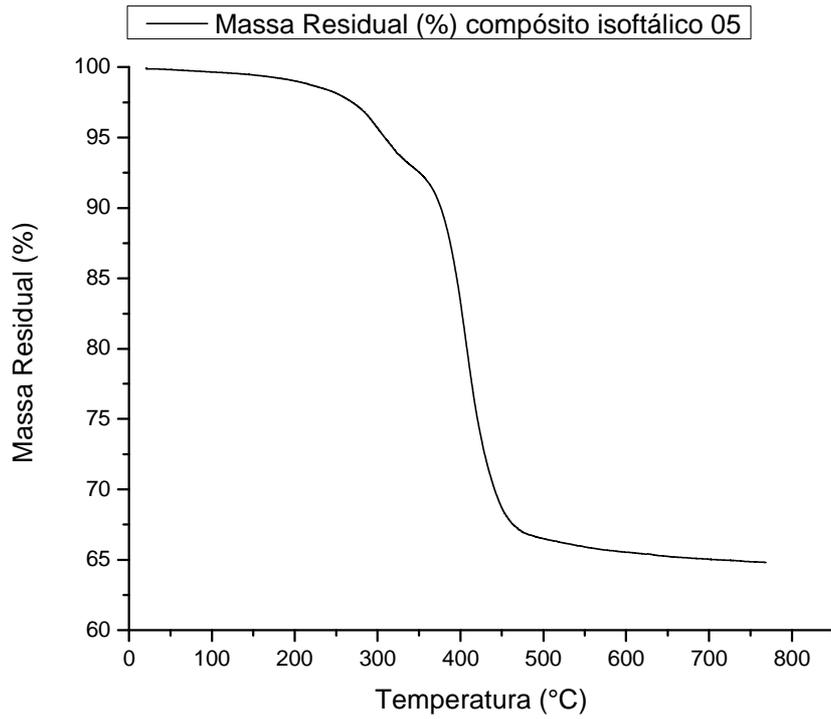
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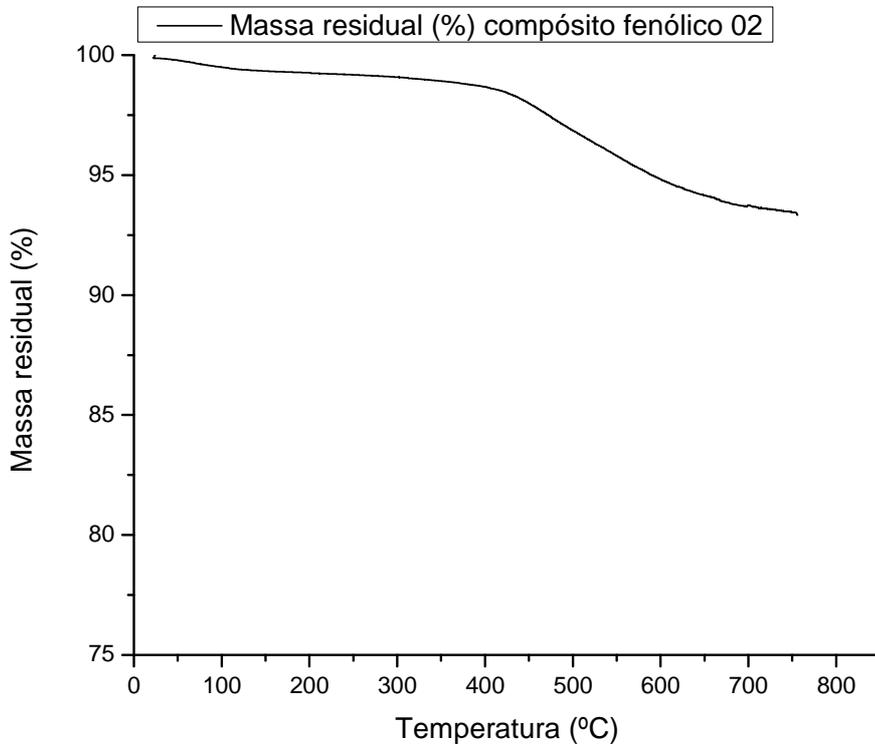
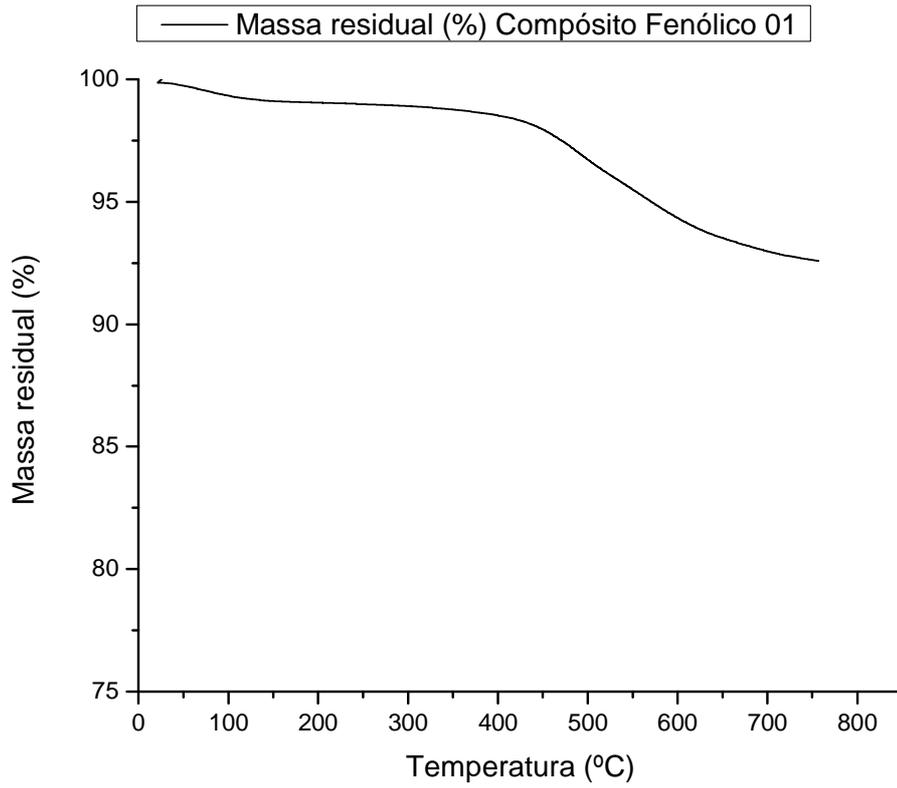
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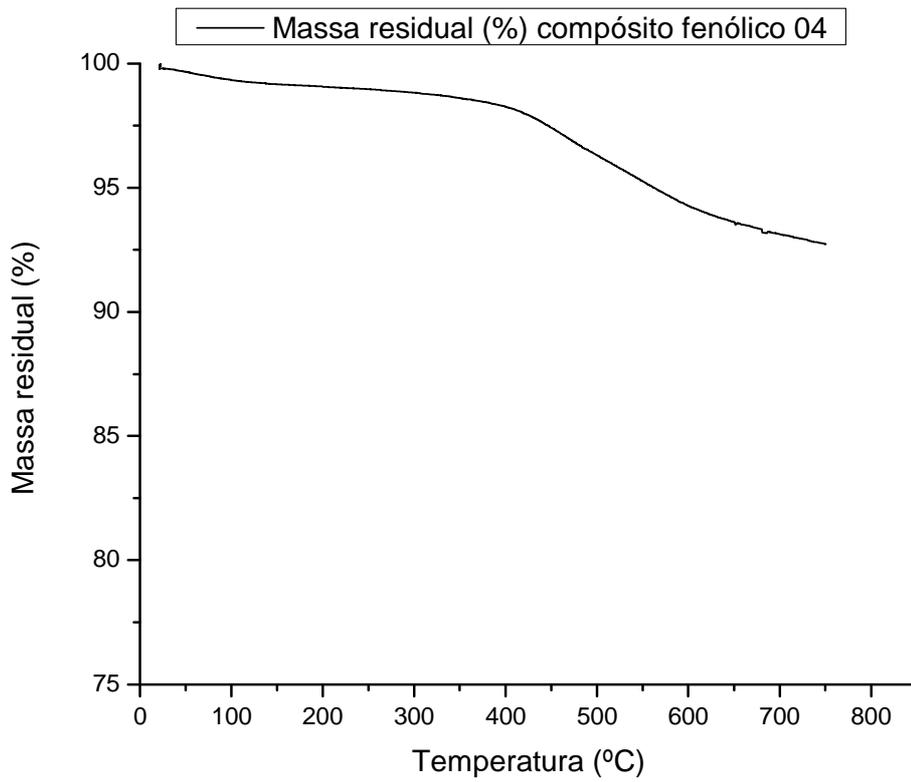
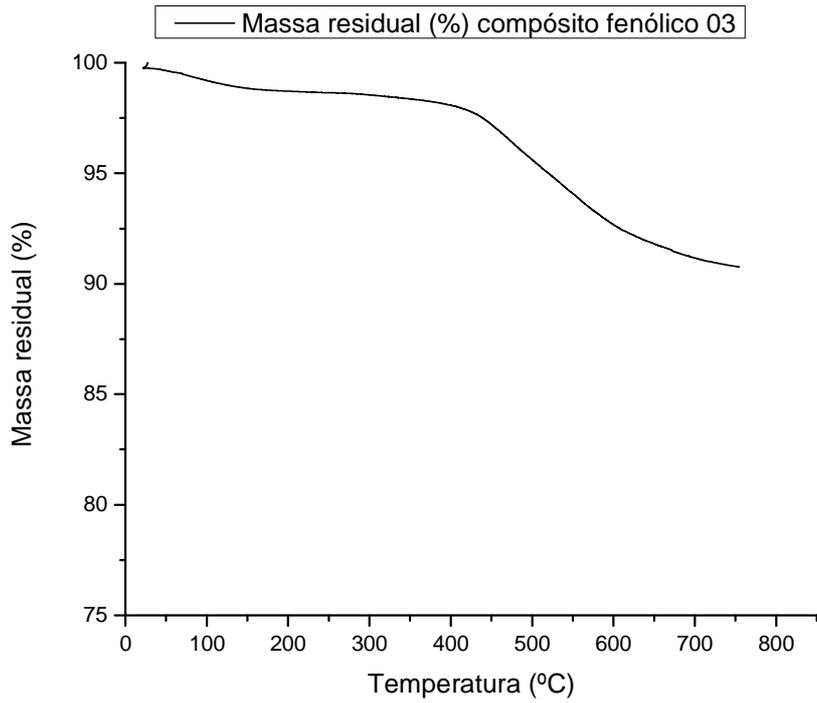
A. Resultados das análises termogravimétricas











B. Processamento Digital de Imagens

Principais passos executados no processamento digital das imagens da microscopia eletrônica de varredura com o *software* Fiji ImageJ.

- 1 Eliminação dos ruídos da imagem através do filtro *Non Local Means*.
- 2 Utilização da ferramenta *Record* no menu *Plugins* para exibição da lista de comandos utilizados.

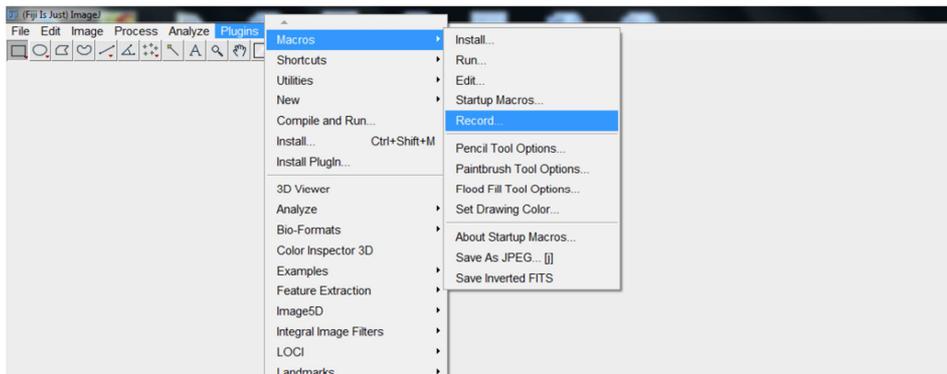


Figura 92 – Ferramenta Record.

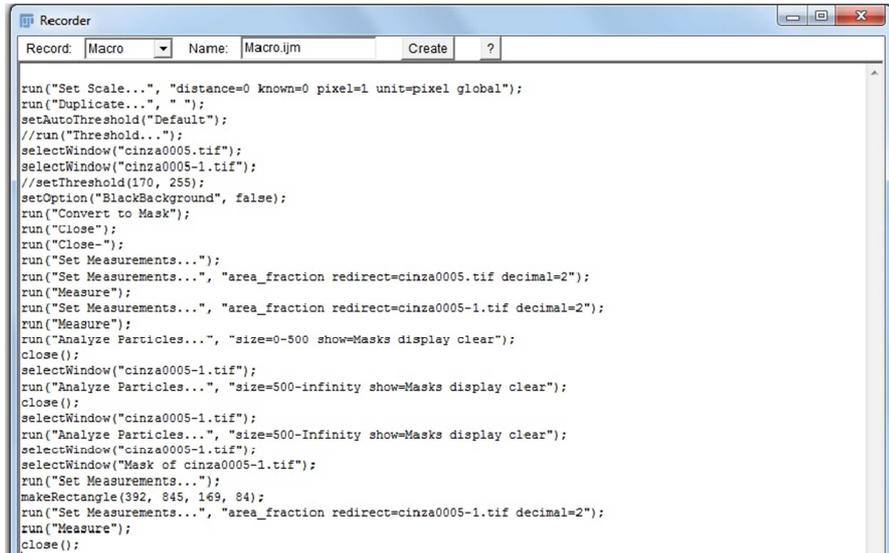


Figura 93 - Comandos utilizados.

- 3 Alterar a escala da imagem para pixel. No menu *Analyse* selecionamos a ferramenta *Set Scale*. Para colocar a imagem em pixel clicamos em *Click to Remove Scale*, com a opção *Global* marcada.

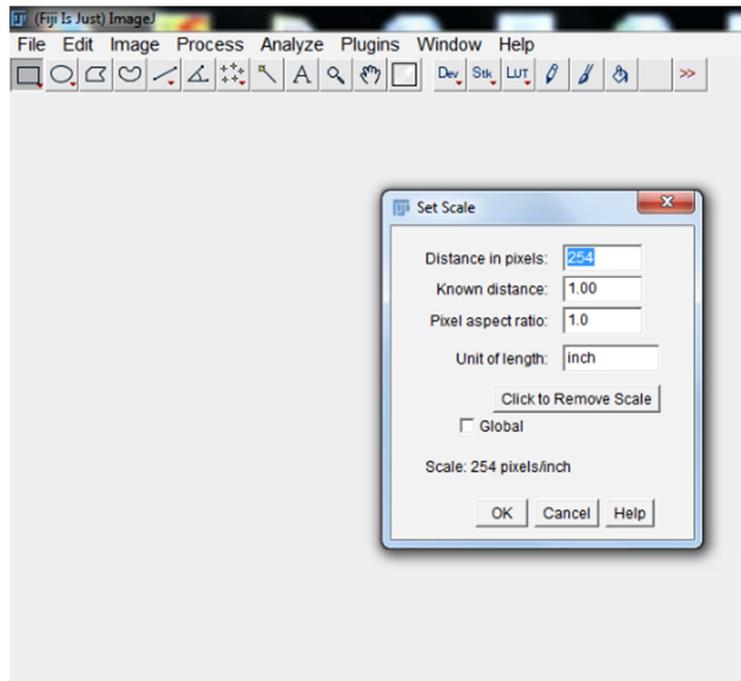


Figura 94 - Ferramenta *Set Scale*.

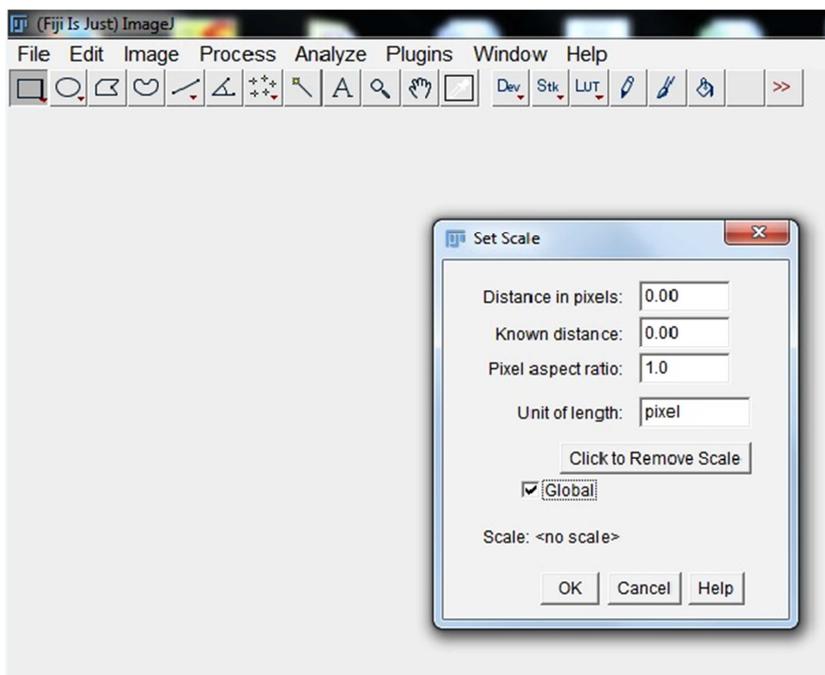


Figura 95 - Escala após o comando *Click to Remove*.

Antes de começar a segmentação é importante duplicar a imagem para manter salva a imagem original.

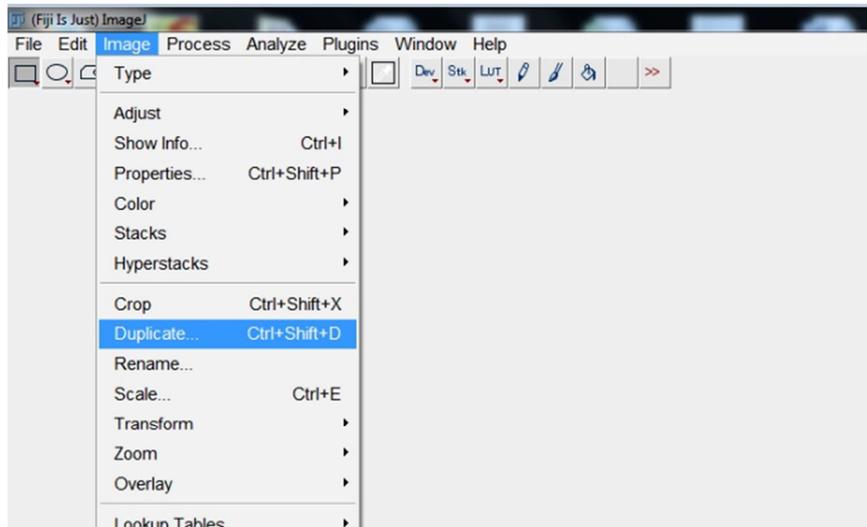


Figura 96 - Menu *Image-Duplicate*.

- 4 Segmentação das fases do material através do comando *Image – Adjust – Threshold*.

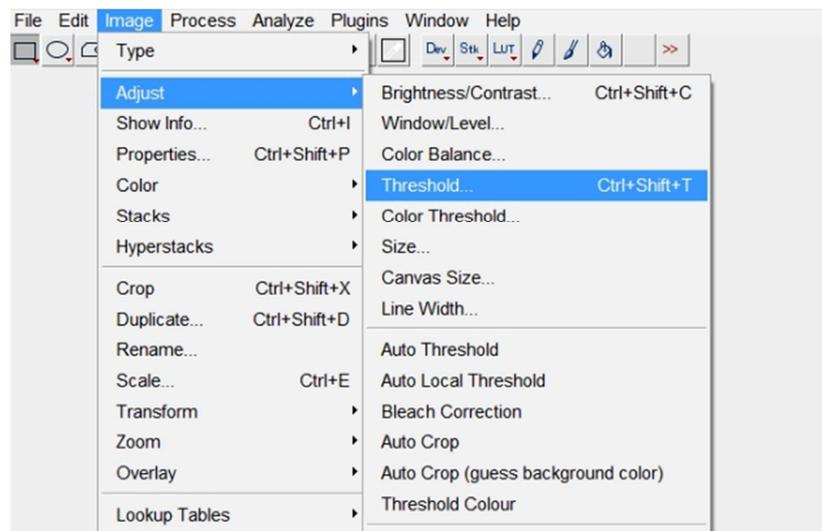


Figura 97 - Menu *Image- Adjust-Threshold*.

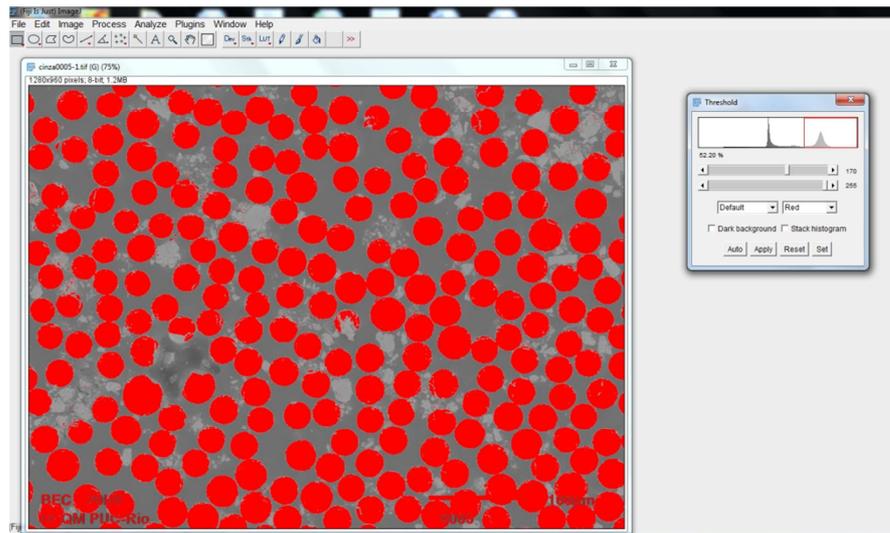


Figura 98 - Ferramenta Threshold com histograma e fibras selecionadas.

5 Ferramenta *Analyze Particles* para selecionar partículas pequenas.

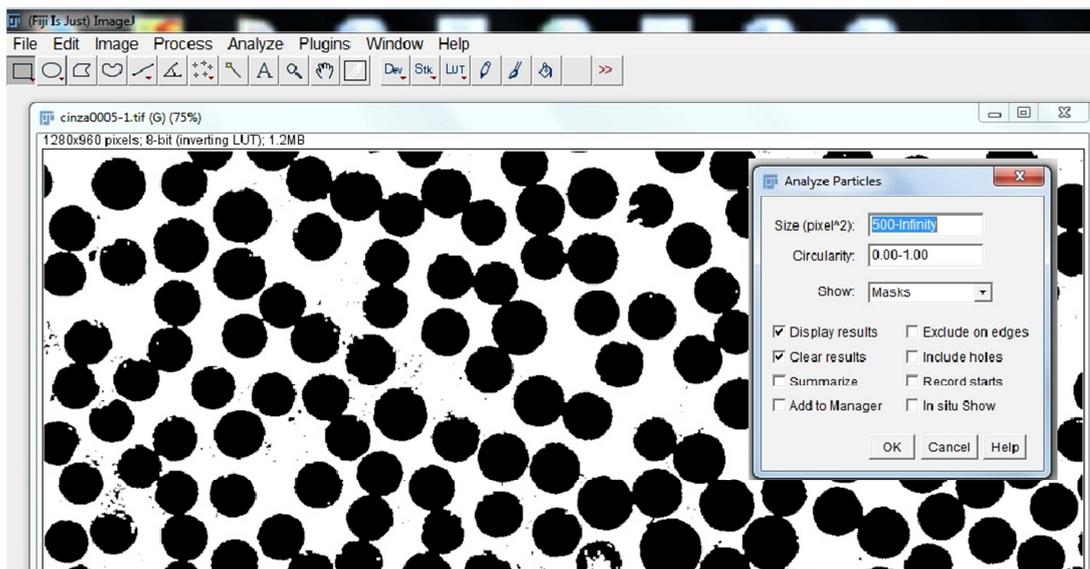


Figura 99 - Ferramenta *Analyze Particles*.

6 A quantificação das proporções selecionadas ocorre através da ferramenta *Measure*.

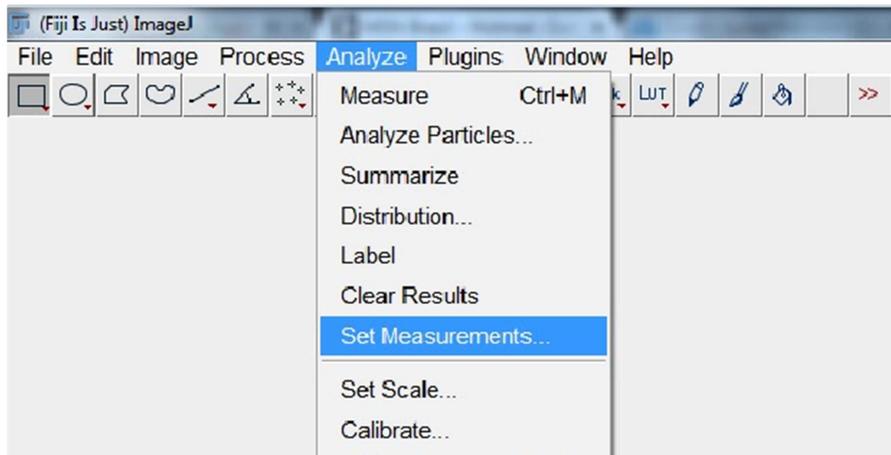


Figura 100 - Ferramenta Analyze - Set Measurements.

- 7 Depois de seleccionar a imagem e o que será dimensionado devemos retornar ao menu Analyze e seleccionar a ferramenta Measure.

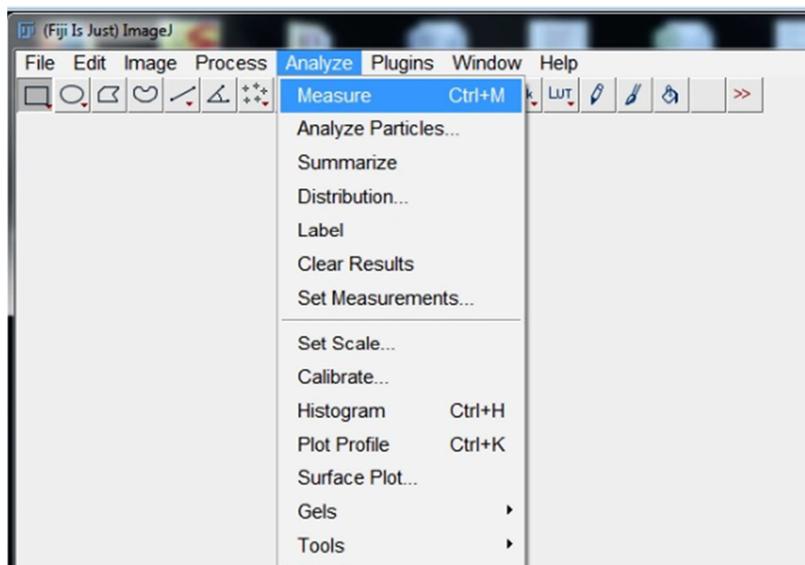
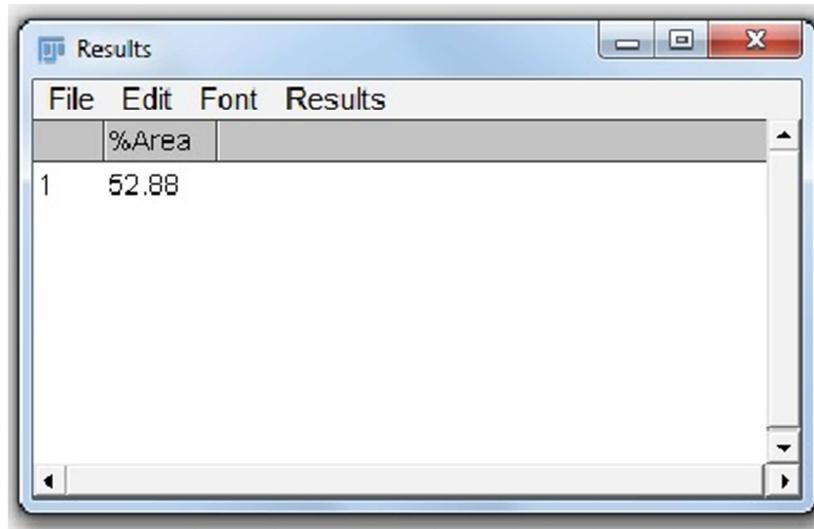


Figura 101 - Menu Measure.

- 8 Obtenção de informações relativas ao percentual de cada fase da microestrutura do material com a utilização da ferramenta *Measure*.



The image shows a screenshot of a software window titled "Results". The window has a standard Windows-style title bar with minimize, maximize, and close buttons. Below the title bar is a menu bar with the following items: "File", "Edit", "Font", and "Results". The main content area of the window displays a table with the following data:

| | %Area |
|---|-------|
| 1 | 52.88 |

Figura 102 - Resultados exibidos com a ferramenta *Measure*.

C. Resultados dos ensaios de flexão por três pontos após exposição térmica para resina isoftálica.

Tabela 16 - Resultado do ensaio de flexão para compósito isoftálico com 30 minutos de exposição no forno.

| Corpos de Prova Resina Isoftálica Ensaio de Flexão a 3 pontos (30 minutos ensaio forno) | | | | | | |
|--|-----------------------------------|-----------------------|---------------------------|----------------------------------|--|---|
| Corpos de Prova | Resistência máxima à flexão [MPa] | Módulo à flexão [GPa] | Deformação máxima [mm/mm] | Área total [J/ mm ³] | Energia de Iniciação [J/ mm ³] | Energia de Propagação [J/ mm ³] |
| CP 01 ISO 30 | 460,6 | 19,0 | 0,029 | 6,6 | 6,6 | 0,0 |
| CP 02 ISO 30 | 684,0 | 19,9 | 0,039 | 13,8 | 12,2 | 1,6 |
| CP 03 ISO 30 | 377,9 | 14,5 | 0,032 | 6,9 | 6,6 | 0,3 |
| CP 04 ISO 30 | 400,3 | 18,5 | 0,025 | 5,1 | 5,0 | 0,2 |
| CP 05 ISO 30 | 382,9 | 17,4 | 0,031 | 6,9 | 6,4 | 0,5 |
| Média | 461,1 | 17,9 | 0,031 | 7,9 | 7,3 | 0,5 |
| Desvio Padrão | 128,9 | 2,1 | 0,005 | 3,4 | 2,8 | 0,6 |

Tabela 17 - Resultado do ensaio de flexão para compósito isoftálico com 60 minutos de exposição no forno.

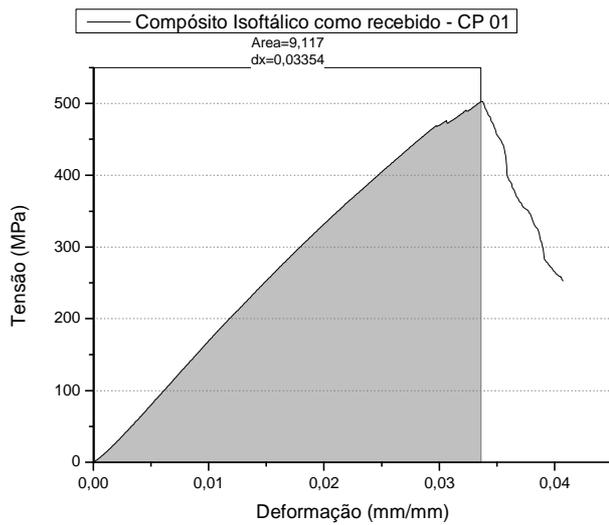
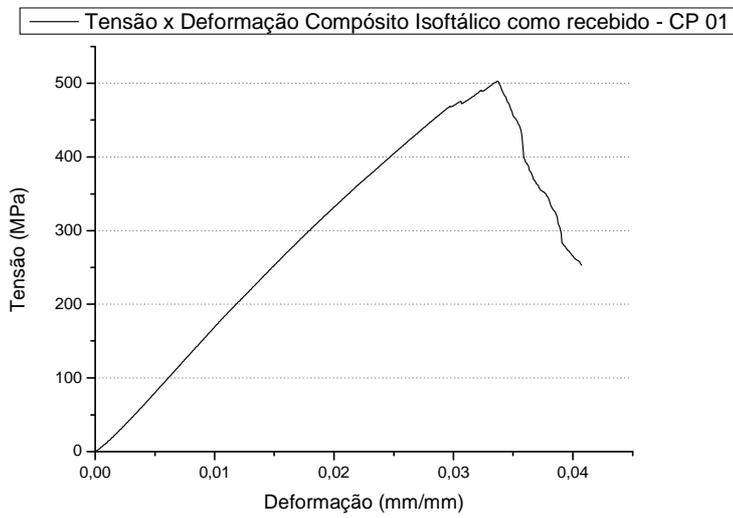
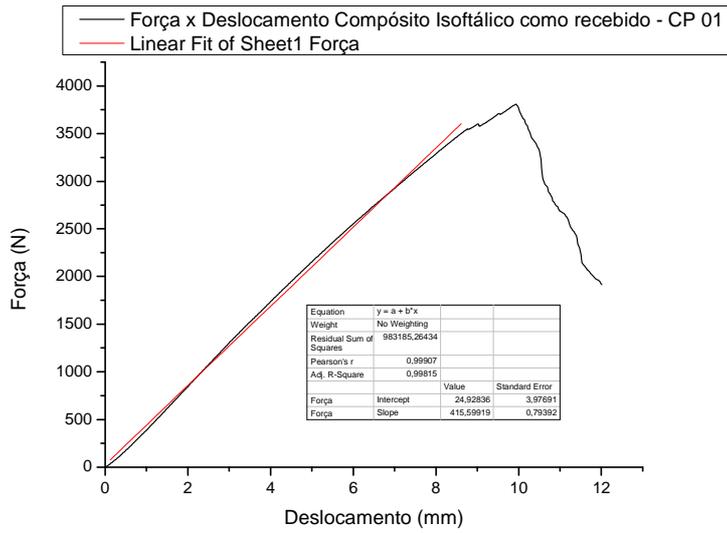
| Corpos de Prova Resina Fenólica Ensaio de Flexão a 3 pontos (60 minutos de exposição) | | | | | | |
|--|-----------------------------------|-----------------------|---------------------------|----------------------------------|--|---|
| Corpos de Prova | Resistência máxima à flexão [MPa] | Módulo à flexão [GPa] | Deformação máxima [mm/mm] | Área total [J/ mm ³] | Energia de Iniciação [J/ mm ³] | Energia de Propagação [J/ mm ³] |
| CP 01 ISO 60 | 366,5 | 17,5 | 0,027 | 5,8 | 4,3 | 1,5 |
| CP 02 ISO 60 | 361,4 | 20,6 | 0,019 | 3,5 | 3,5 | 0,1 |
| CP 03 ISO 60 | 285,8 | 14,5 | 0,027 | 4,5 | 4,1 | 0,4 |
| CP 04 ISO 60 | 403,6 | 20,9 | 0,049 | 11,7 | 6,4 | 5,3 |
| Média | 354,3 | 18,4 | 0,030 | 6,4 | 4,6 | 1,8 |
| Desvio Padrão | 49,4 | 3,0 | 0,013 | 3,7 | 1,3 | 2,4 |

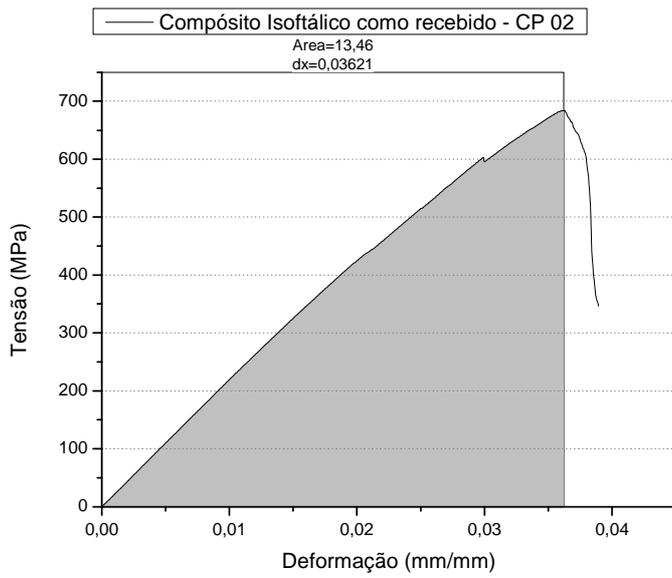
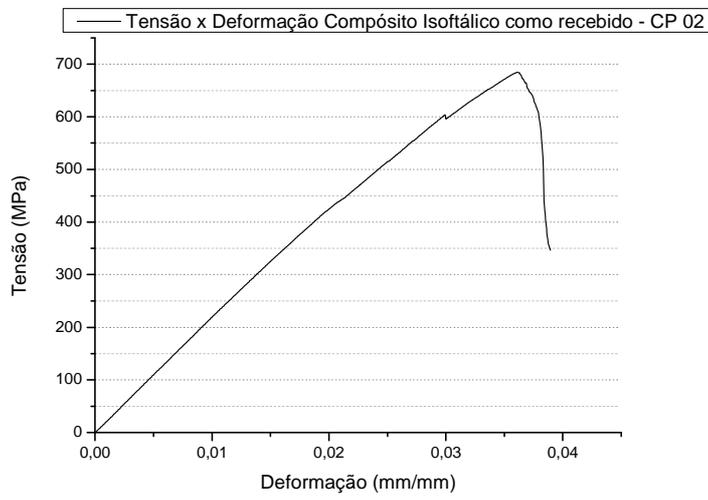
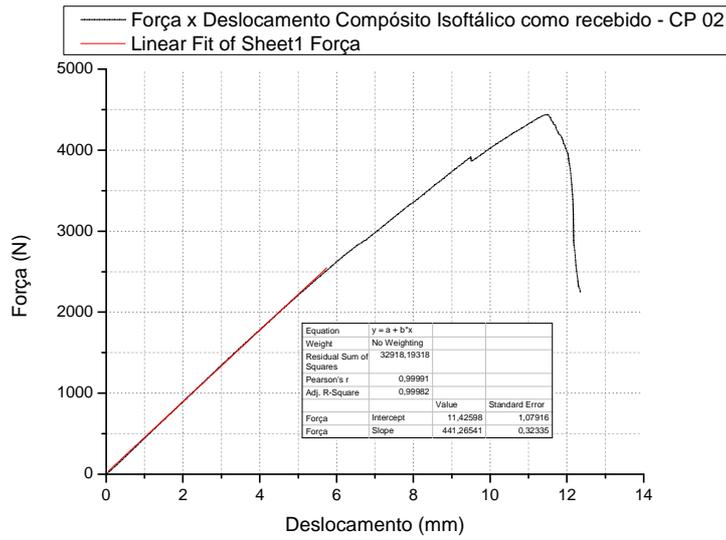
Tabela 18 - - Resultado do ensaio de flexão para compósito isoftálico com 90 minutos de exposição no forno.

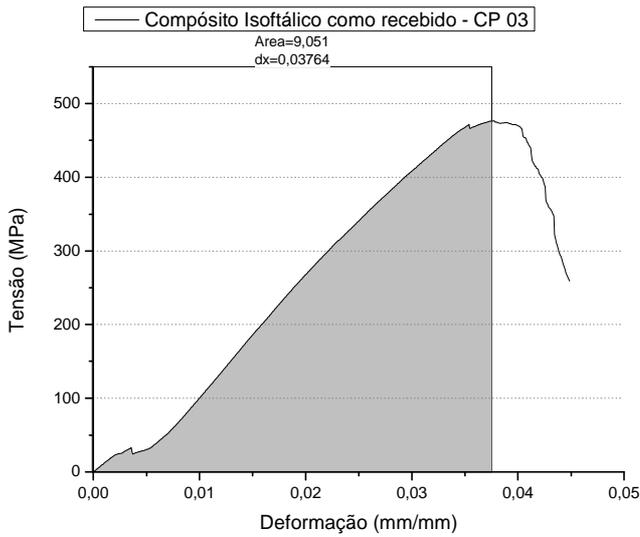
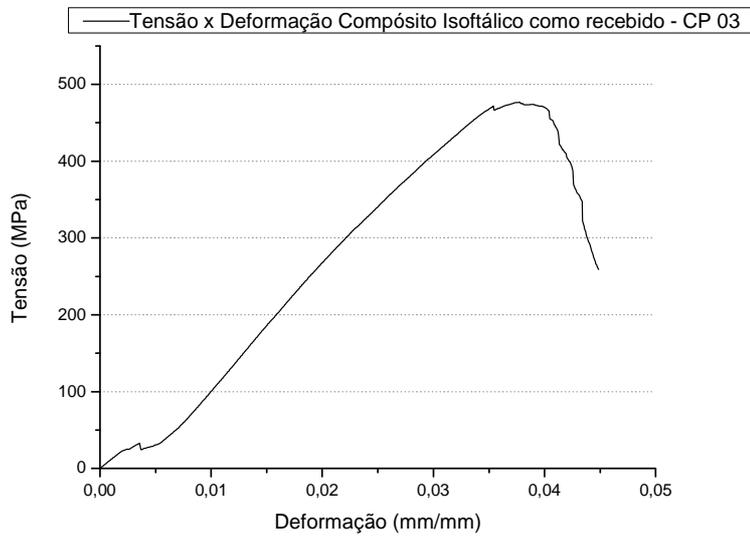
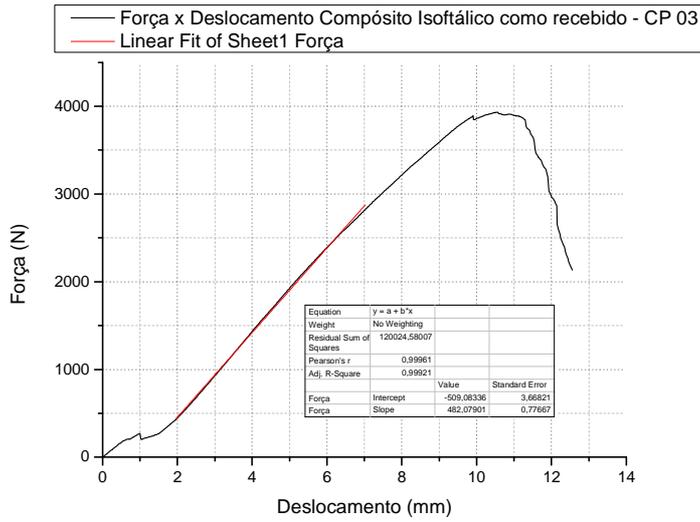
| Corpos de Prova Resina Isoftálica Ensaio de Flexão a 3 pontos (90 minutos de exposição térmica) | | | | | | |
|--|-----------------------------------|-----------------------|---------------------------|----------------------------------|--|---|
| Corpos de Prova | Resistência máxima à flexão [MPa] | Módulo à flexão [GPa] | Deformação máxima [mm/mm] | Área total [J/ mm ³] | Energia de Iniciação [J/ mm ³] | Energia de Propagação [J/ mm ³] |
| CP 01 ISO 90 | 426,0 | 18,6 | 0,029 | 7,0 | 6,6 | 0,4 |
| CP 02 ISO 90 | 478,3 | 22,6 | 0,025 | 6,5 | 5,5 | 1,0 |
| CP 03 ISO 90 | 377,9 | 14,4 | 0,055 | 8,8 | 3,9 | 4,9 |
| CP 04 ISO 90 | 294,2 | 16,3 | 0,047 | 8,0 | 3,7 | 4,3 |
| CP 05 ISO 90 | 333,0 | 17,2 | 0,023 | 4,4 | 4,4 | 0,0 |
| Média | 381,9 | 17,8 | 0,036 | 6,9 | 4,8 | 2,1 |
| Desvio Padrão | 73,1 | 3,1 | 0,014 | 1,7 | 1,2 | 2,3 |

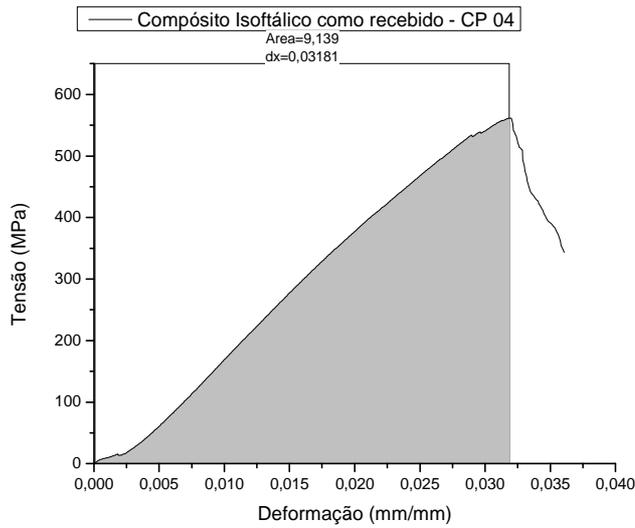
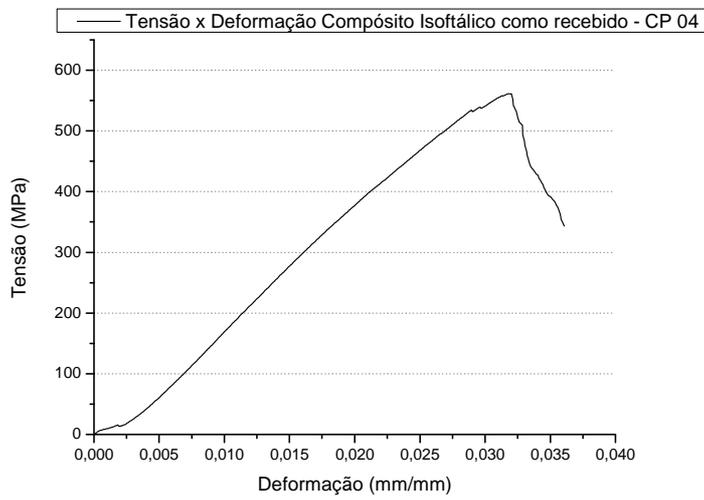
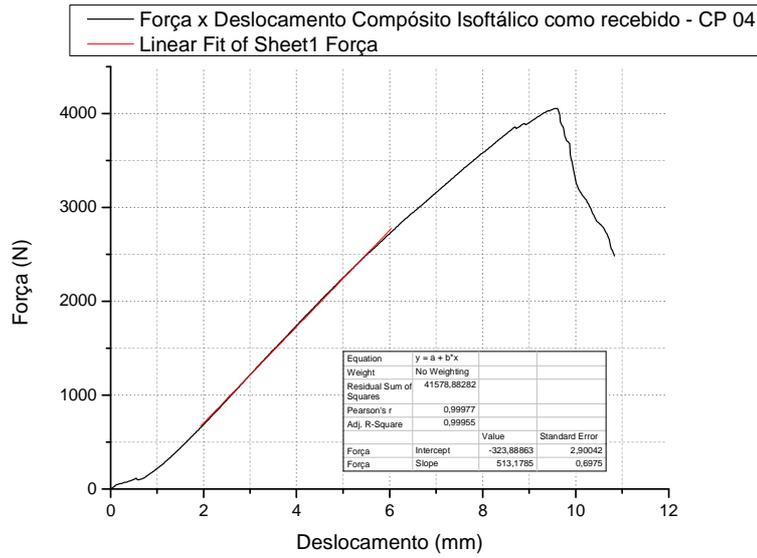
Tabela 19 - Resultado do ensaio de flexão para compósito isoftálico com 120 minutos de exposição no forno.

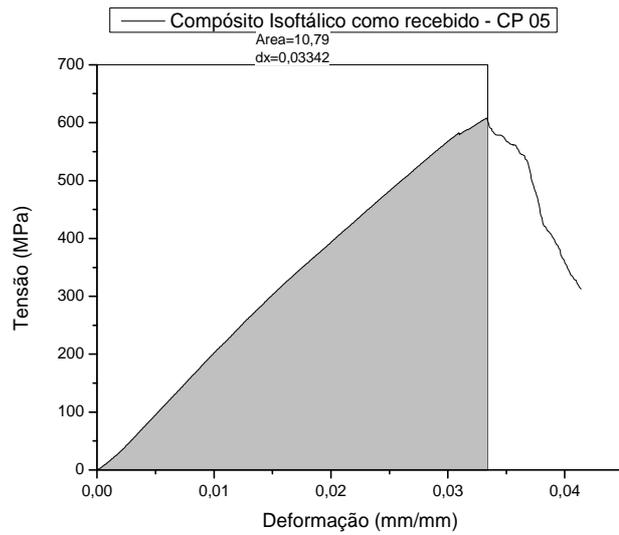
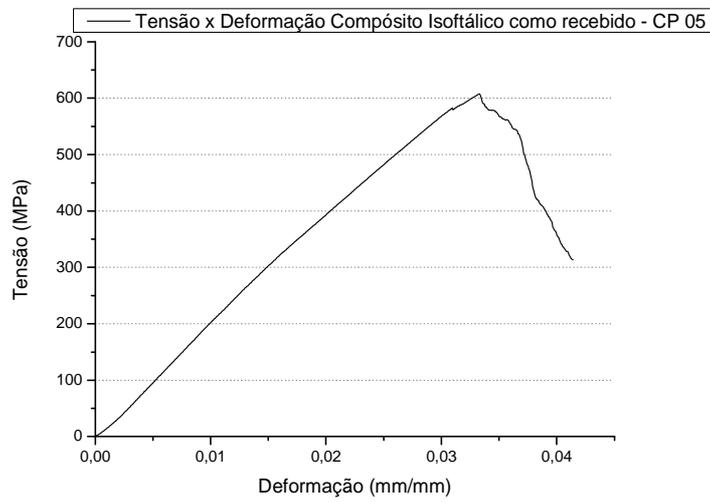
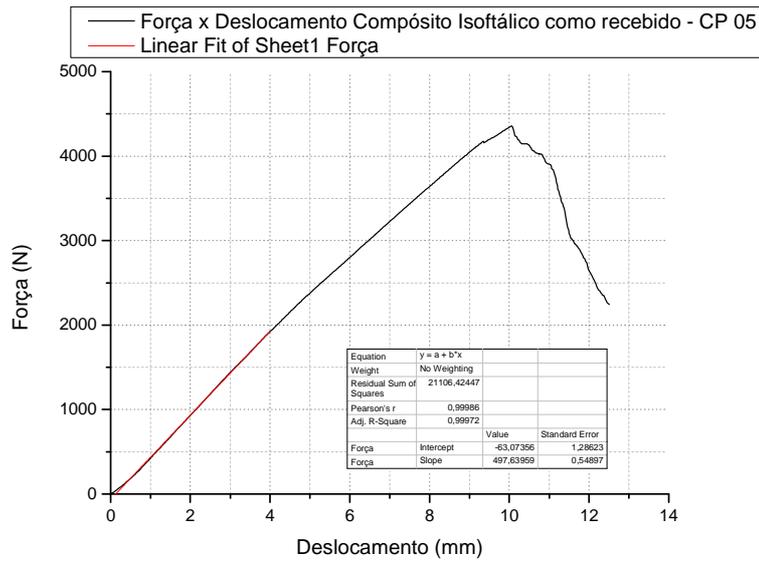
| Corpos de Prova Resina Isoftálica Ensaio de Flexão a 3 pontos (120 minutos de exposição térmica) | | | | | | |
|---|-----------------------------------|-----------------------|---------------------------|----------------------------------|--|---|
| Corpos de Prova | Resistência máxima à flexão [MPa] | Módulo à flexão [GPa] | Deformação máxima [mm/mm] | Área total [J/ mm ³] | Energia de Iniciação [J/ mm ³] | Energia de Propagação [J/ mm ³] |
| CP 01 ISO 120 | 271,1 | 13,7 | 0,079 | 7,0 | 6,8 | 0,2 |
| CP 02 ISO 120 | 273,2 | 12,6 | 0,060 | 7,4 | 2,2 | 5,2 |
| CP 03 ISO 120 | 287,9 | 20,2 | 0,020 | 3,6 | 3,2 | 0,5 |
| CP 04 ISO 120 | 309,6 | 20,0 | 0,044 | 9,9 | 3,1 | 6,8 |
| CP 05 ISO 120 | 287,2 | 20,6 | 0,054 | 11,8 | 3,2 | 8,7 |
| Média | 285,8 | 17,4 | 0,051 | 7,9 | 3,7 | 4,3 |
| Desvio Padrão | 15,4 | 3,9 | 0,021 | 3,1 | 1,8 | 3,8 |

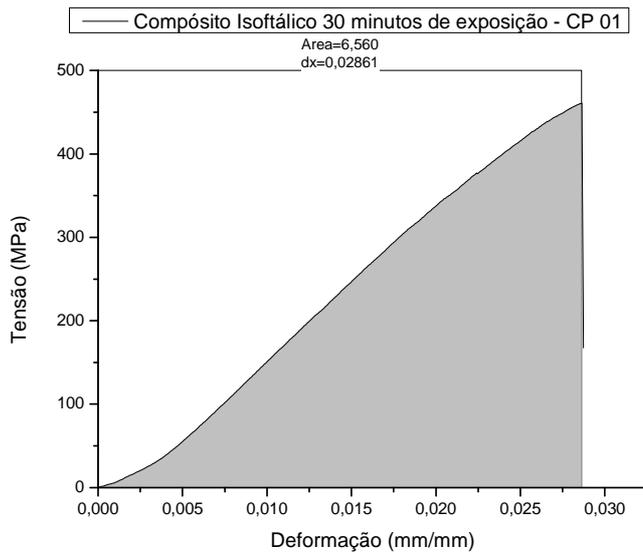
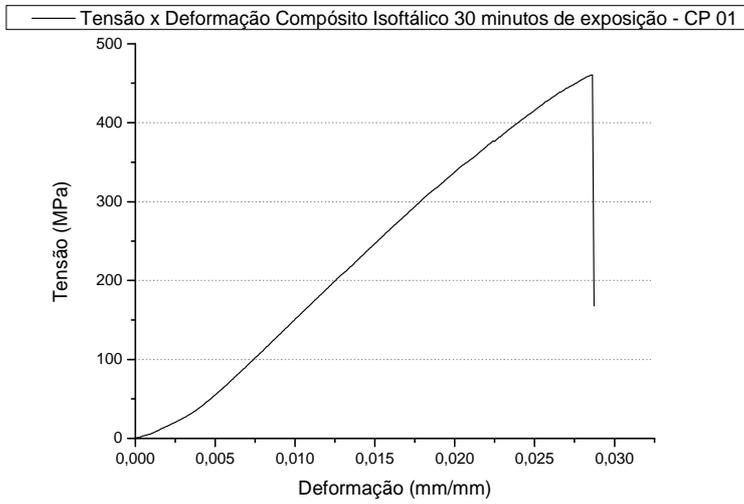
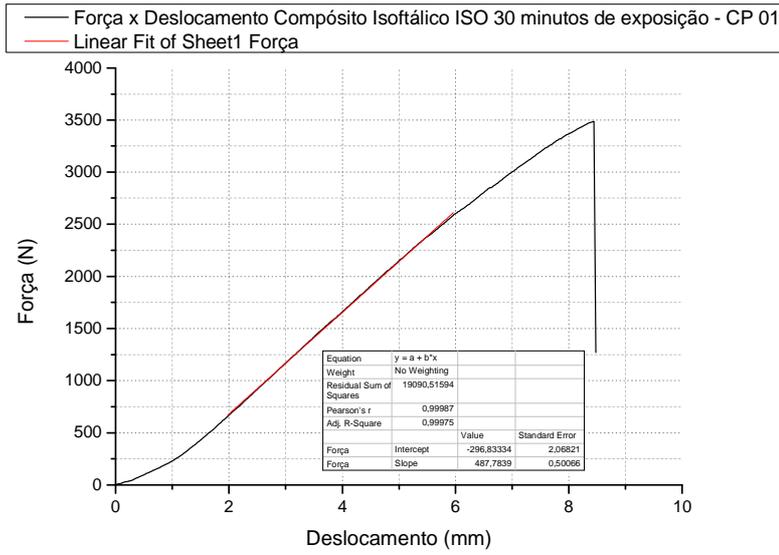


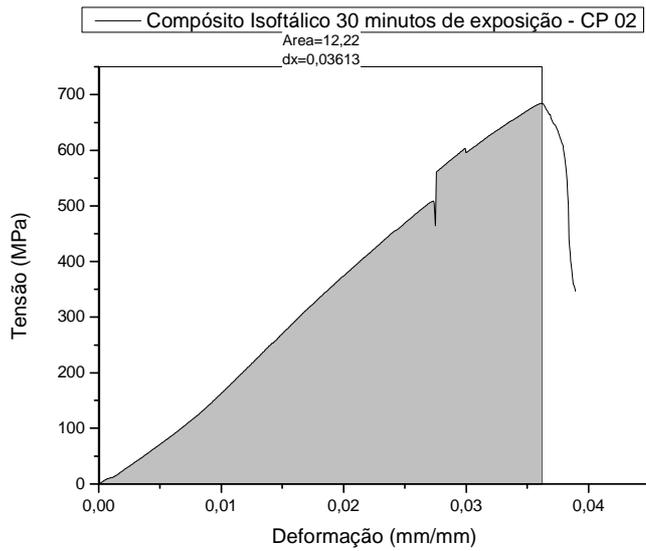
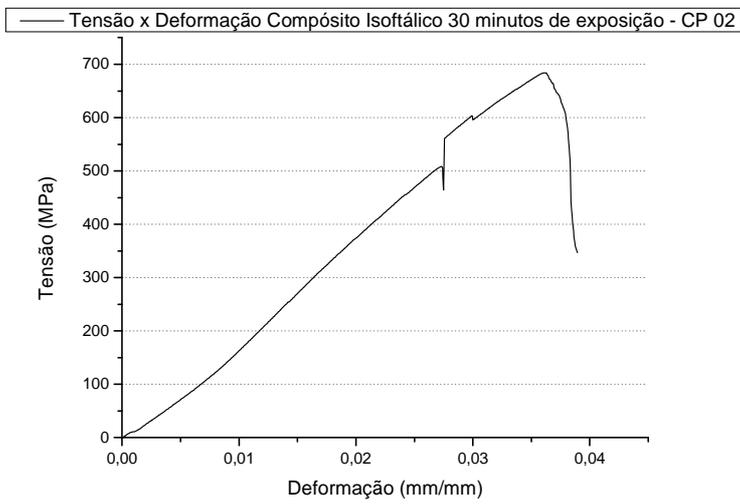
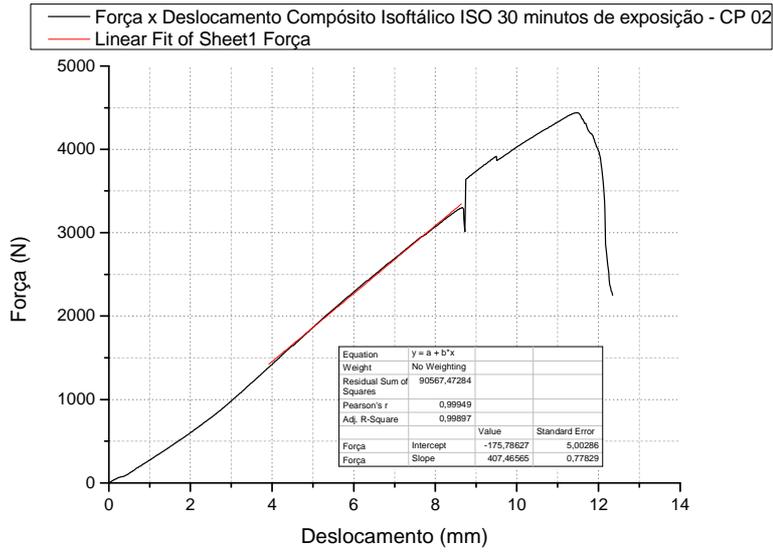


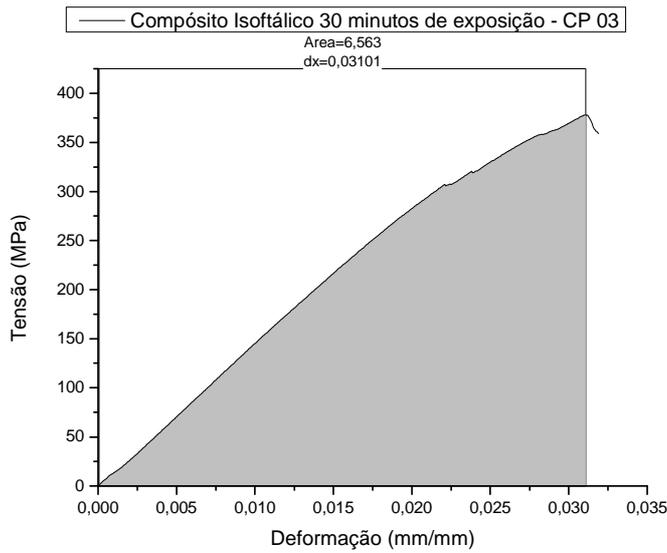
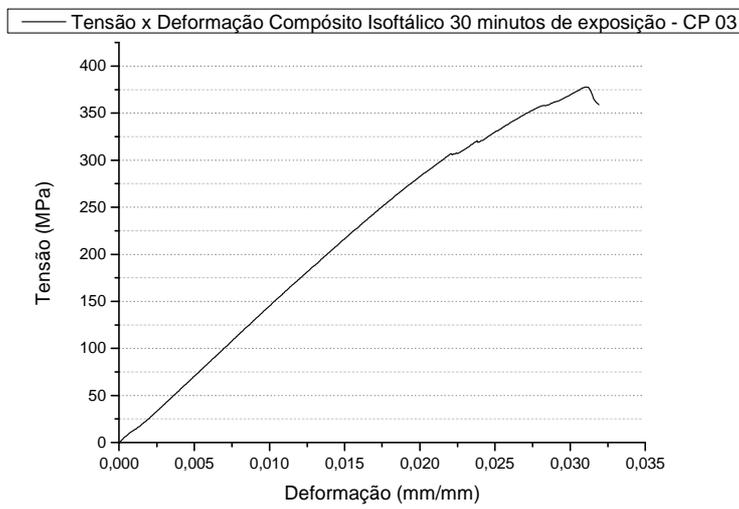
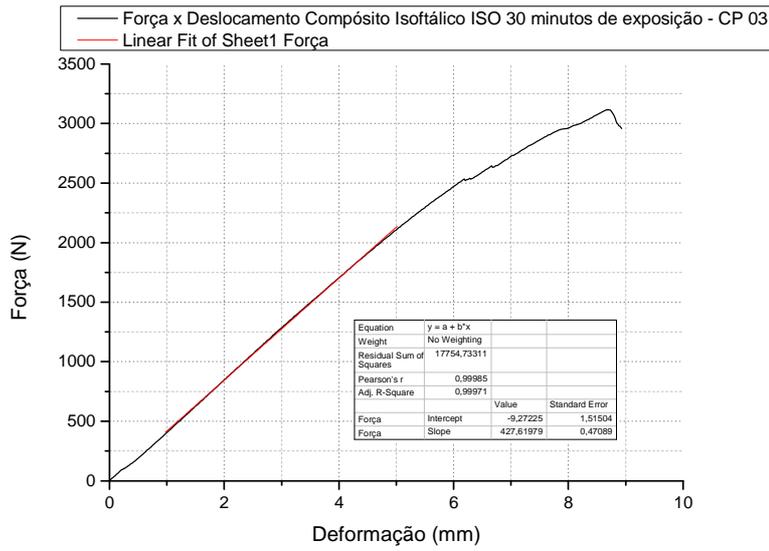


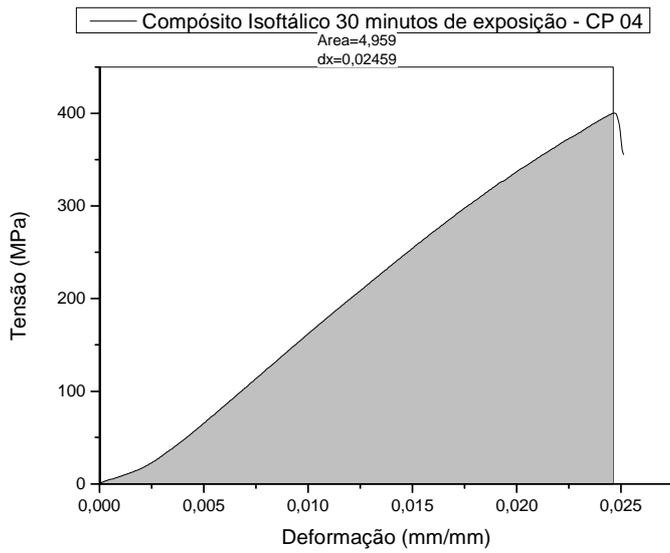
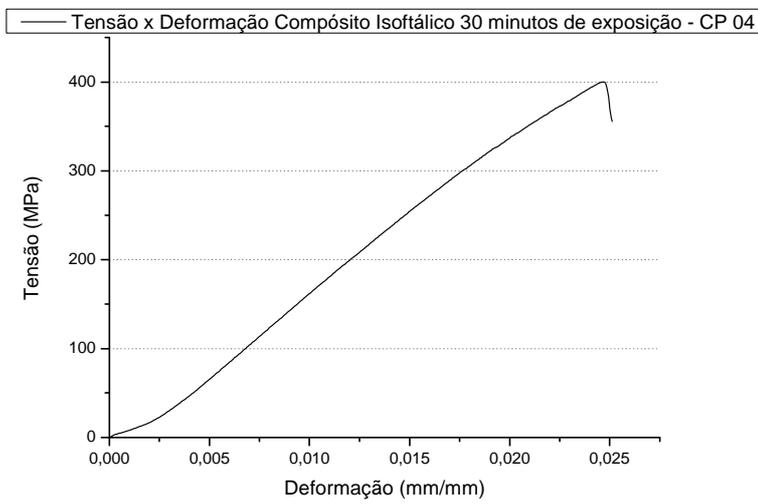
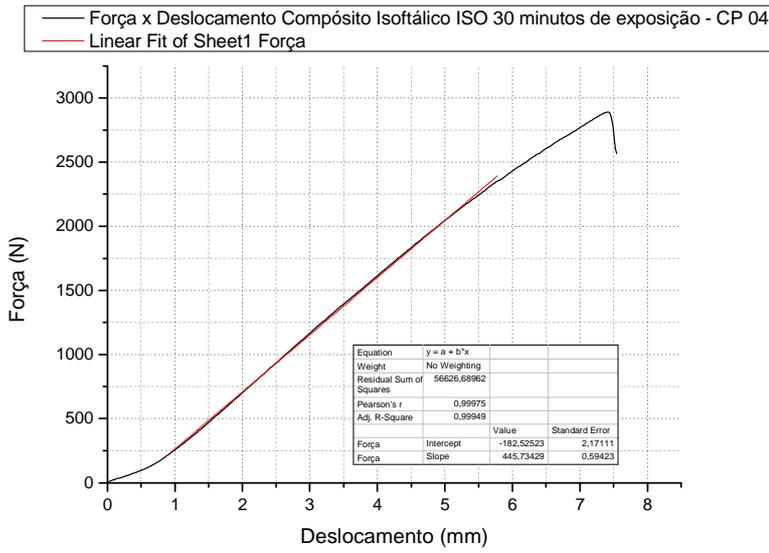


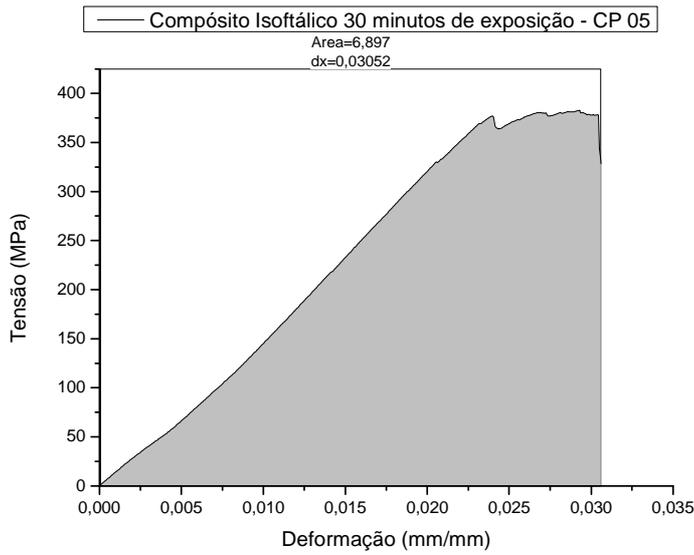
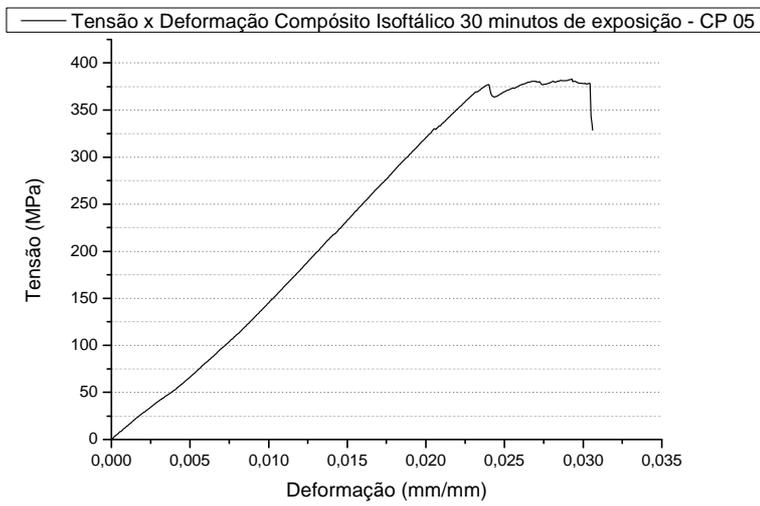
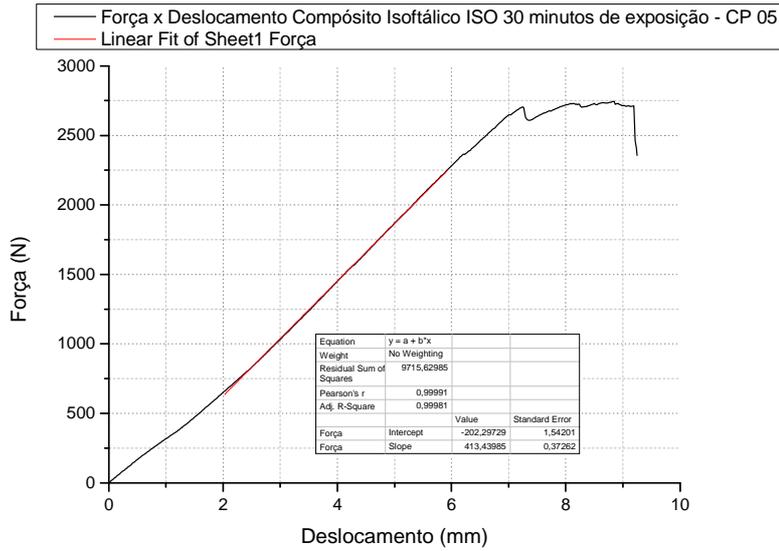


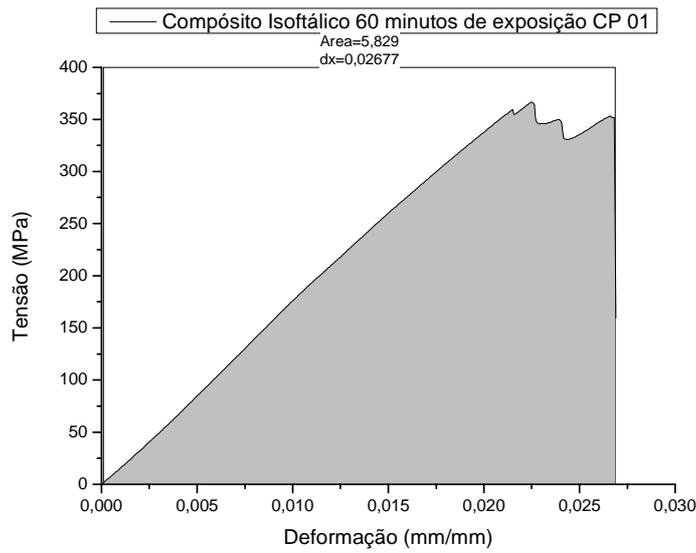
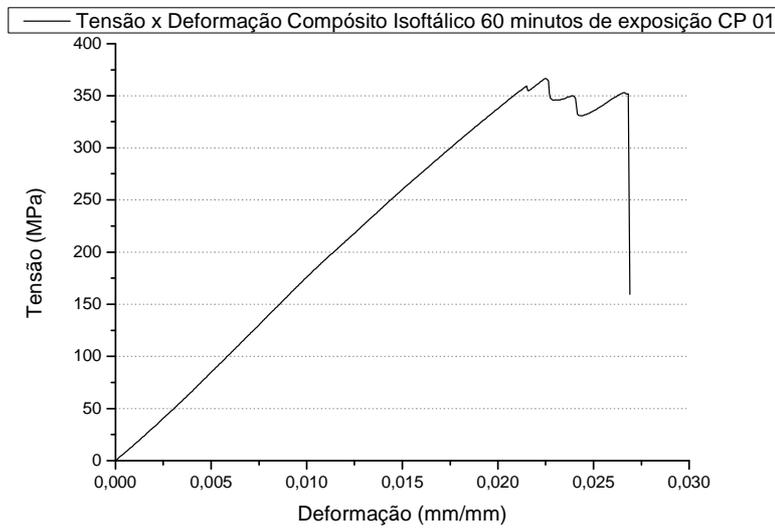
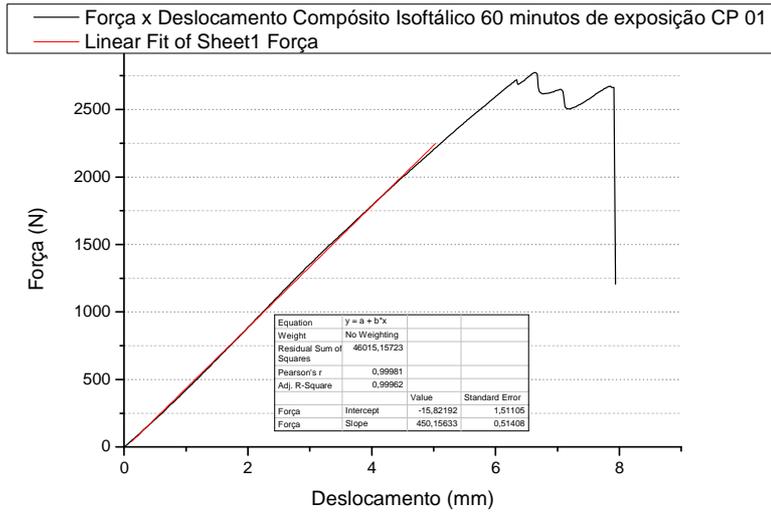


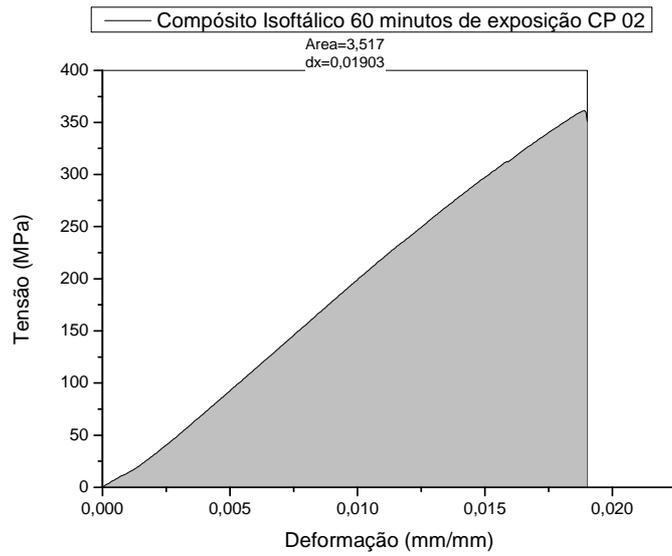
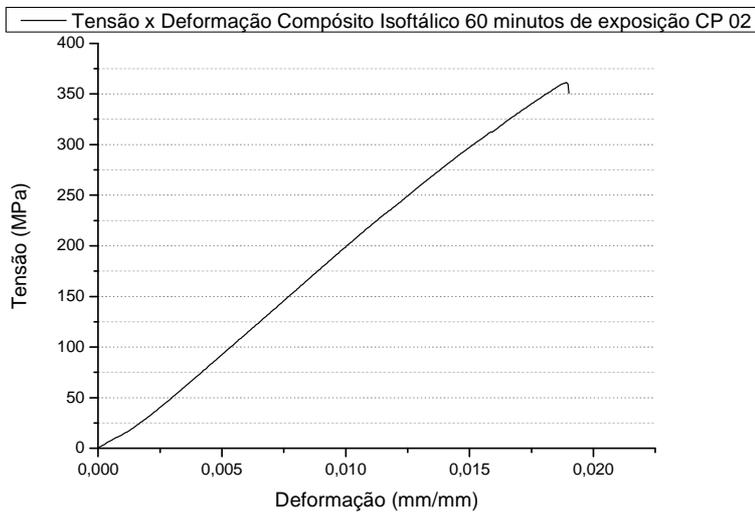
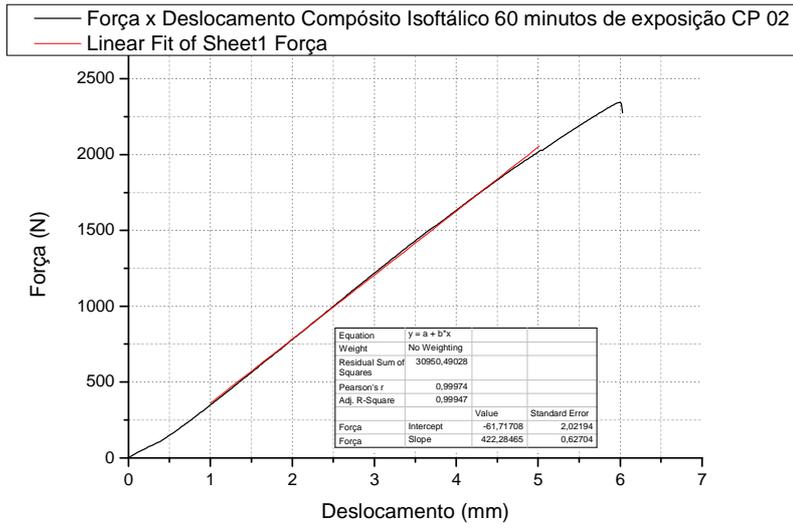


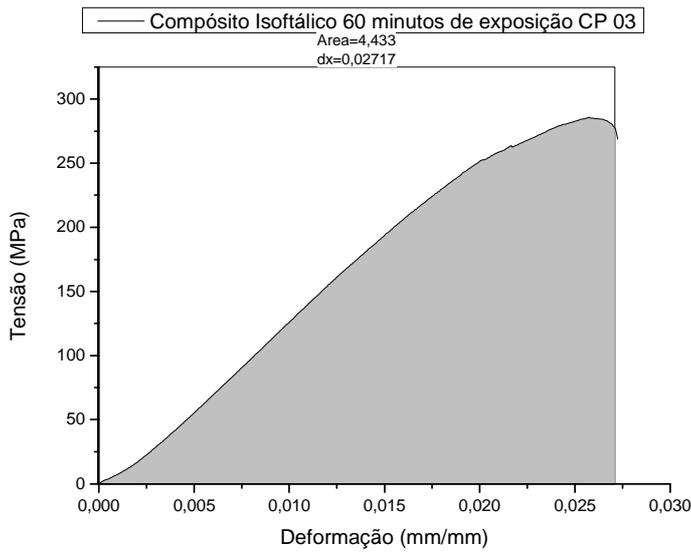
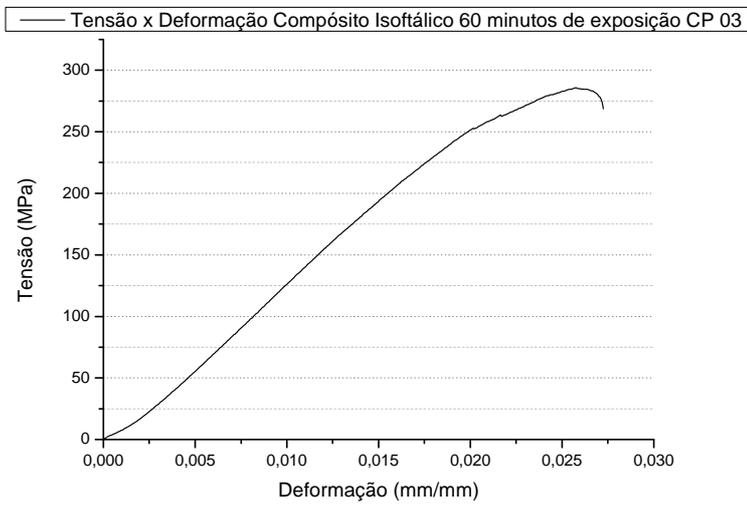
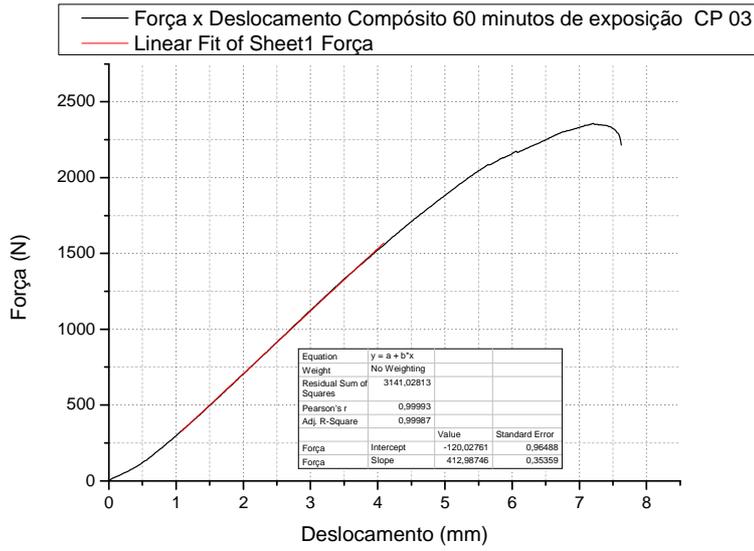


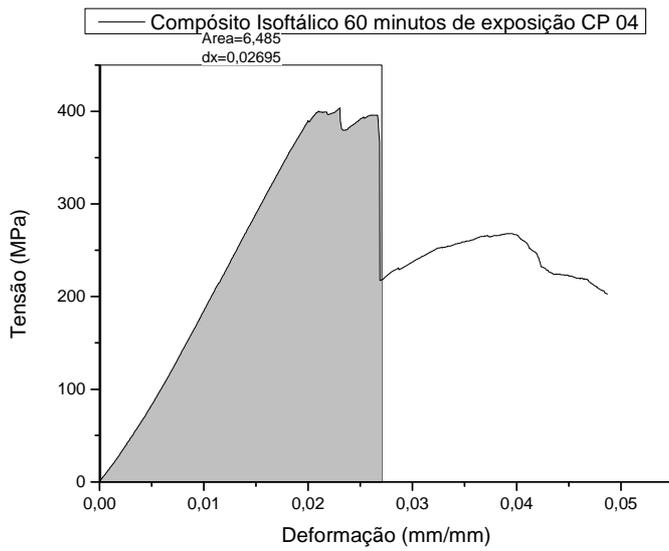
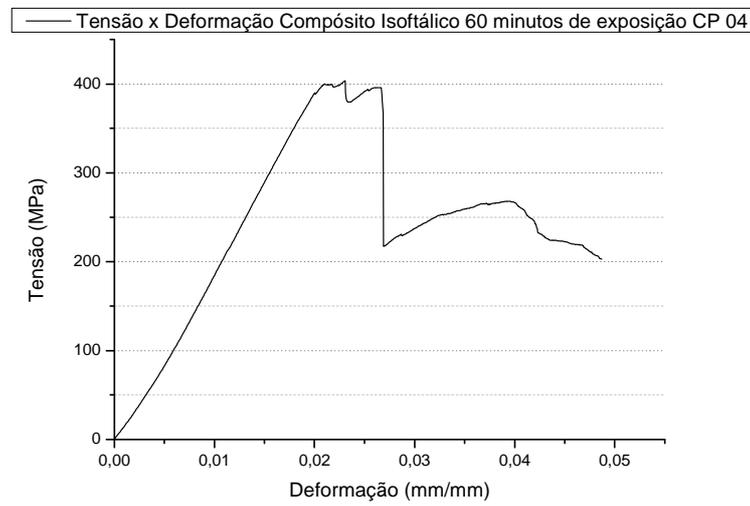
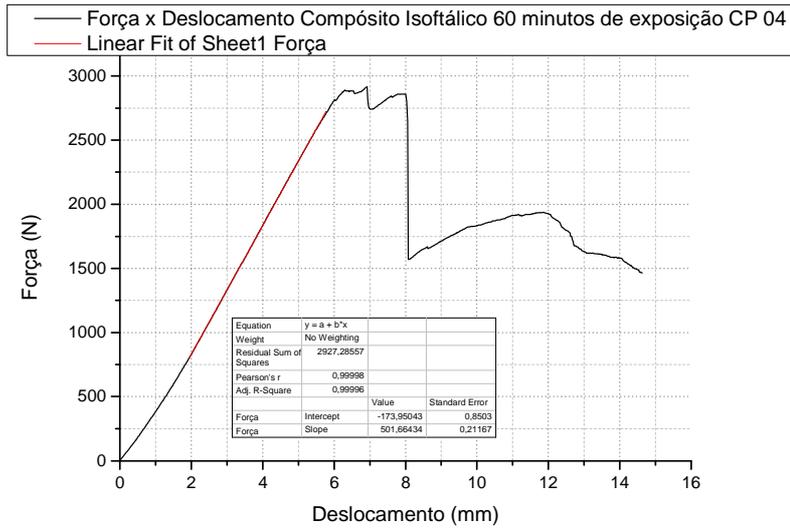


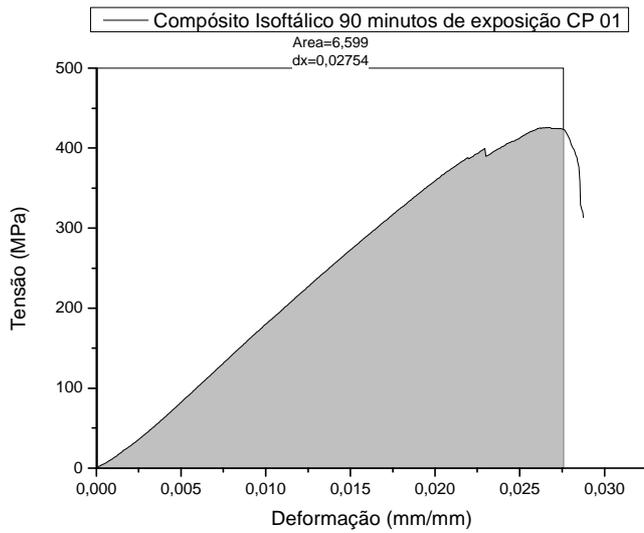
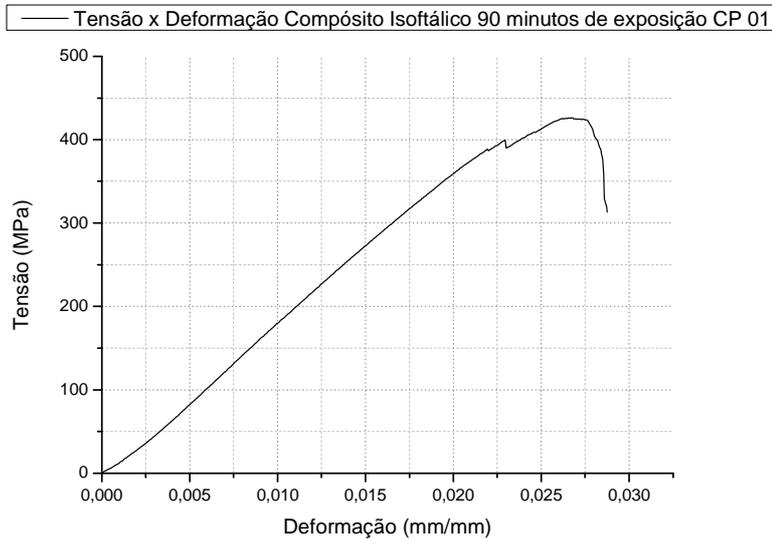
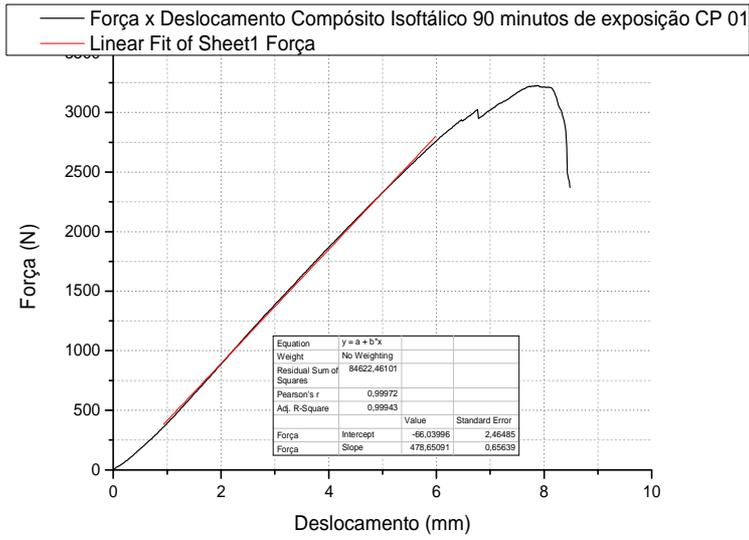


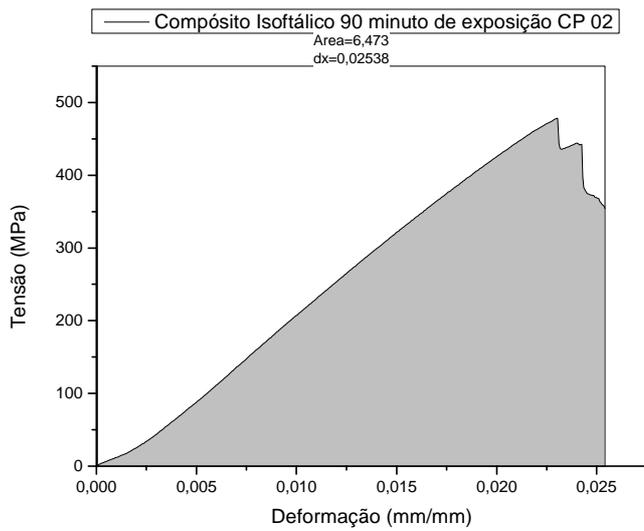
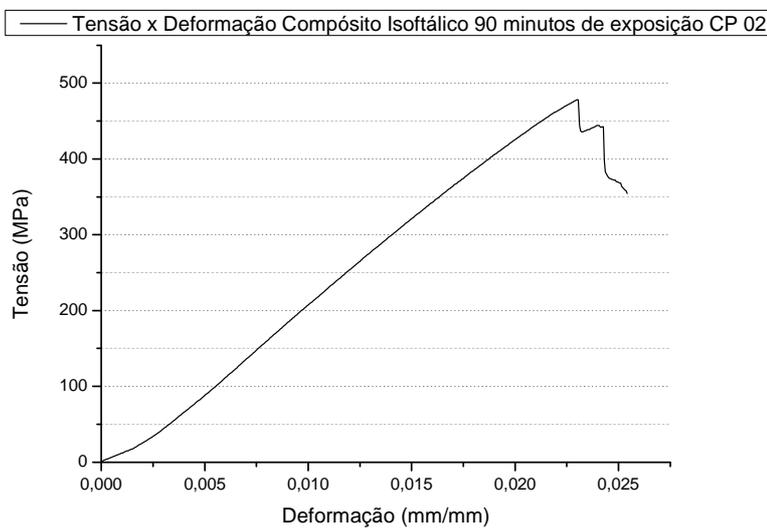
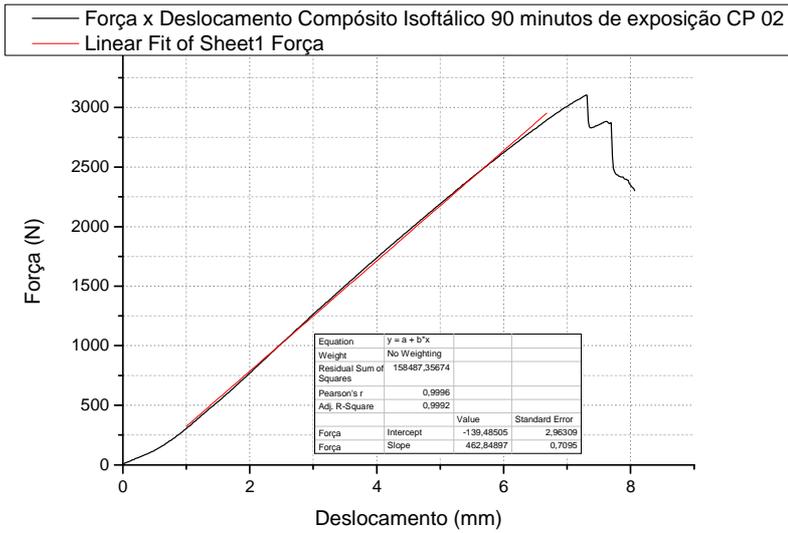


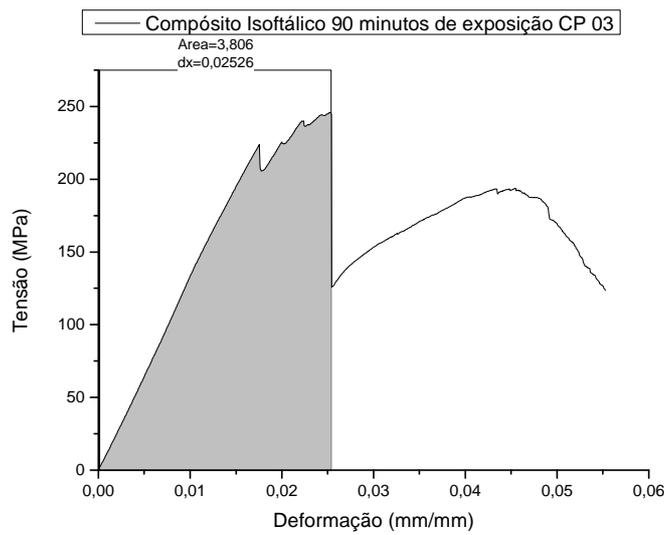
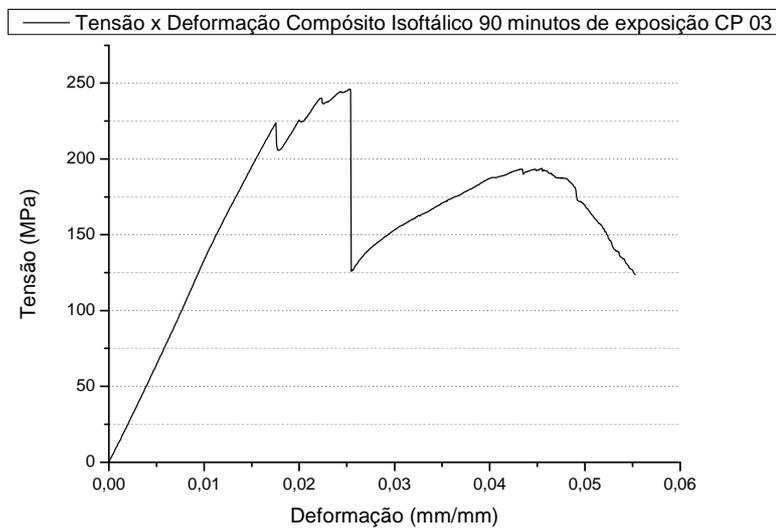
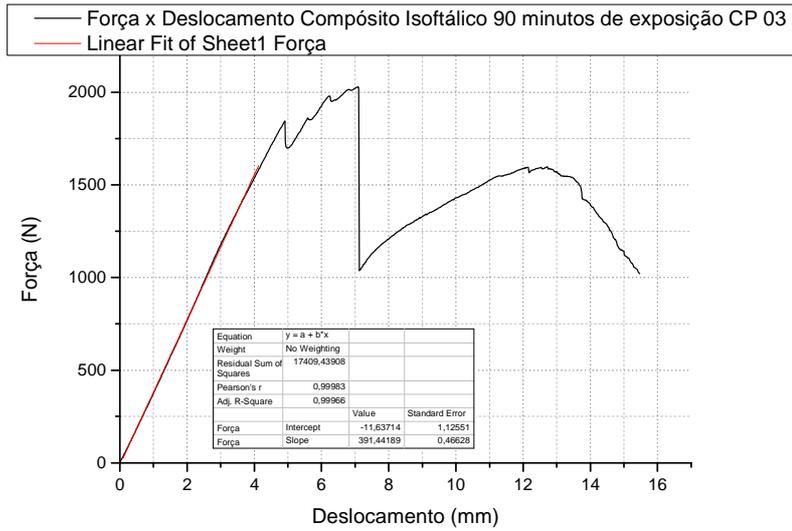


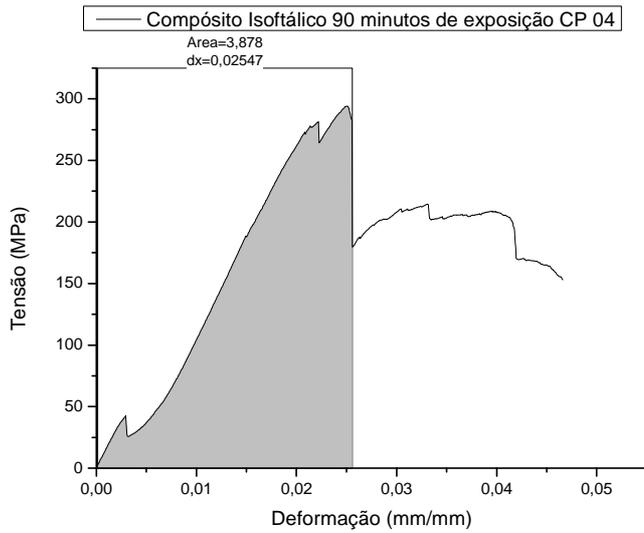
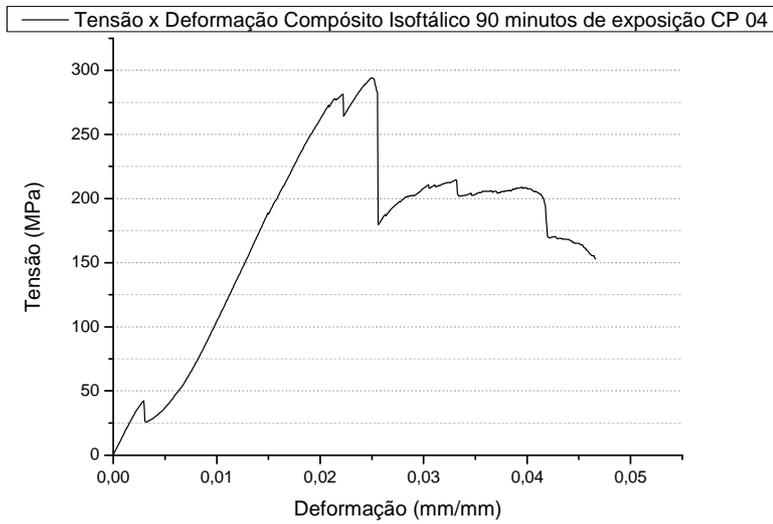
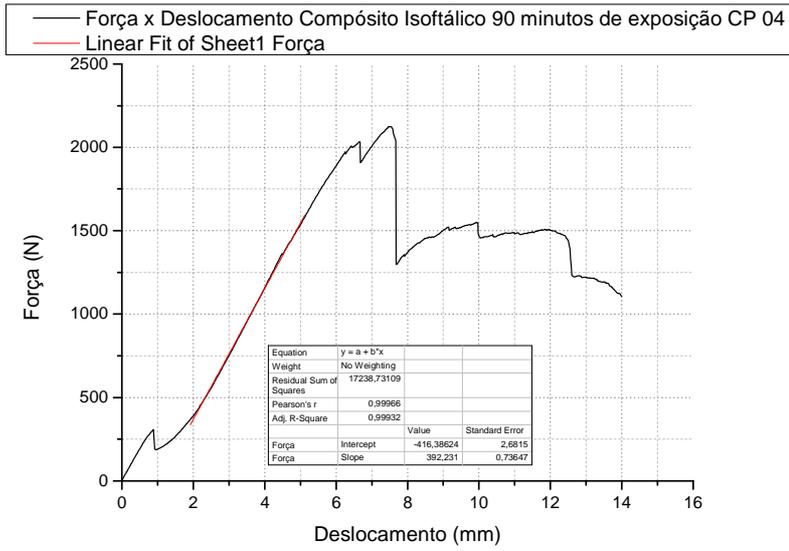


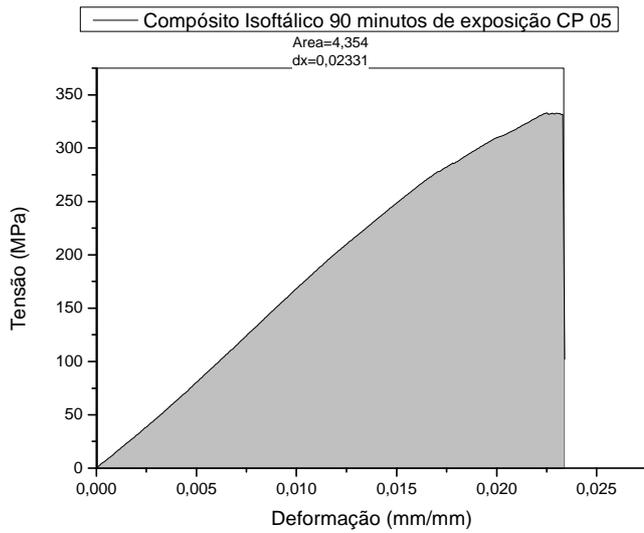
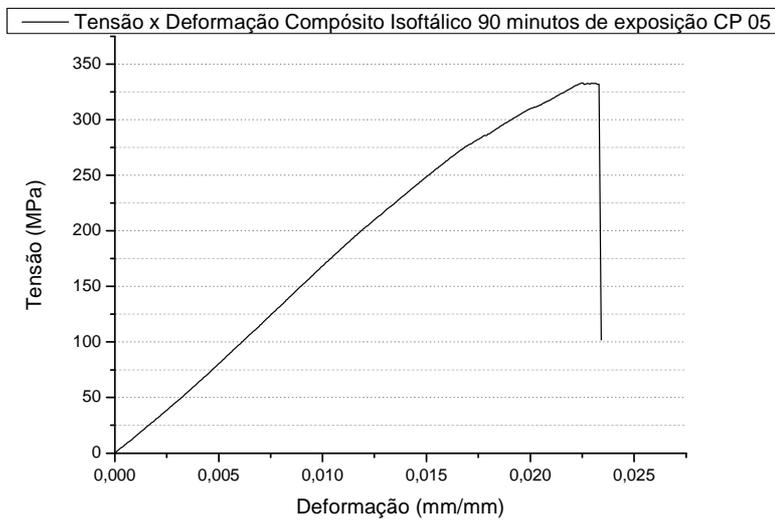
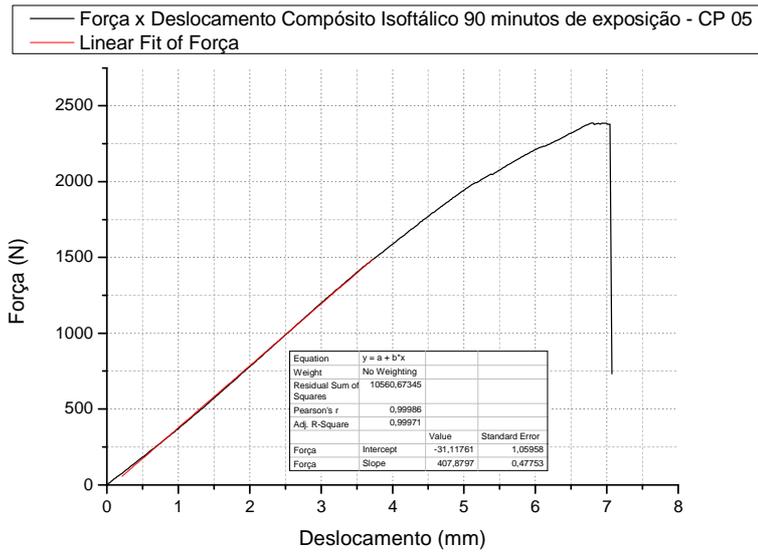




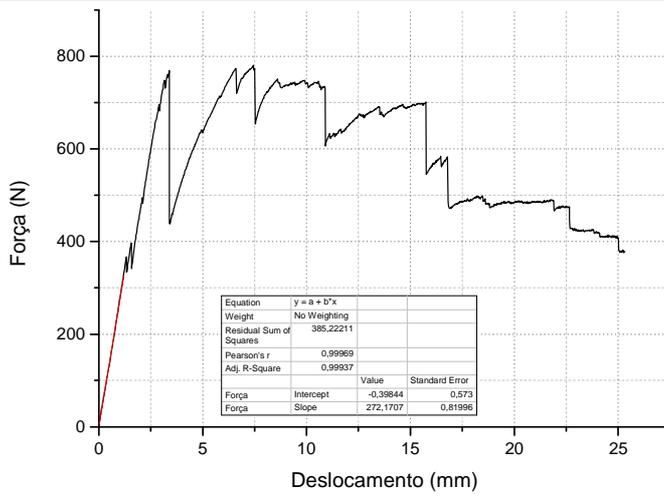




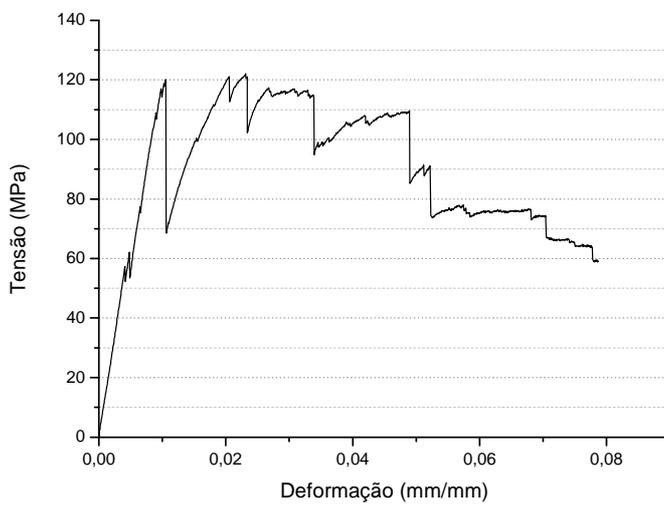




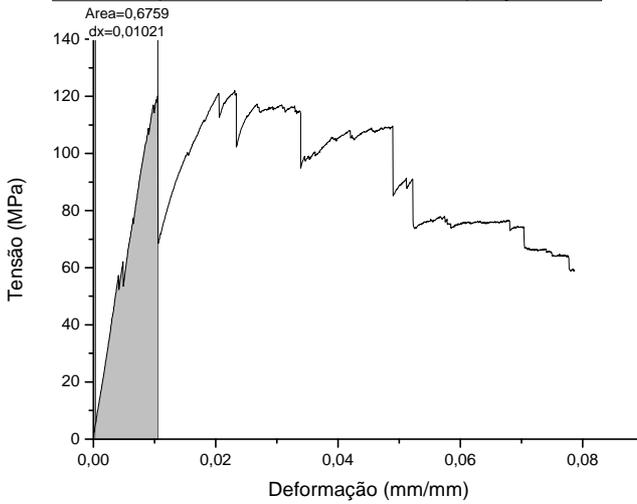
— Força x Deslocamento Compósito Isofático 120 minutos de exposição - CP 01
 — Linear Fit of Sheet1 Força

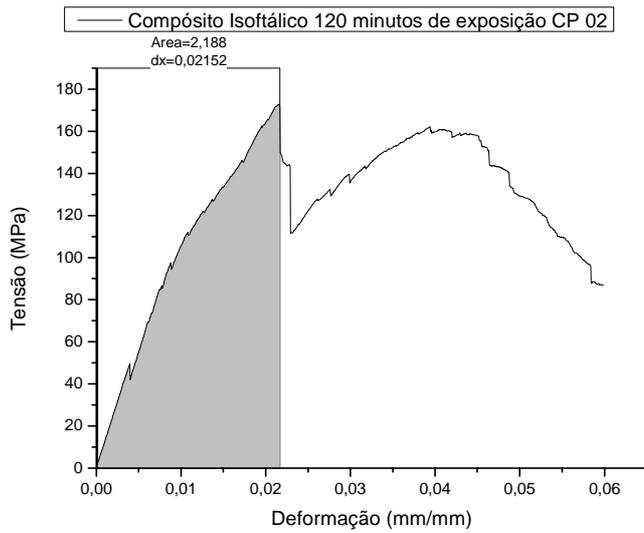
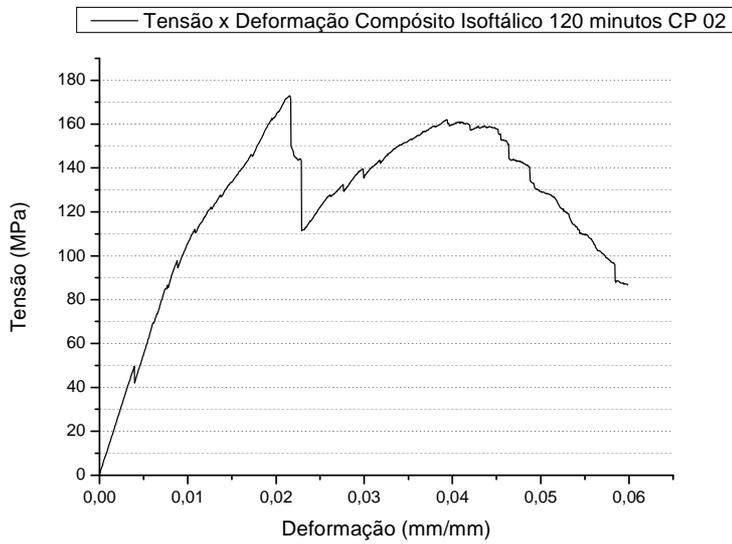
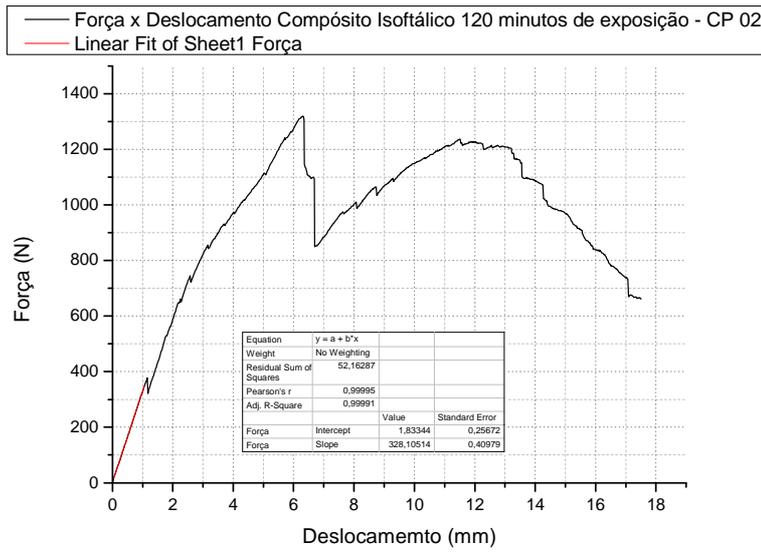


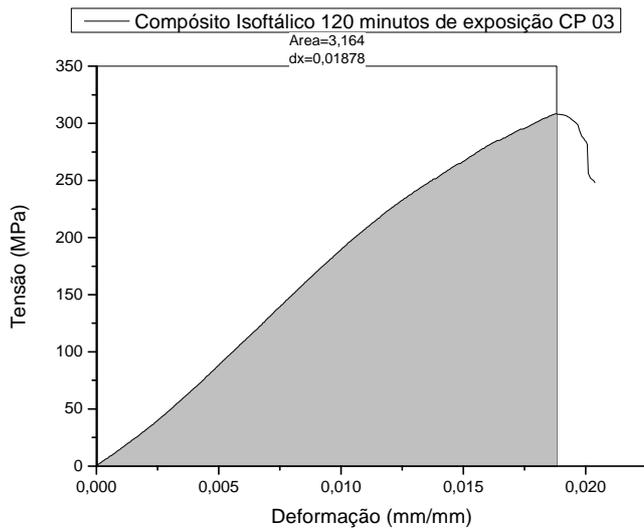
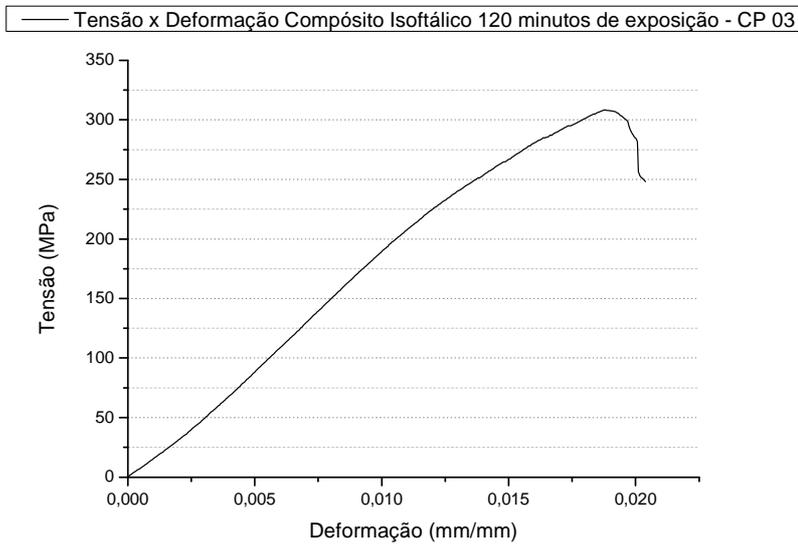
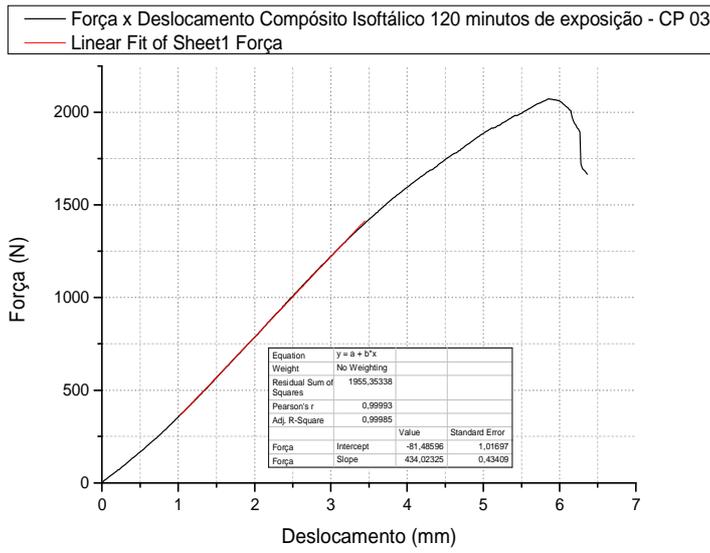
— Tensão x Deformação Compósito Isofático 120 minutos de exposição - CP 01

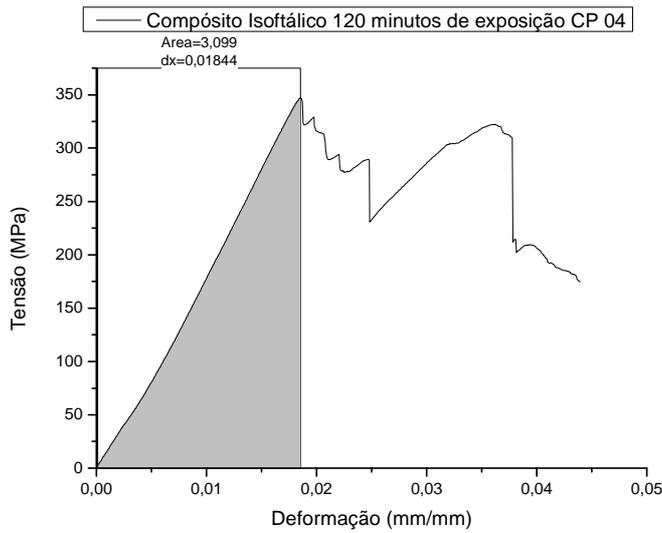
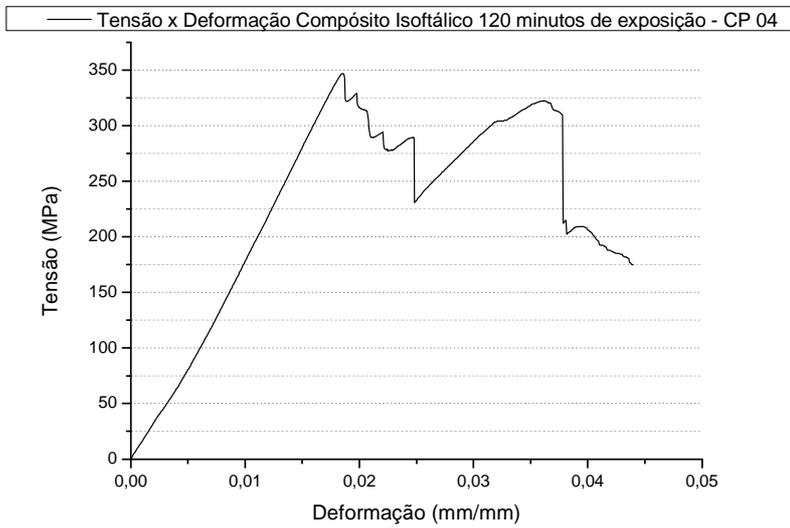
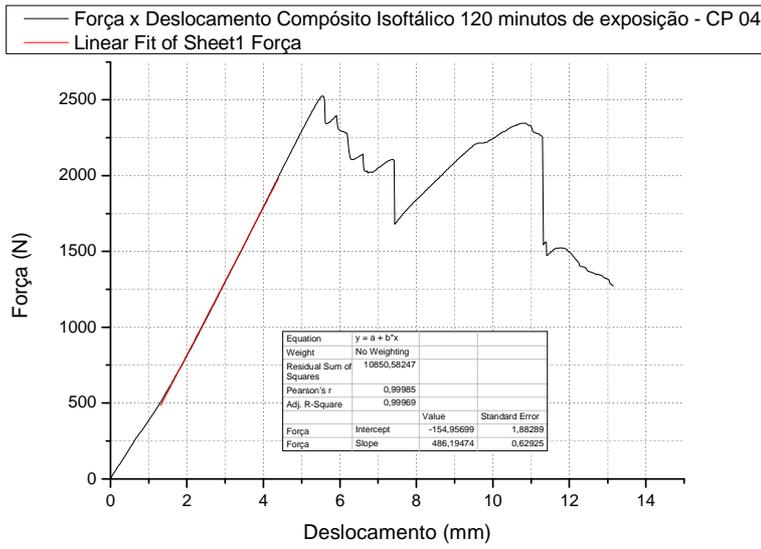


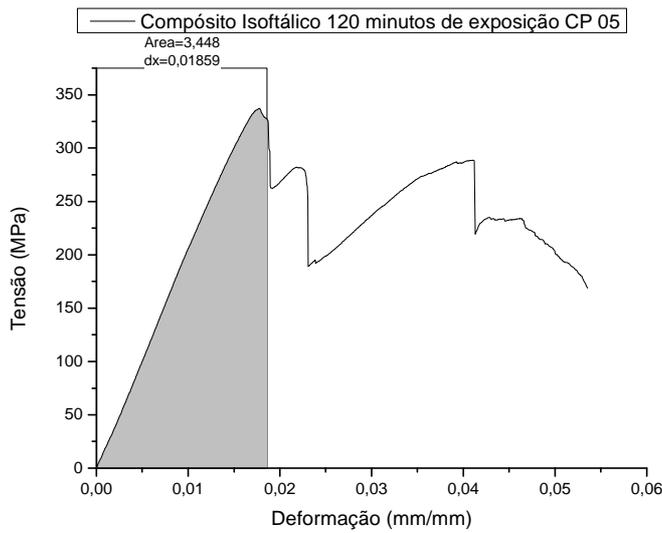
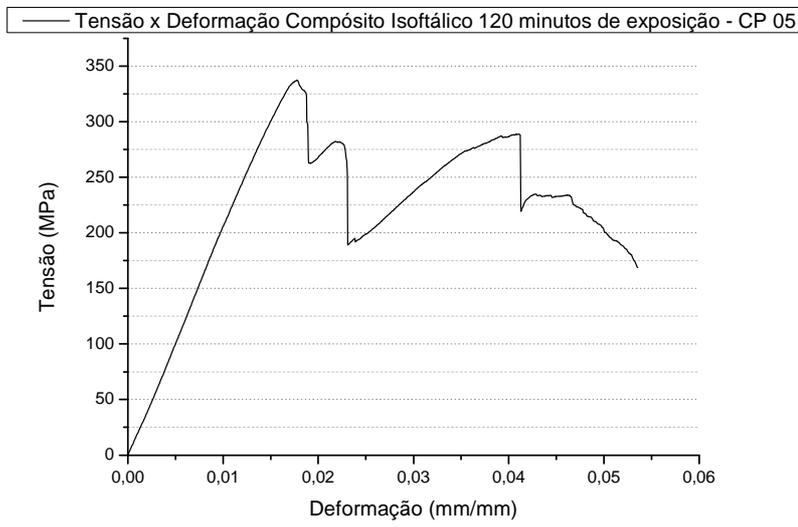
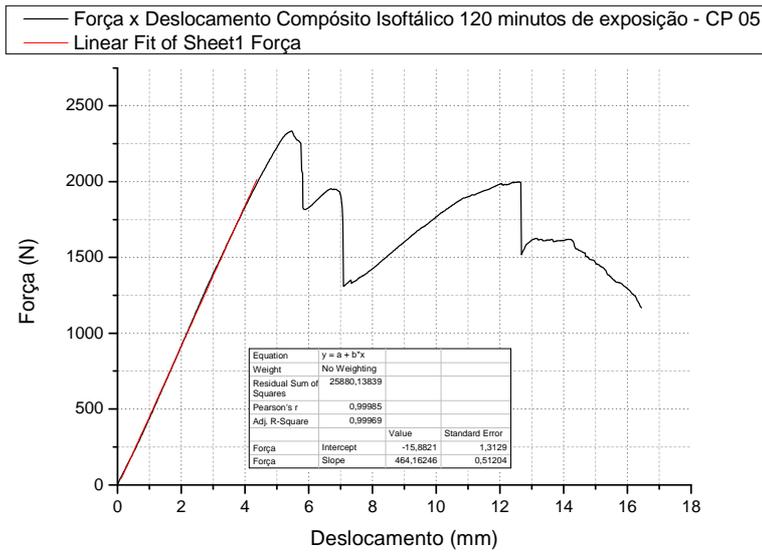
— Compósito Isofático 120 minutos de exposição CP 01











D. Resultados dos ensaios de flexão por três pontos para resina fenólica.

Tabela 20 - Resultado do ensaio de flexão para compósito fenólico com 30 minutos de exposição no forno.

| Corpos de Prova Resina Fenólica Ensaio de Flexão a 3 pontos (30 minutos de exposição) | | | | | | |
|--|-----------------------------------|-----------------------|---------------------------|----------------------------------|--|---|
| Corpos de Prova | Resistência máxima à flexão [MPa] | Módulo à flexão [GPa] | Deformação máxima [mm/mm] | Área total [J/ mm ³] | Energia de Iniciação [J/ mm ³] | Energia de Propagação [J/ mm ³] |
| CP 01 FEN 30 | 250,3 | 25,2 | 0,055 | 7,8 | 1,3 | 6,5 |
| CP 02 FEN 30 | 209,5 | 28,9 | 0,051 | 7,1 | 0,8 | 6,4 |
| CP 03 FEN 30 | 224,9 | 28,1 | 0,047 | 6,7 | 1,1 | 5,6 |
| CP 04 FEN 30 | 228,9 | 24,8 | 0,041 | 6,5 | 1,6 | 4,9 |
| CP 05 FEN 30 | 268,3 | 30,3 | 0,043 | 7,1 | 1,2 | 5,8 |
| Média | 236,4 | 27,5 | 0,047 | 7,0 | 1,2 | 5,8 |
| Desvio Padrão | 23,0 | 2,4 | 0,006 | 0,5 | 0,3 | 0,6 |

Tabela 21 - Resultado do ensaio de flexão para compósito fenólico com 60 minutos de exposição no forno.

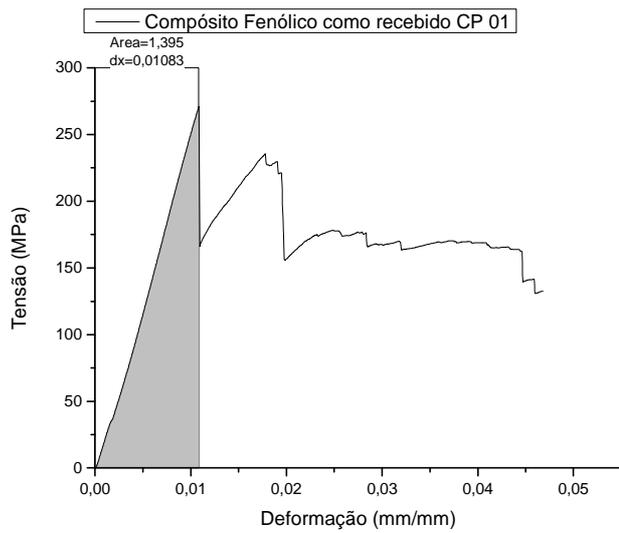
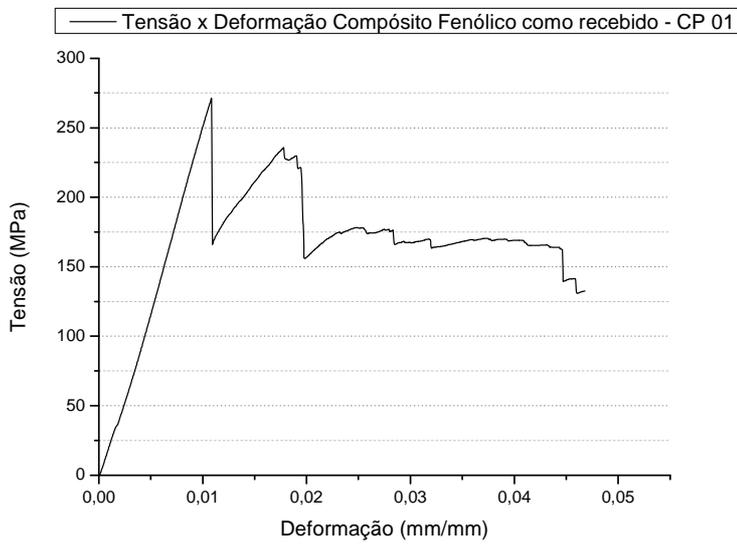
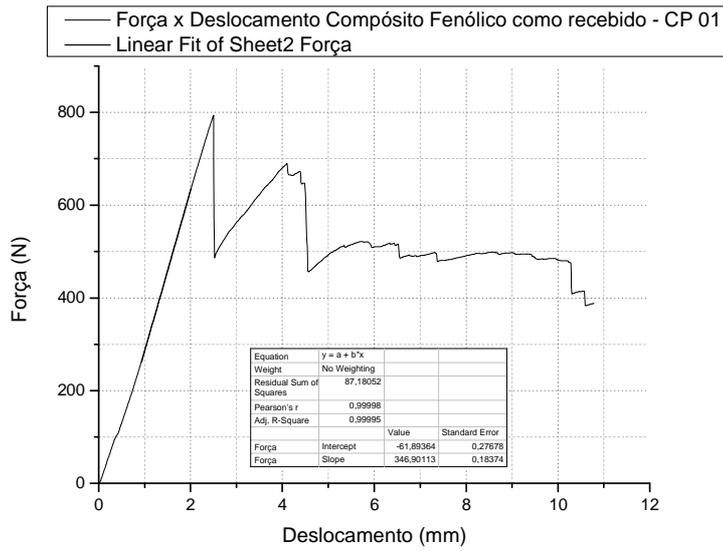
| Corpos de Prova Resina Fenólica Ensaio de Flexão a 3 pontos (60 minutos de exposição térmica) | | | | | | |
|--|-----------------------------------|-----------------------|---------------------------|----------------------------------|--|---|
| Corpos de Prova | Resistência máxima à flexão [MPa] | Módulo à flexão [GPa] | Deformação máxima [mm/mm] | Área total [J/ mm ³] | Energia de Iniciação [J/ mm ³] | Energia de Propagação [J/ mm ³] |
| CP 01 FEN 60 | 220,11 | 30,02 | 0,04938 | 7,30 | 0,62 | 6,68 |
| CP 02 FEN 60 | 213,15 | 24,43 | 0,06207 | 8,31 | 1,16 | 7,15 |
| CP 03 FEN 60 | 237,58 | 28,75 | 0,04683 | 6,86 | 1,05 | 5,82 |
| CP 04 FEN 60 | 292,13 | 31,63 | 0,00966 | 1,46 | 1,46 | 0,00 |
| CP 05 FEN 60 | 181,25 | 26,27 | 0,04406 | 5,60 | 0,73 | 4,86 |
| Média | 228,84 | 28,22 | 0,04240 | 5,91 | 1,01 | 4,90 |
| Desvio Padrão | 40,83 | 2,89 | 0,01956 | 2,67 | 0,34 | 2,87 |

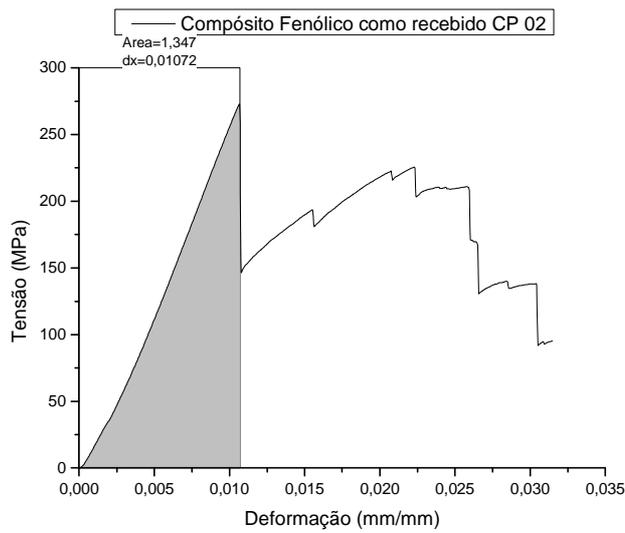
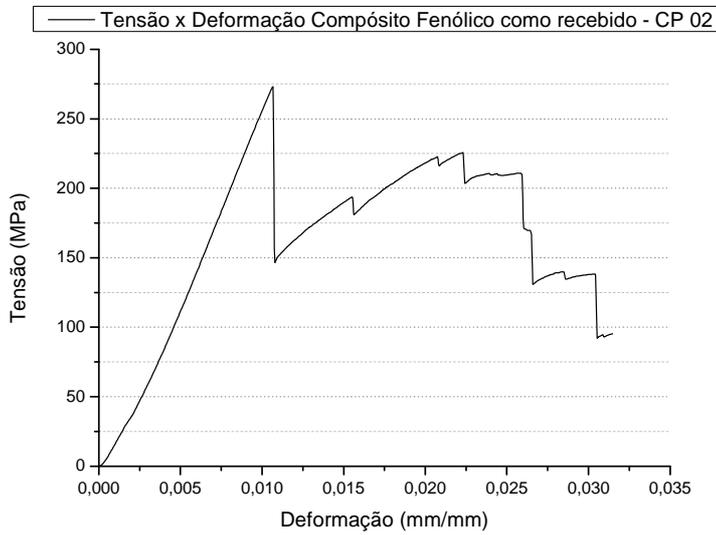
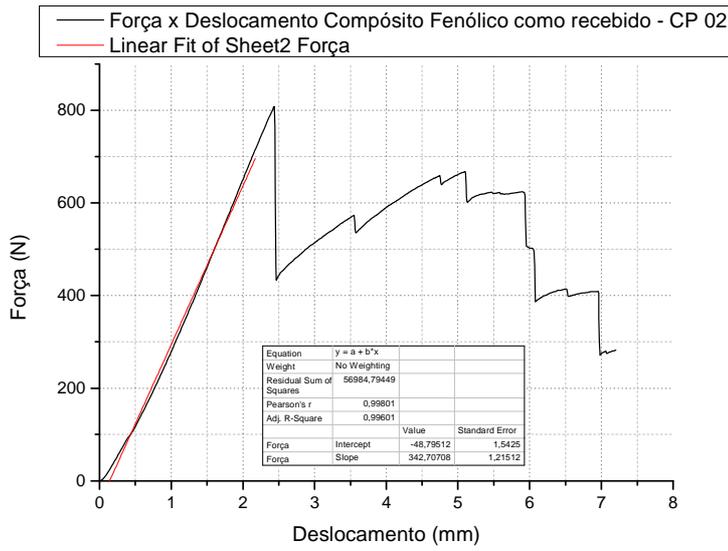
Tabela 22 - Resultado do ensaio de flexão para compósito fenólico com 90 minutos de exposição no forno.

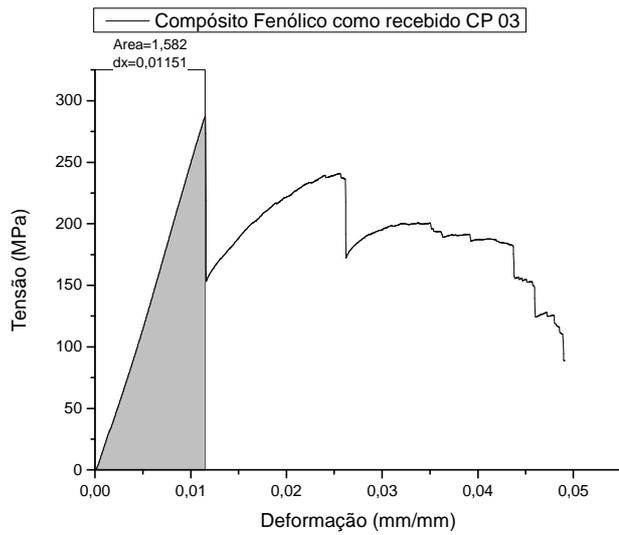
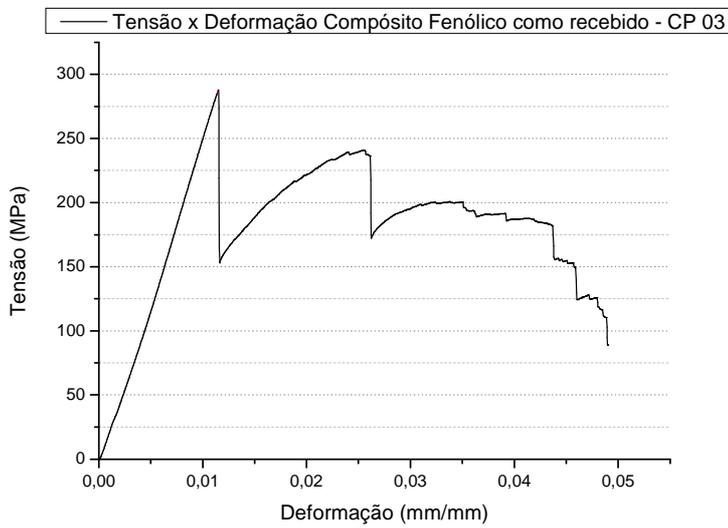
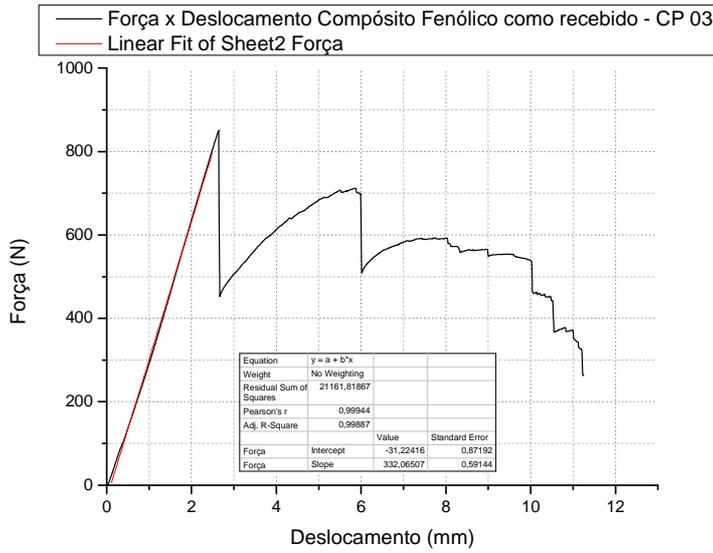
| Corpos de Prova Resina Fenólica Ensaio de Flexão a 3 pontos (90 minutos de exposição térmica) | | | | | | |
|--|-----------------------------------|-----------------------|---------------------------|---------------------------------|---|--|
| Corpos de Prova | Resistência máxima à flexão [MPa] | Módulo à flexão [GPa] | Deformação máxima [mm/mm] | Área total [J/mm ³] | Energia de Iniciação [J/mm ³] | Energia de Propagação [J/mm ³] |
| CP 01 FEN 90 | 255,4 | 27,0 | 0,048 | 7,7 | 1,2 | 6,5 |
| CP 02 FEN 90 | 239,9 | 27,3 | 0,038 | 6,6 | 0,9 | 5,7 |
| CP 03 FEN 90 | 247,6 | 32,1 | 0,053 | 9,1 | 0,9 | 8,1 |
| CP 04 FEN 90 | 209,0 | 27,3 | 0,068 | 9,6 | 0,8 | 8,8 |
| CP 05 FEN 90 | 307,4 | 29,0 | 0,011 | 1,6 | 1,6 | 0,0 |
| Média | 251,9 | 28,5 | 0,043 | 6,9 | 1,1 | 5,8 |
| Desvio Padrão | 35,7 | 2,1 | 0,021 | 3,2 | 0,3 | 3,5 |

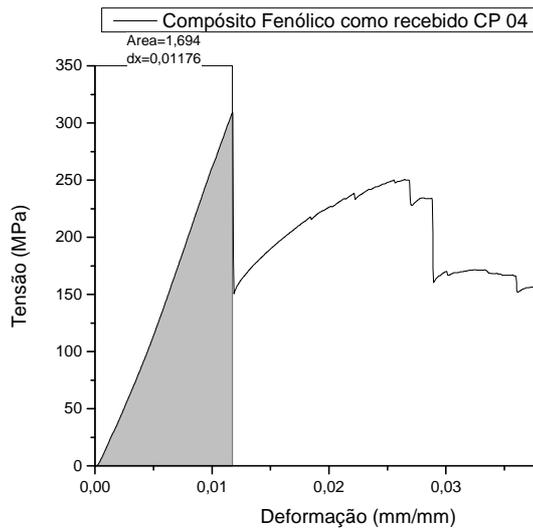
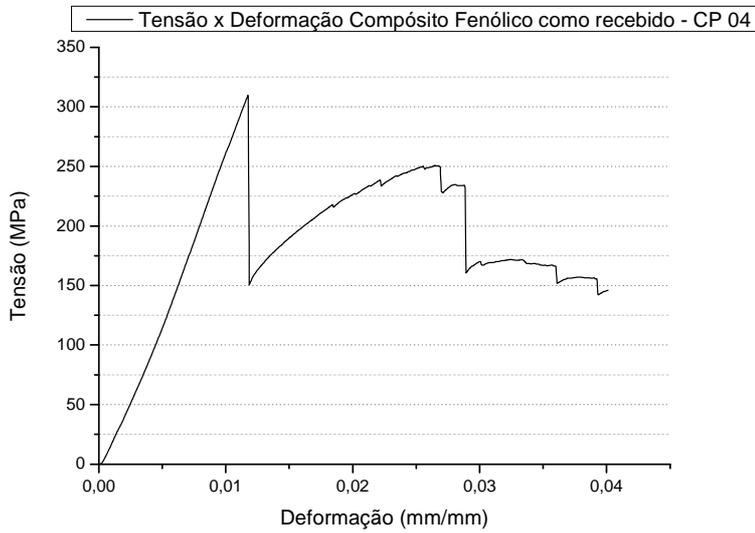
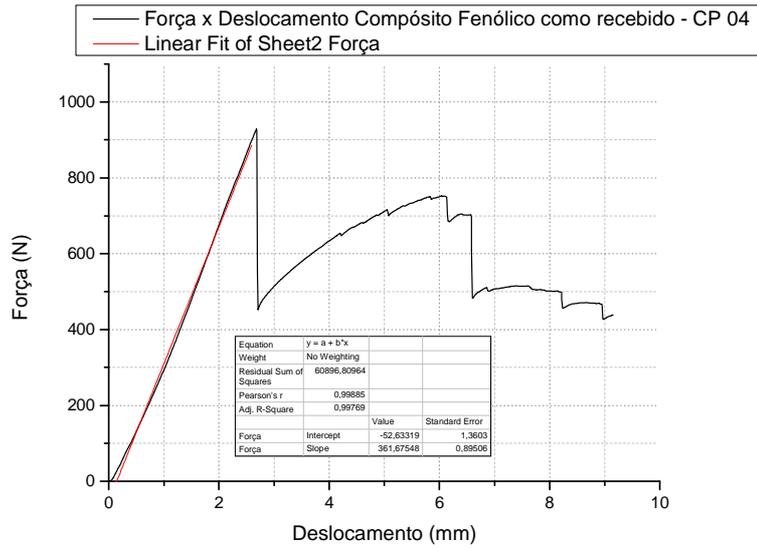
Tabela 23 - Resultado do ensaio de flexão para compósito fenólico com 120 minutos de exposição no forno.

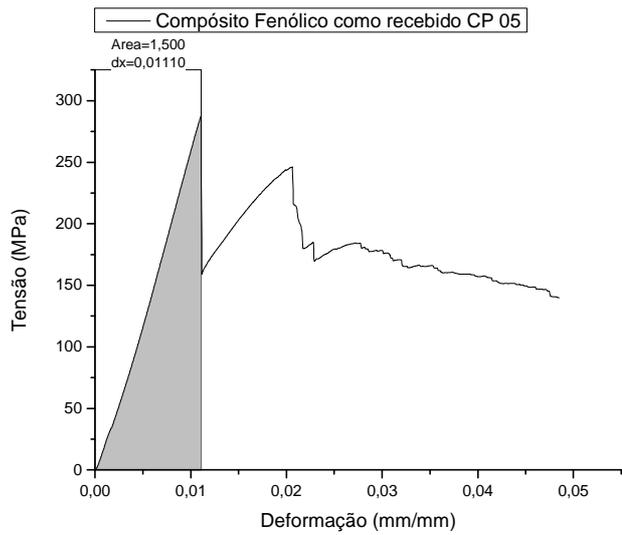
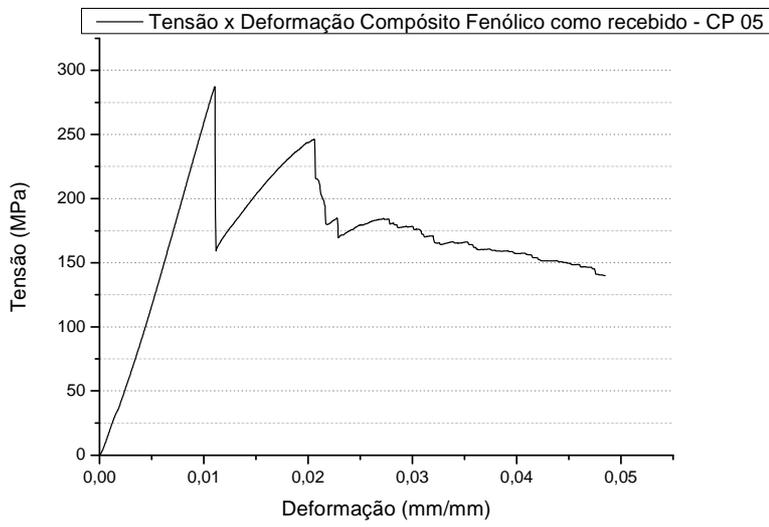
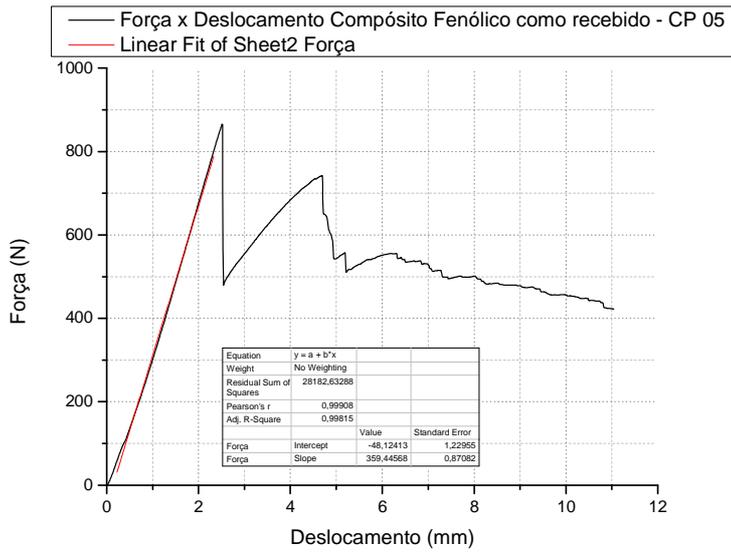
| Corpos de Prova Resina Fenólica Ensaio de Flexão a 3 pontos (120 minutos de exposição) | | | | | | |
|---|-----------------------------------|-----------------------|---------------------------|---------------------------------|---|--|
| Corpos de Prova | Resistência máxima à flexão [MPa] | Módulo à flexão [GPa] | Deformação máxima [mm/mm] | Área total [J/mm ³] | Energia de Iniciação [J/mm ³] | Energia de Propagação [J/mm ³] |
| CP 01 FEN 120 | 248,2 | 32,8 | 0,046 | 7,8 | 1,0 | 6,8 |
| CP 02 FEN 120 | 379,0 | 31,3 | 0,015 | 3,1 | 3,1 | 0,0 |
| CP 03 FEN 120 | 291,9 | 30,7 | 0,010 | 1,4 | 1,4 | 0,0 |
| CP 04 FEN 120 | 249,7 | 32,1 | 0,054 | 9,5 | 1,3 | 8,3 |
| CP 05 FEN 120 | 213,9 | 27,1 | 0,057 | 8,2 | 0,9 | 7,3 |
| Média | 276,6 | 30,8 | 0,036 | 6,0 | 1,5 | 4,5 |
| Desvio Padrão | 63,6 | 2,2 | 0,022 | 3,5 | 0,9 | 4,1 |

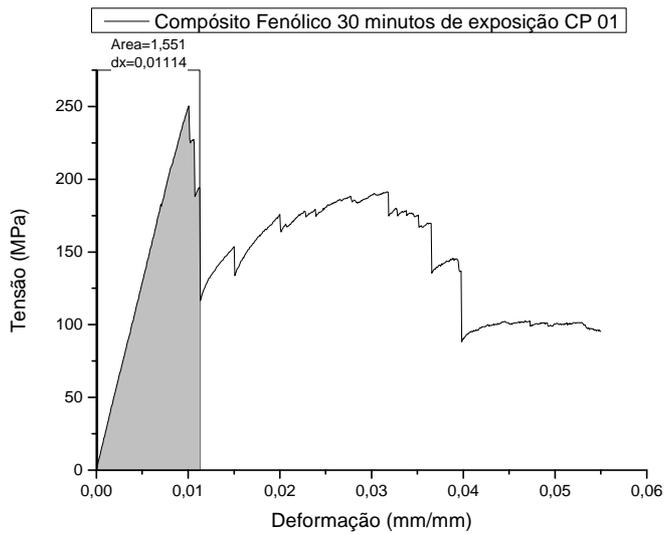
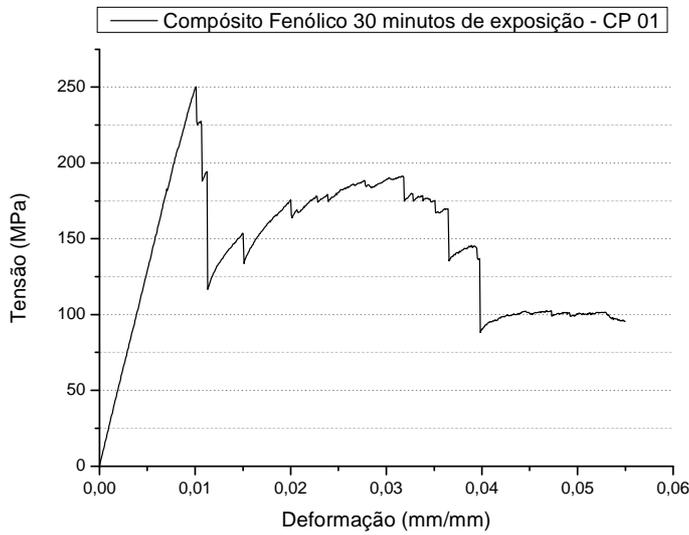
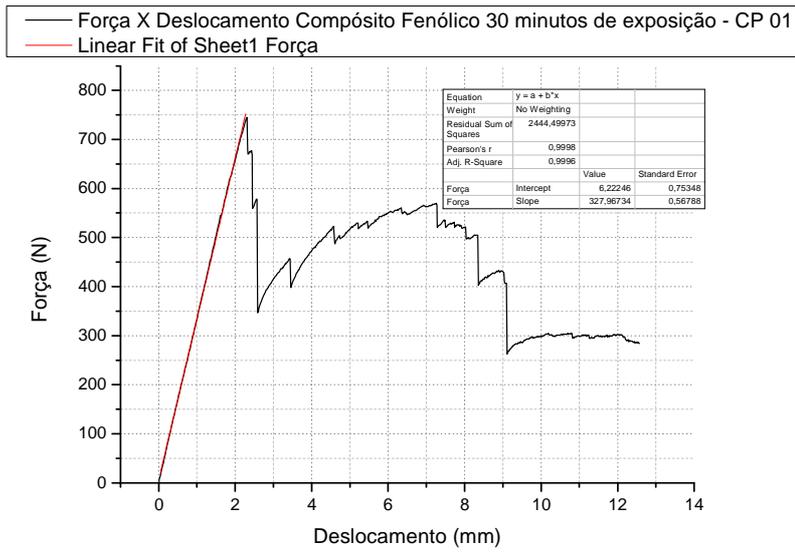


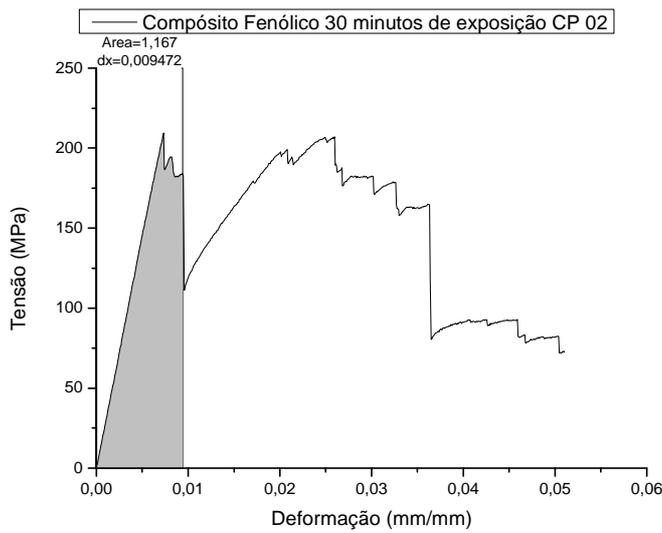
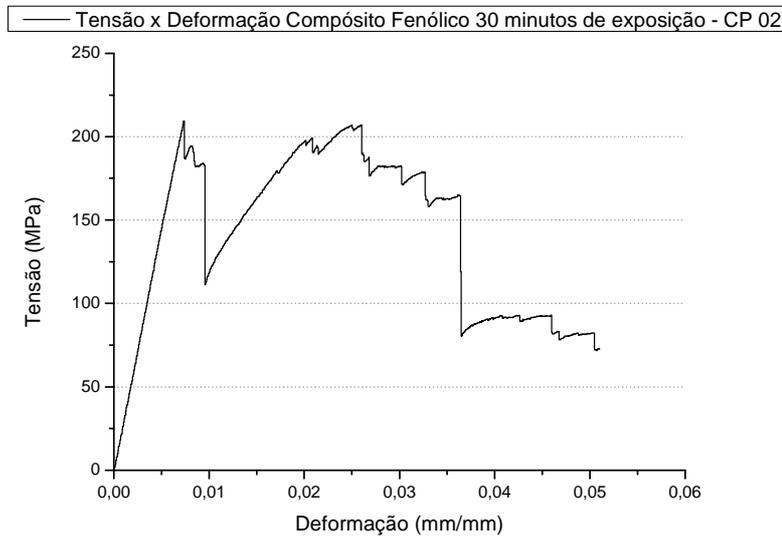
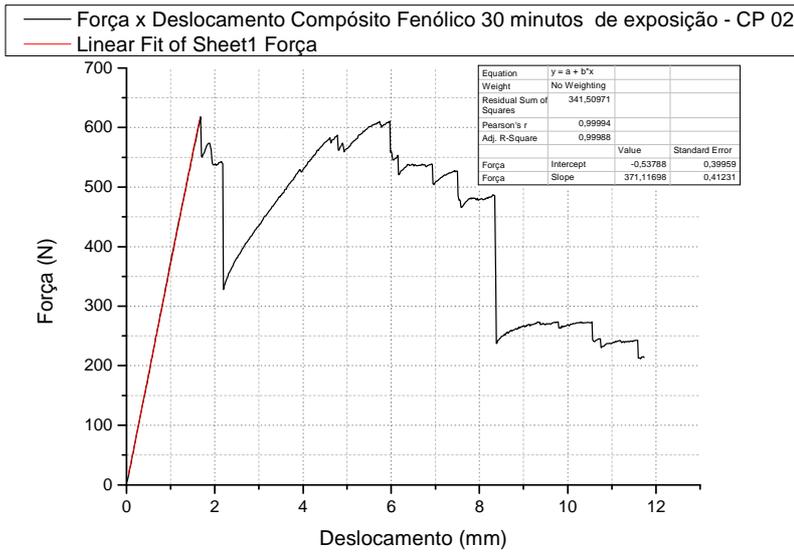


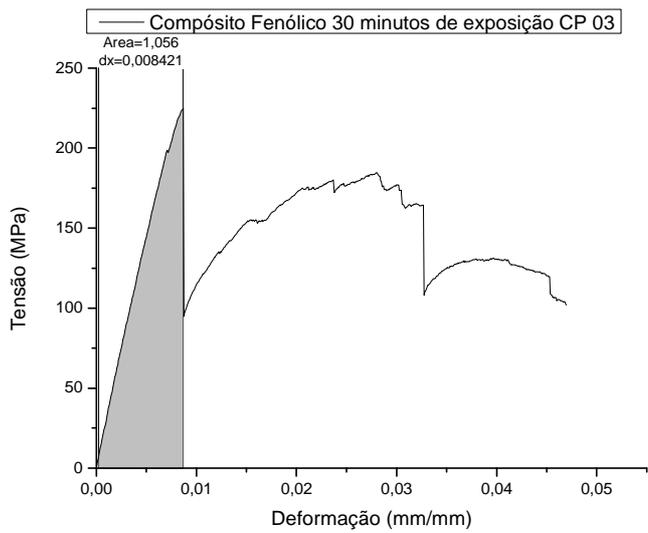
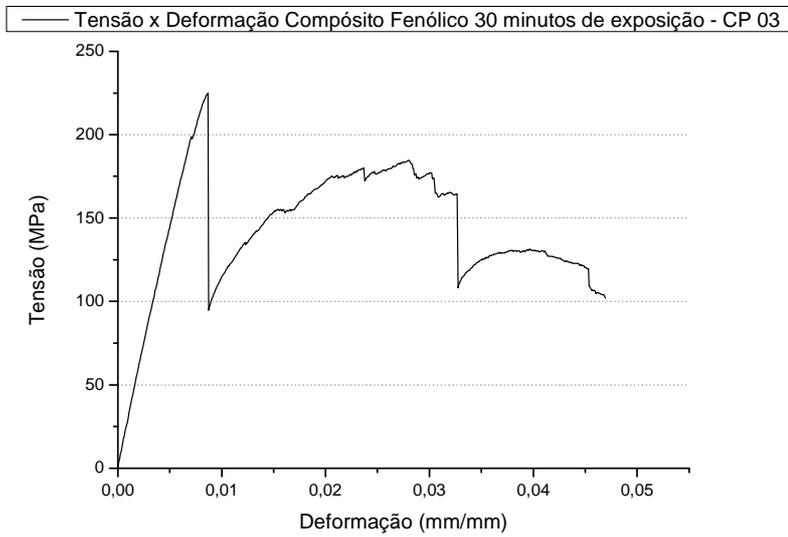
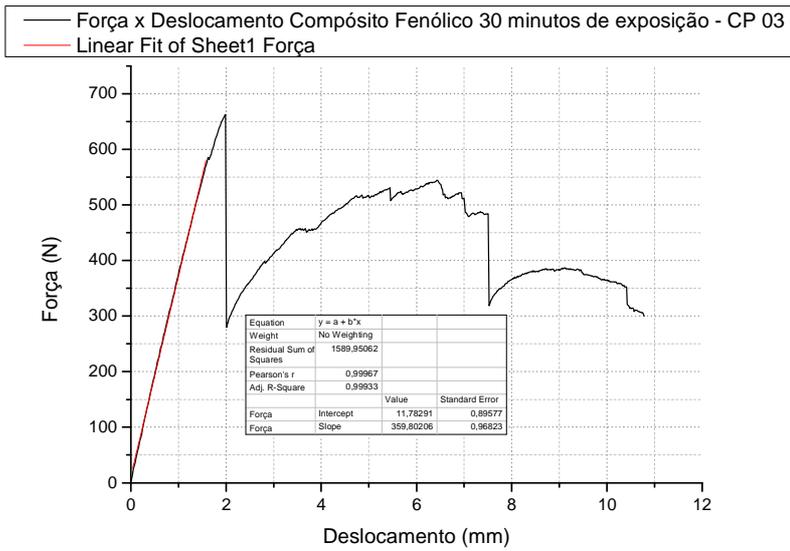


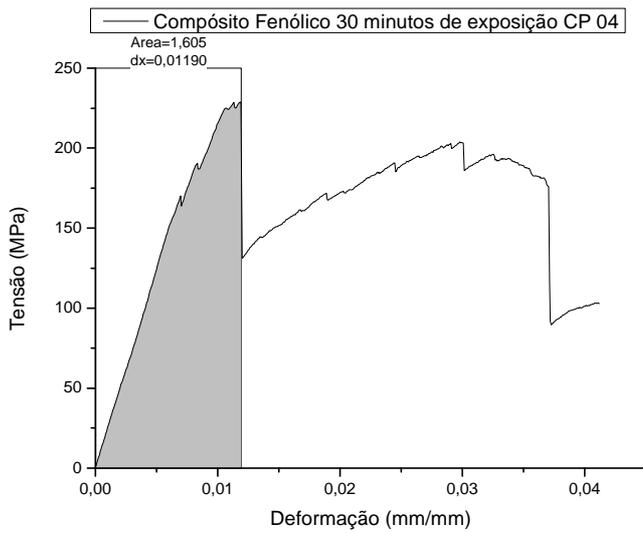
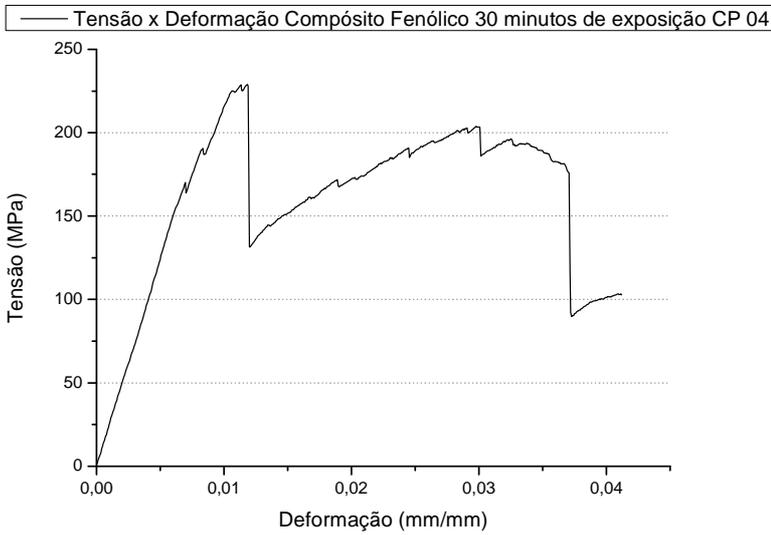
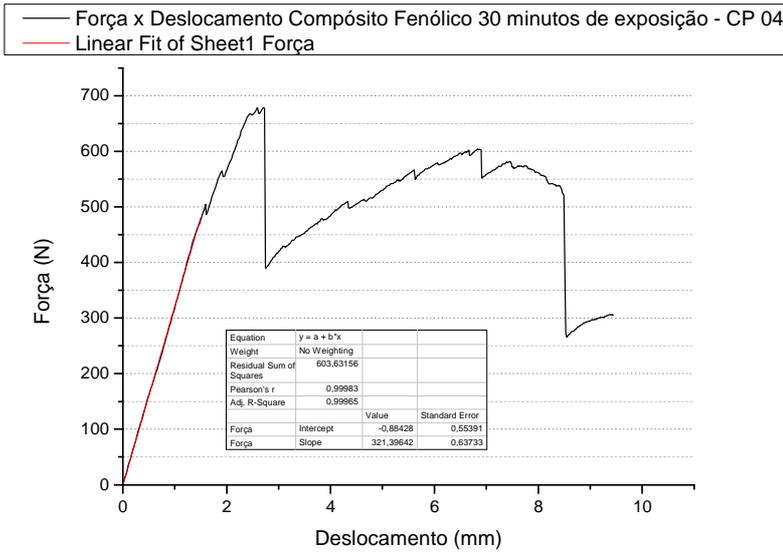


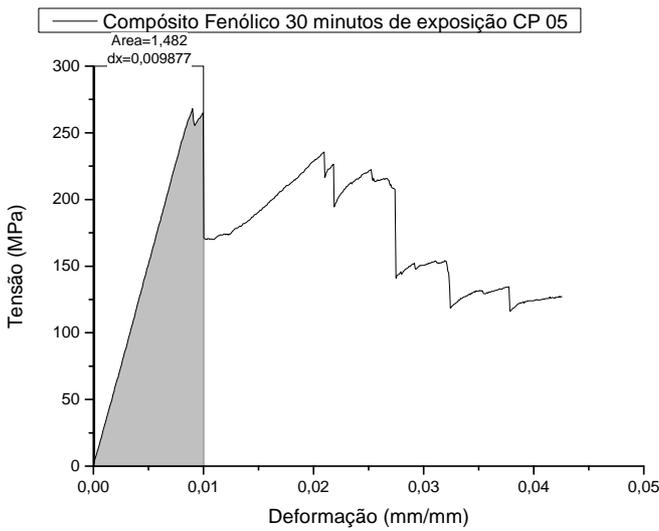
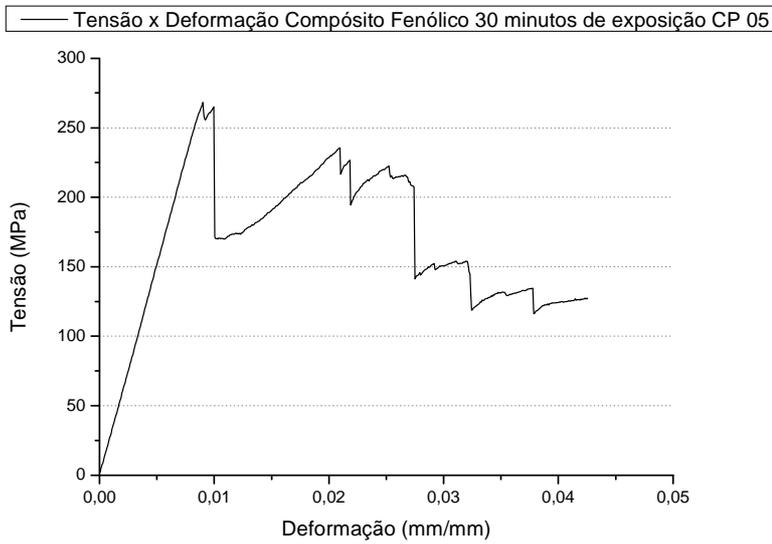
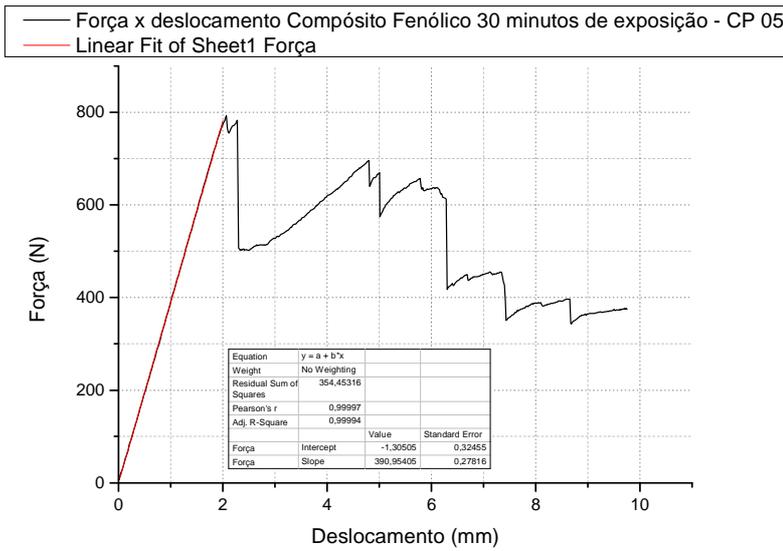


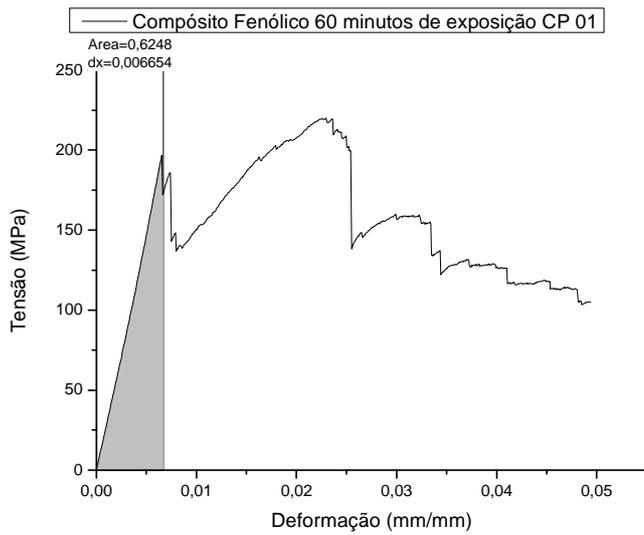
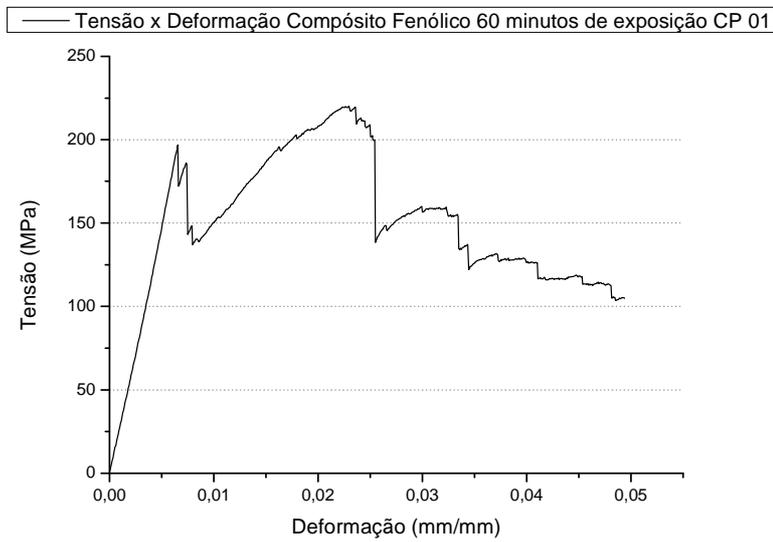
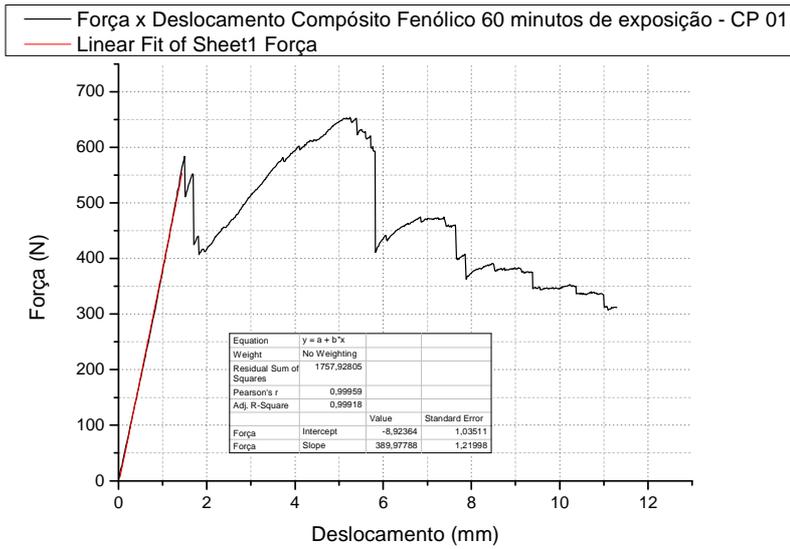




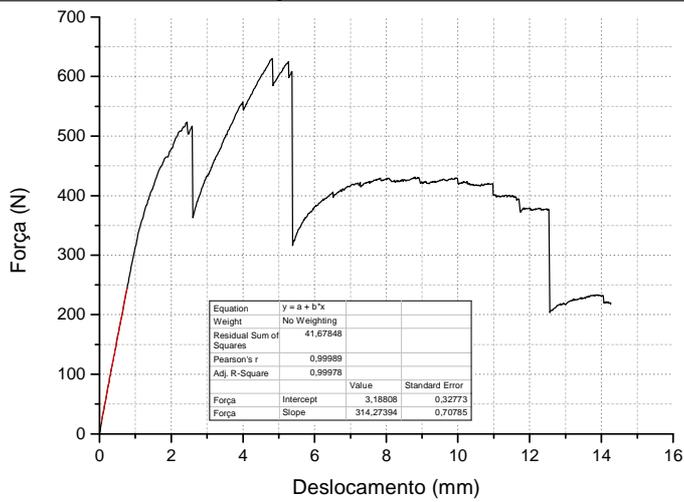




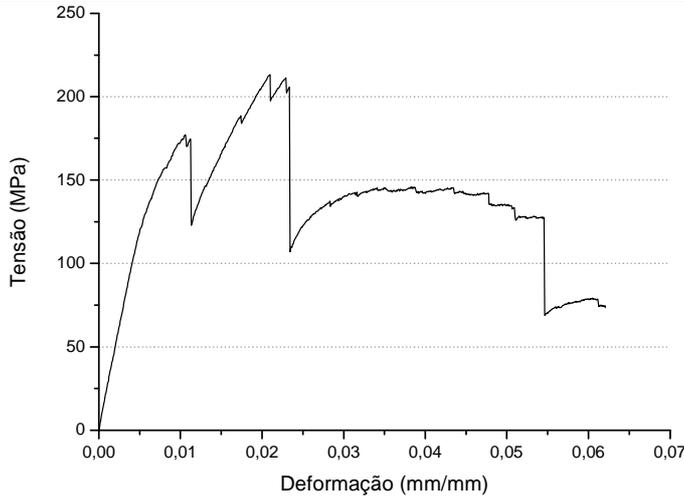




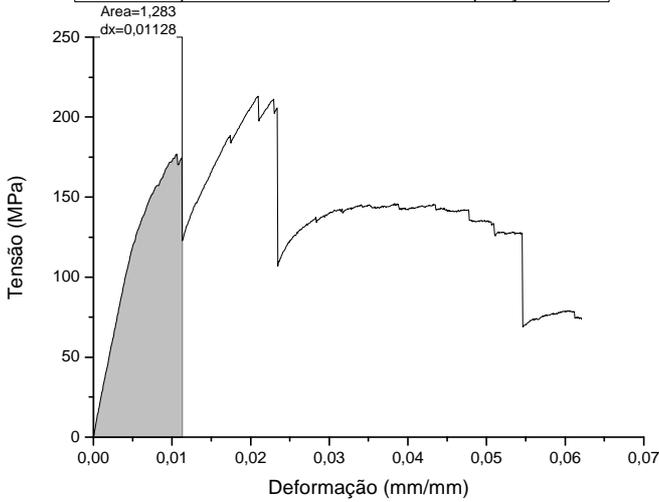
— Força x Deslocamento Compósito Fenólico 60 minutos de exposição - CP 02
 — Linear Fit of Sheet1 Força

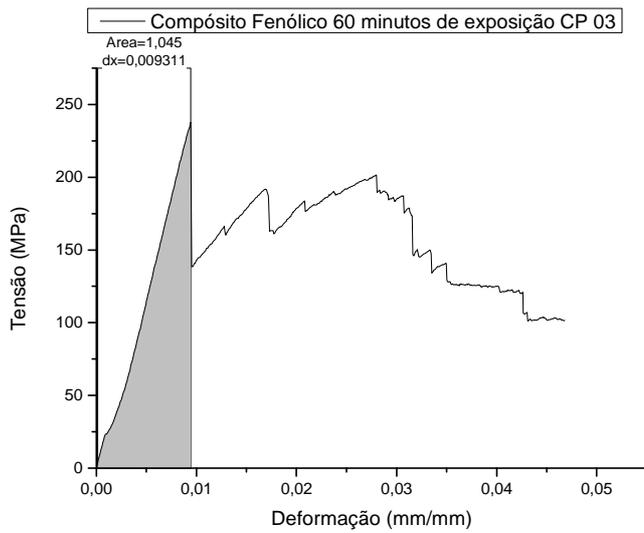
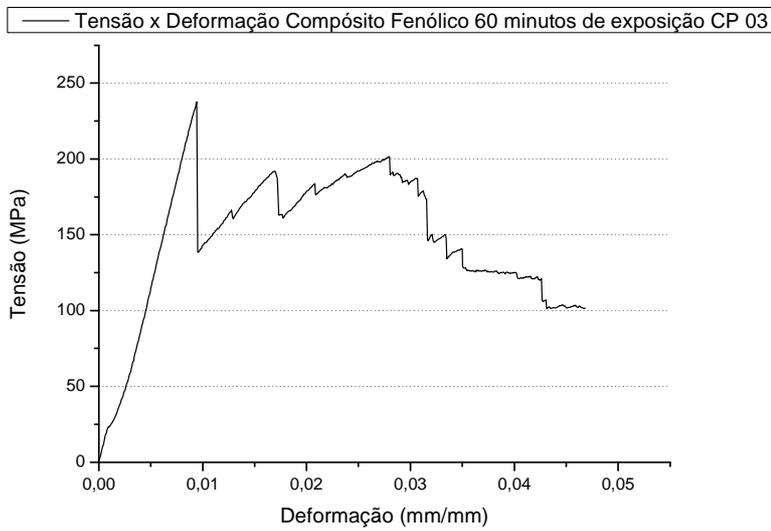
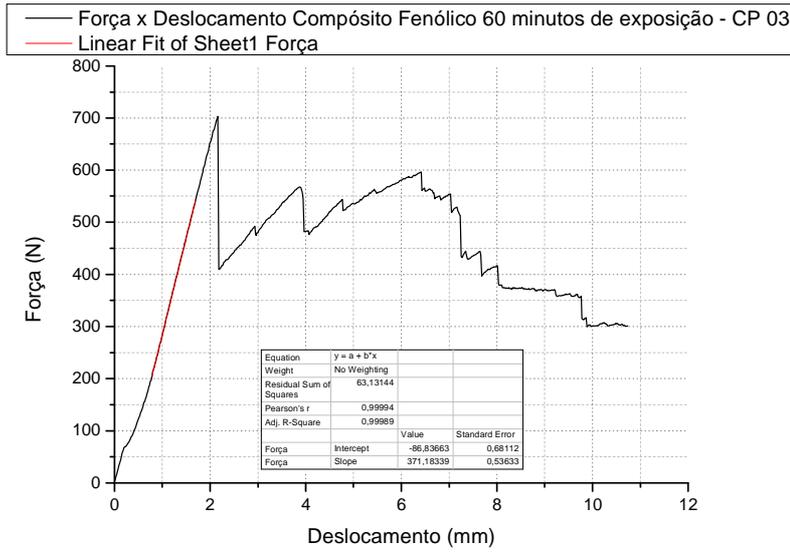


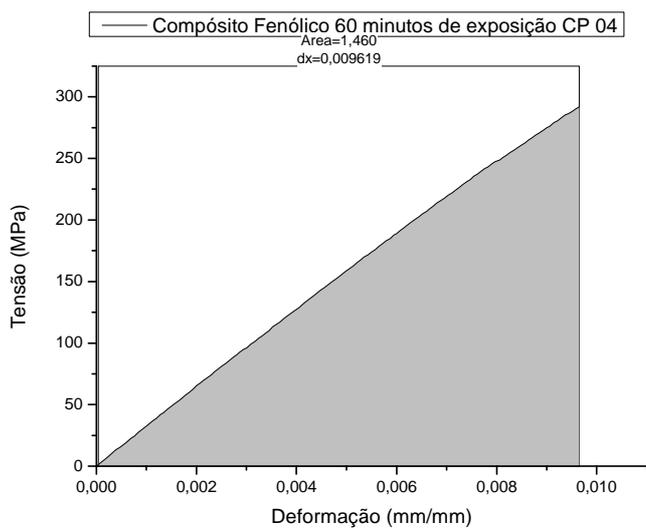
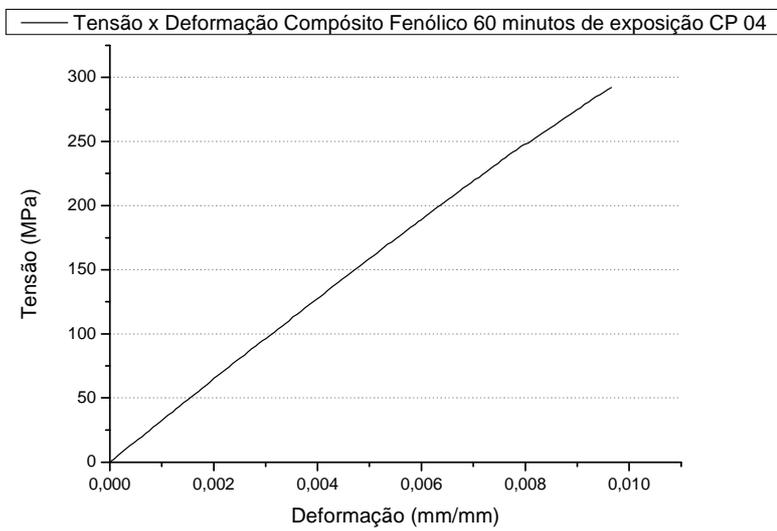
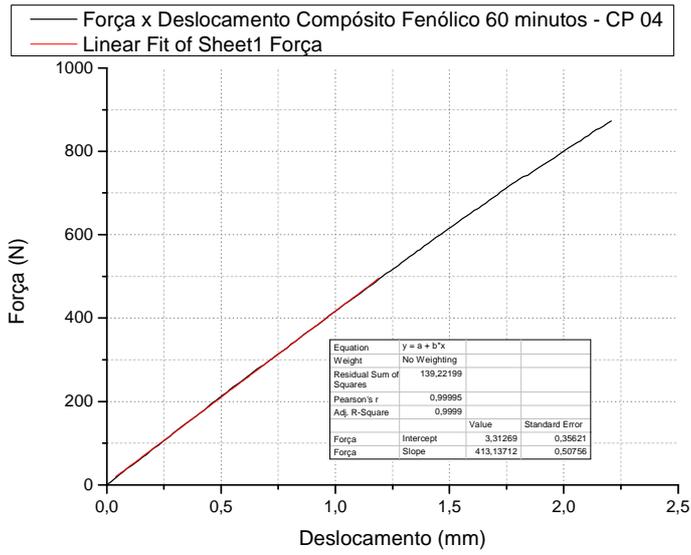
— Tensão x Deformação Compósito Fenólico 60 minutos de exposição CP 02

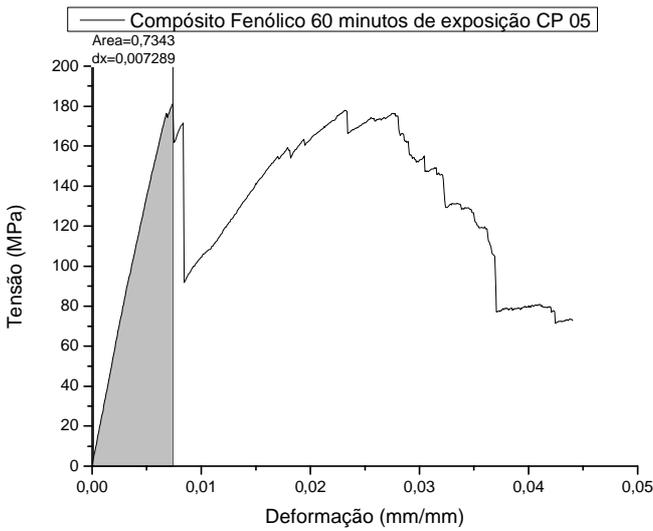
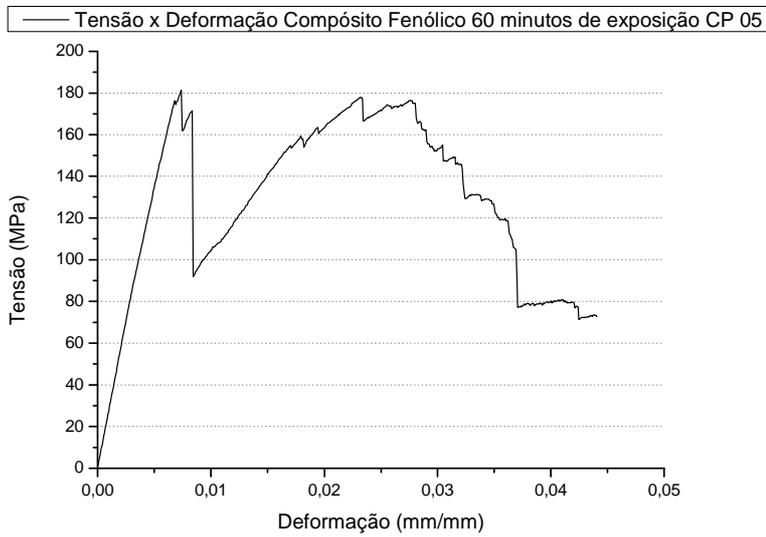
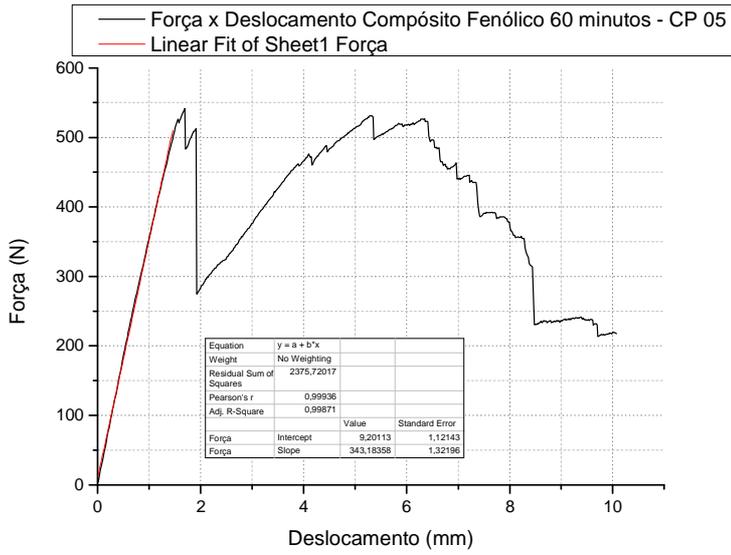


— Compósito Fenólico 60 minutos de exposição CP 02

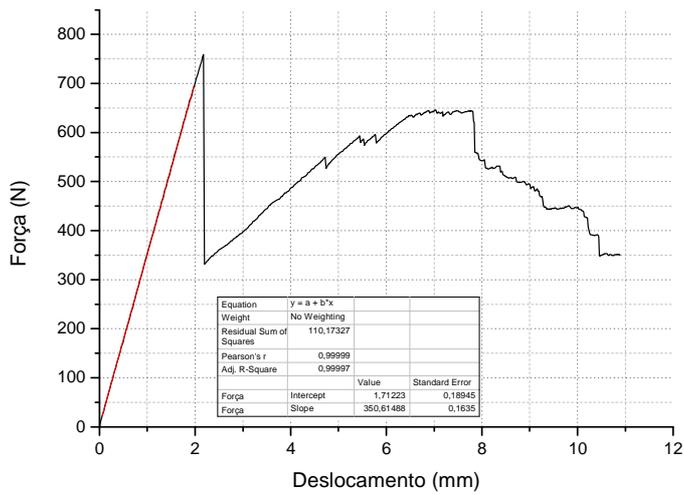




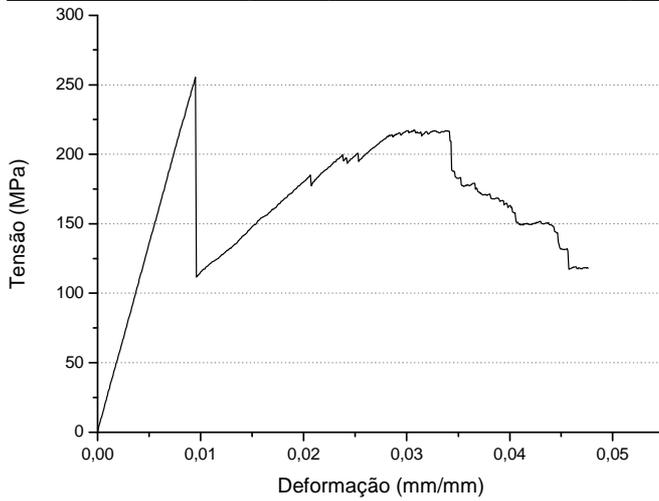




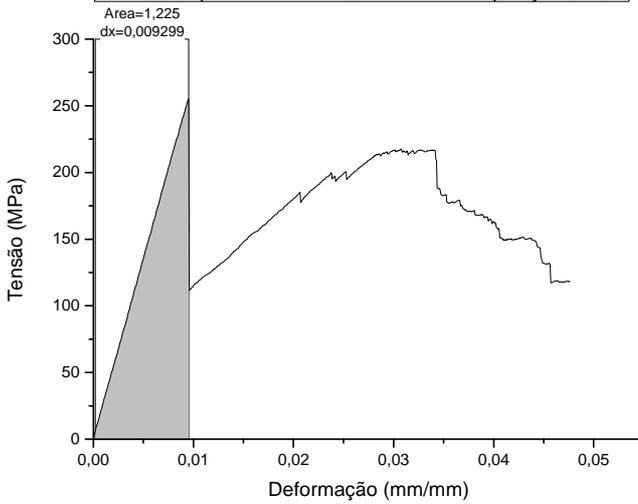
— Força x Deslocamento Compósito Fenólico 90 minutos de exposição - CP 01
 — Linear Fit of Sheet1 Força

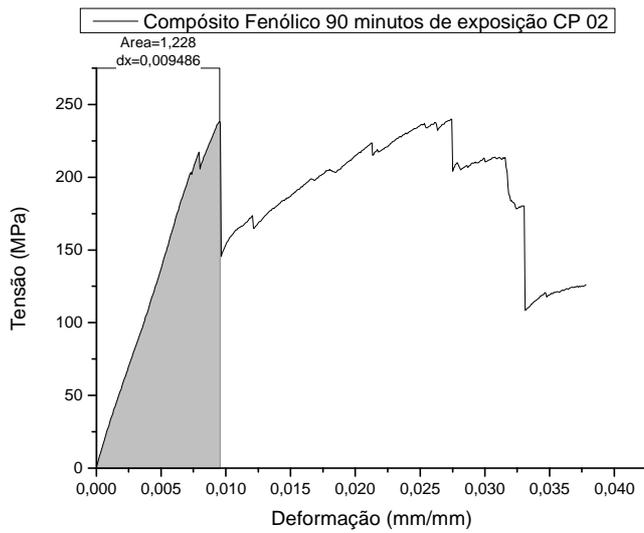
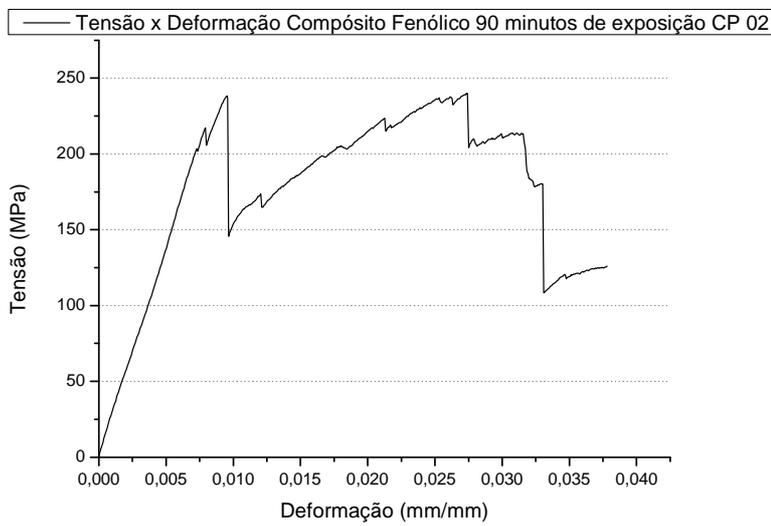
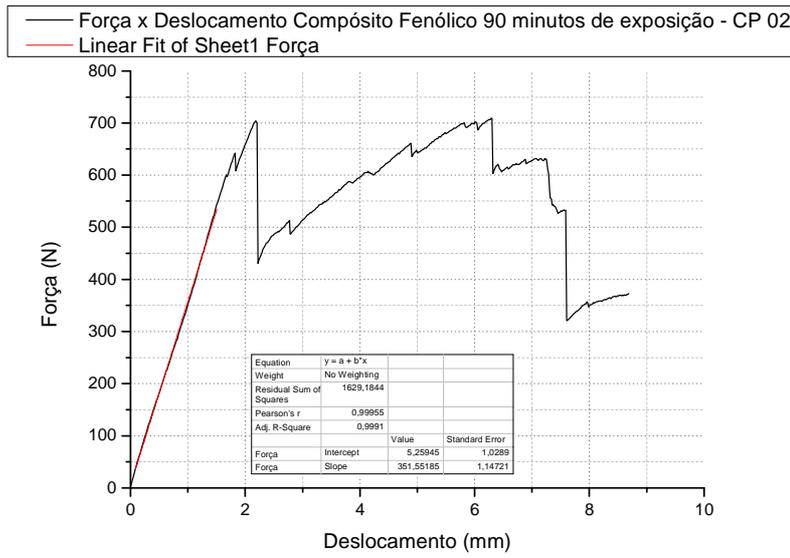


— Tensão x Deformação Compósito Fenólico 90 minutos de exposição CP 01

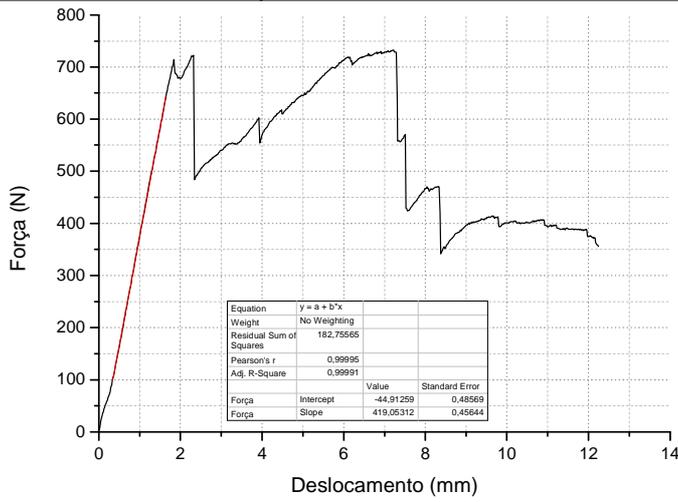


— Compósito Fenólico 90 minutos de exposição CP 01

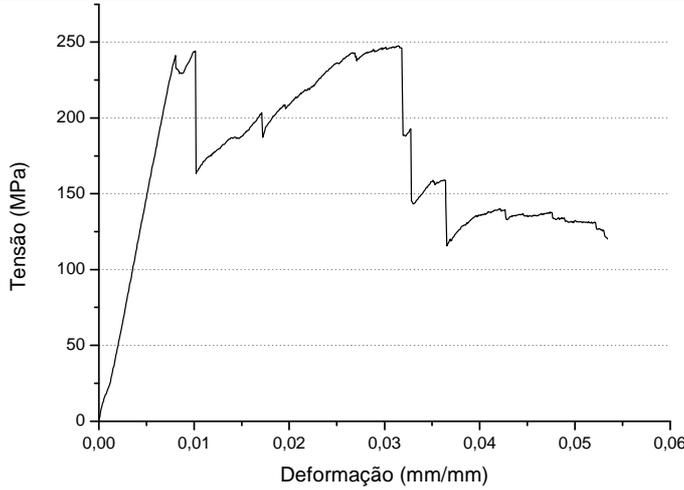




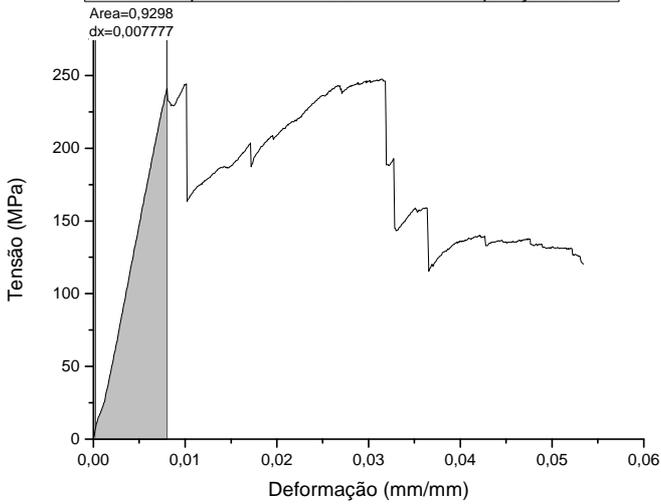
— Força x Deslocamento Compósito Fenólico 90 minutos de exposição - CP 03
 — Linear Fit of Sheet1 Força

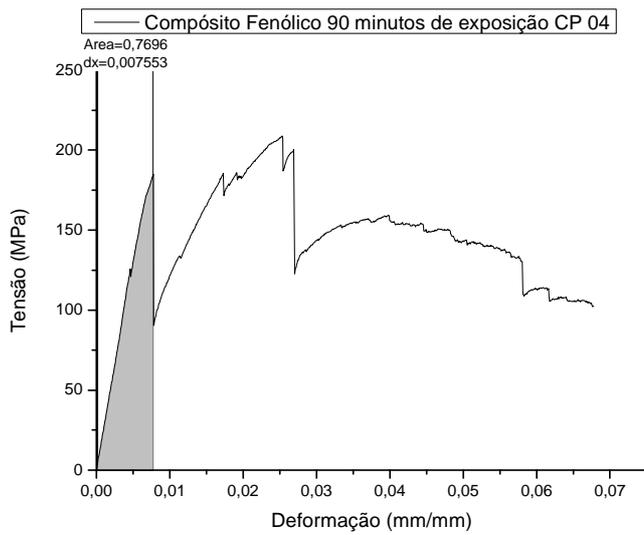
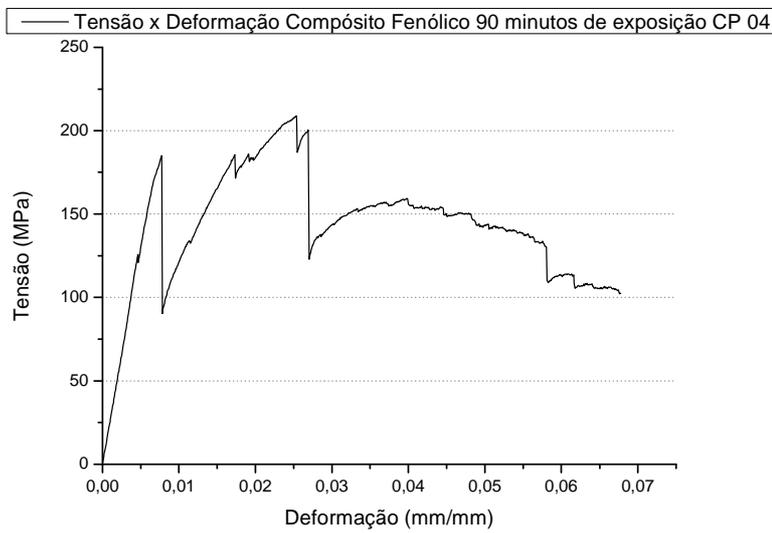
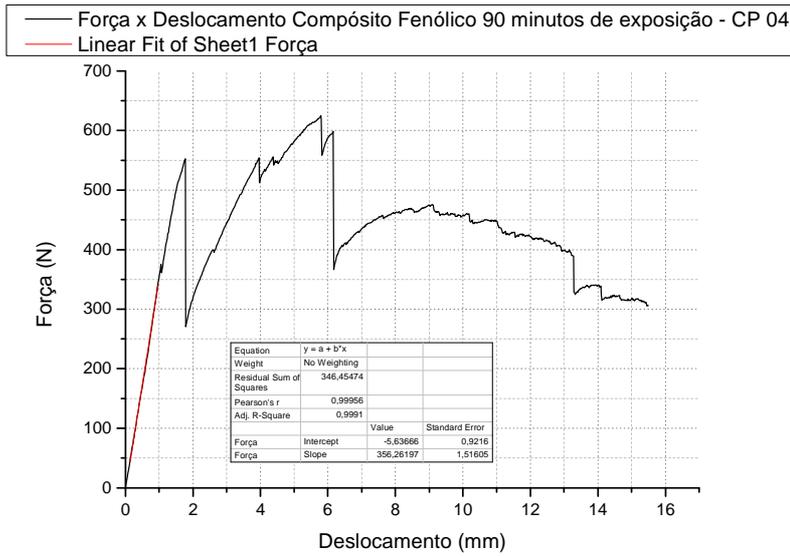


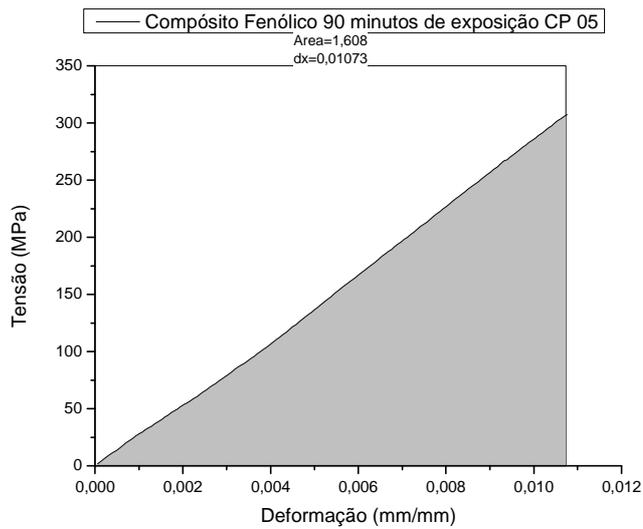
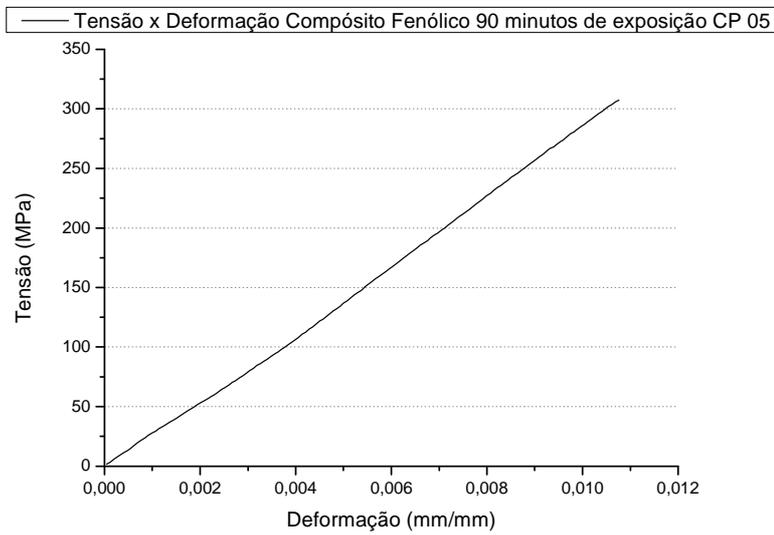
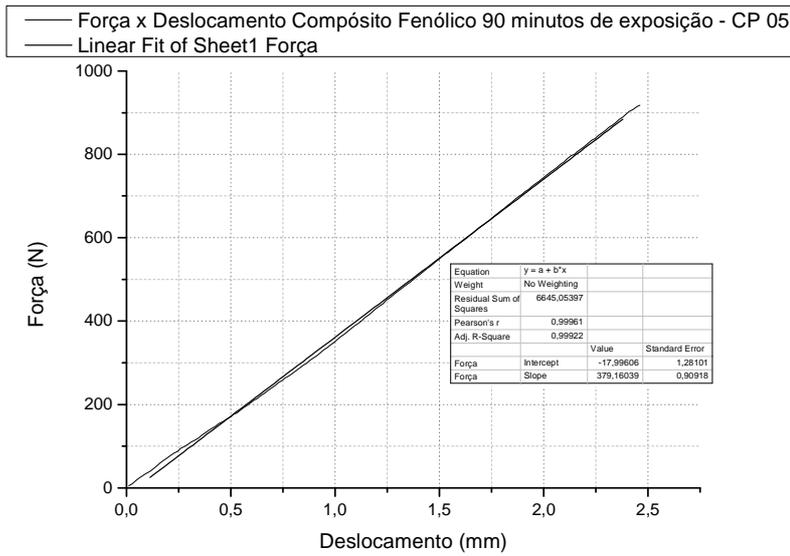
— Tensão x Deformação Compósito Fenólico 90 minutos de exposição CP 03

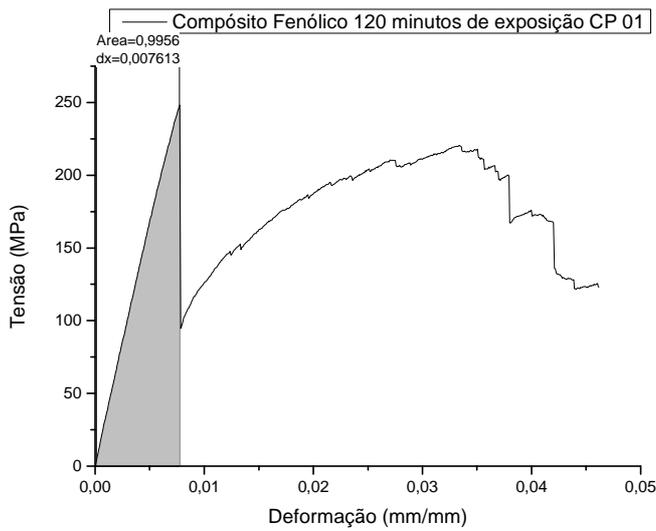
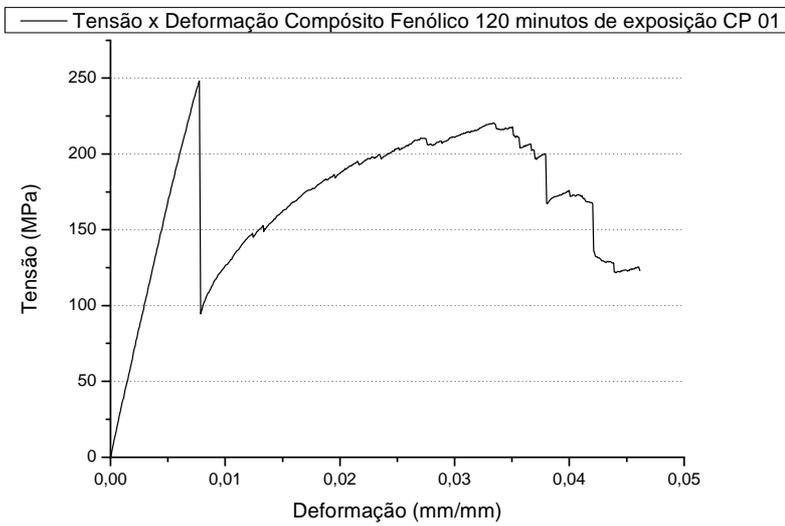
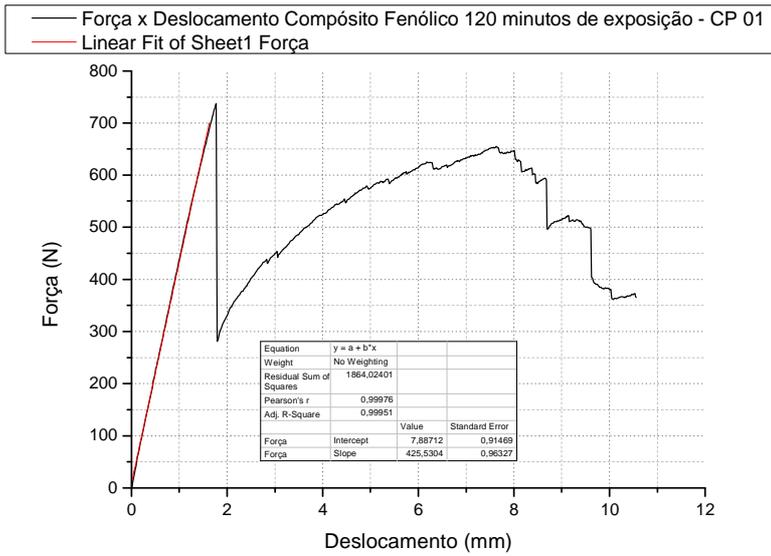


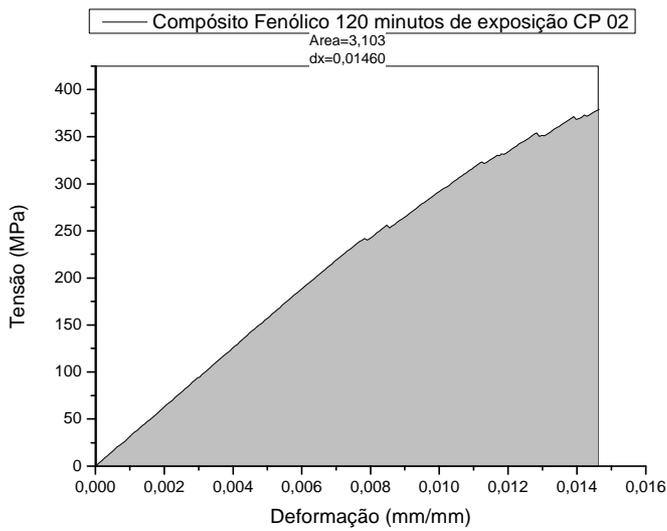
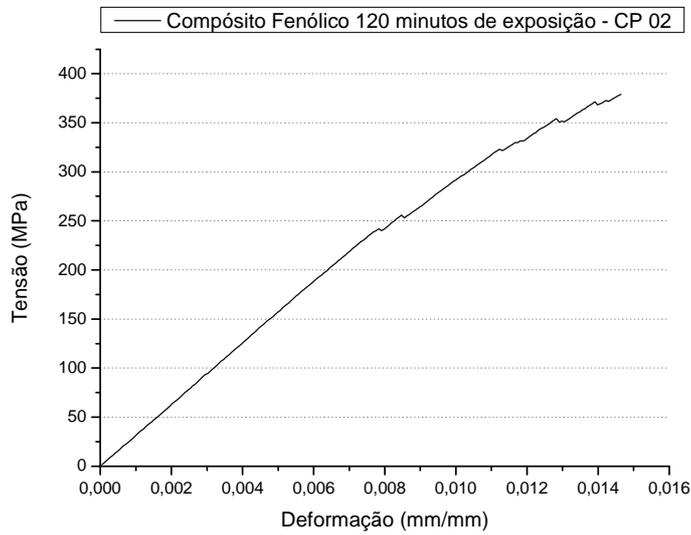
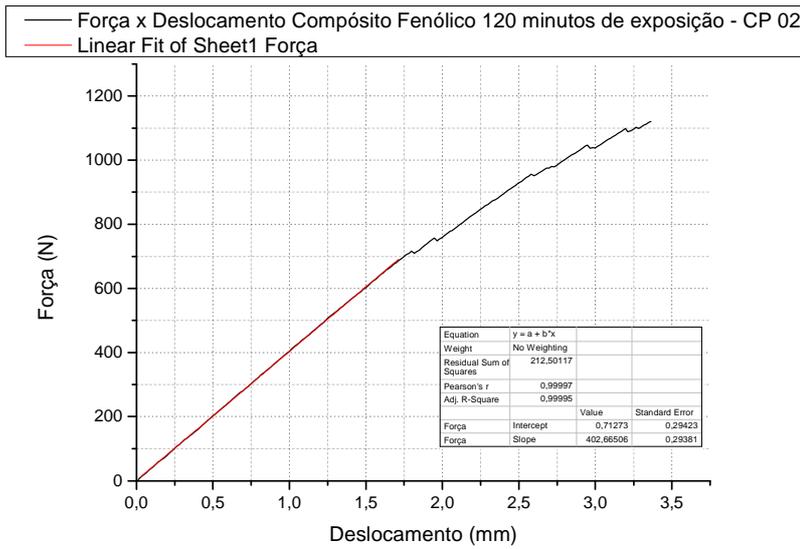
— Compósito Fenólico 90 minutos de exposição CP 03

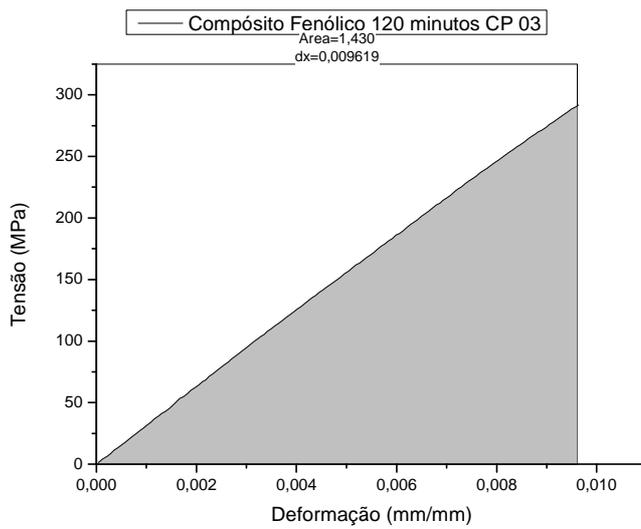
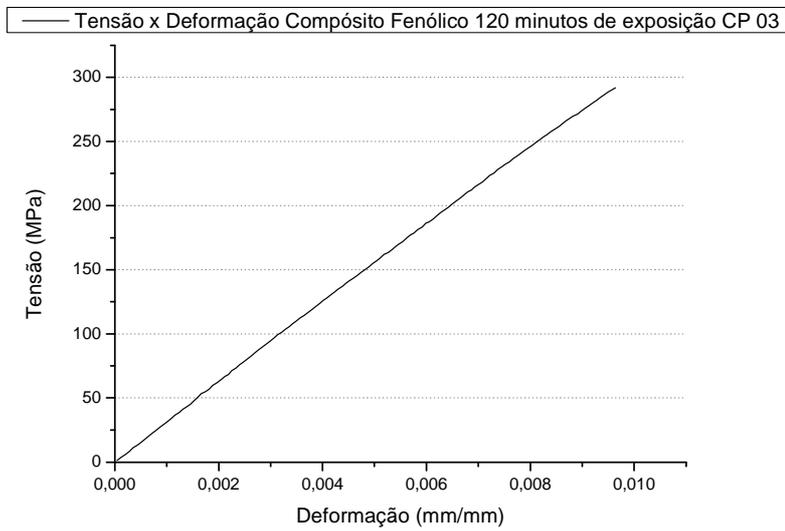
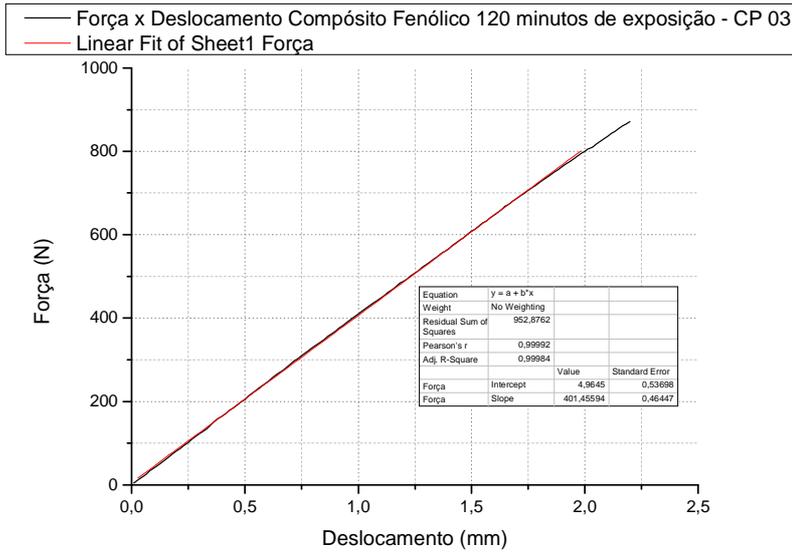




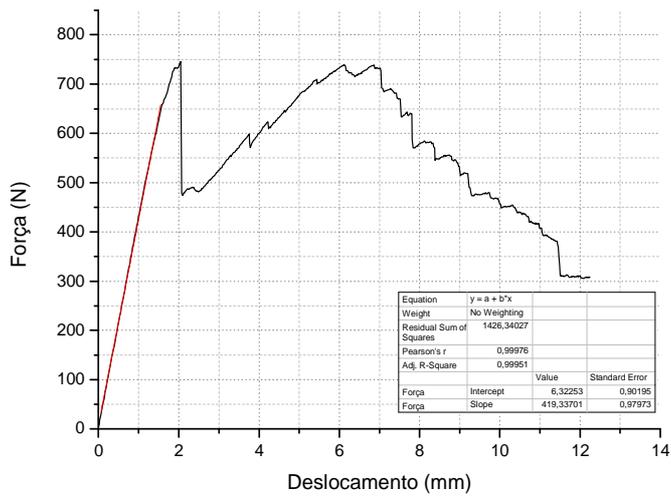




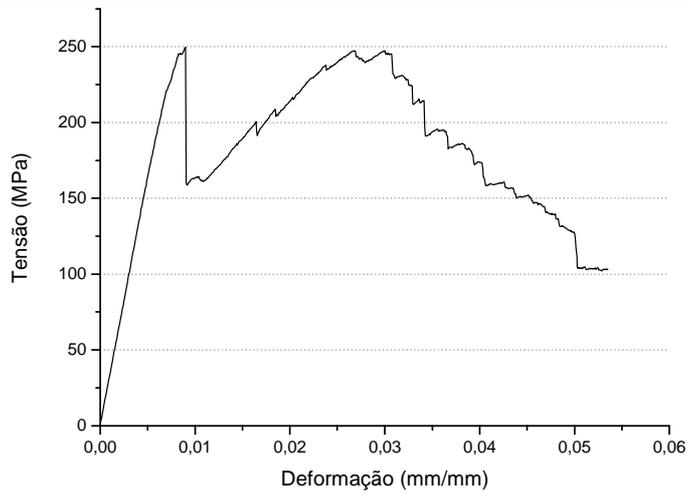




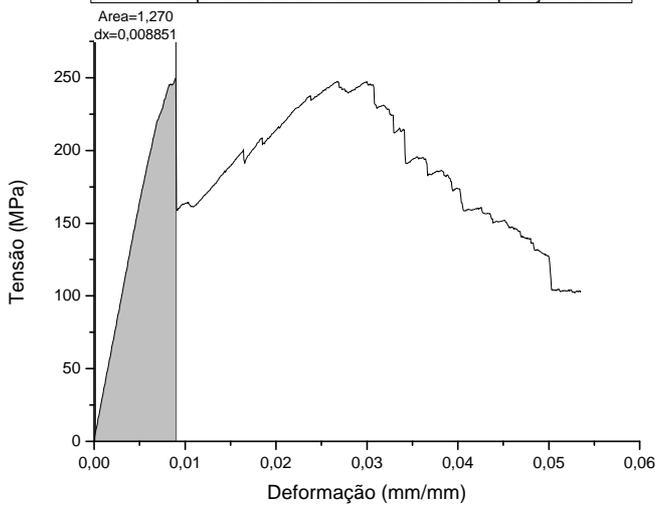
— Força x Deslocamento Compósito Fenólico 120 minutos de exposição - CP 04
 — Linear Fit of Sheet1 Força

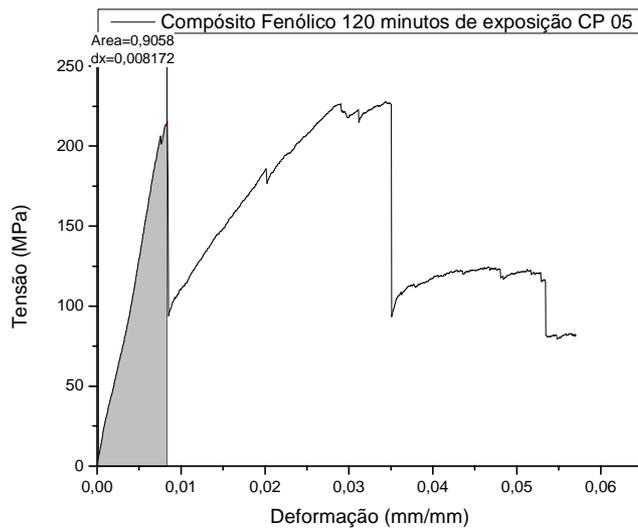
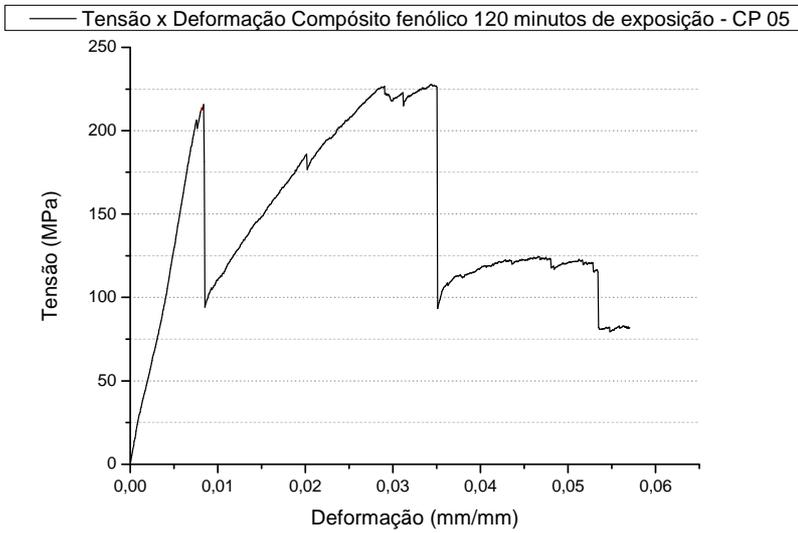
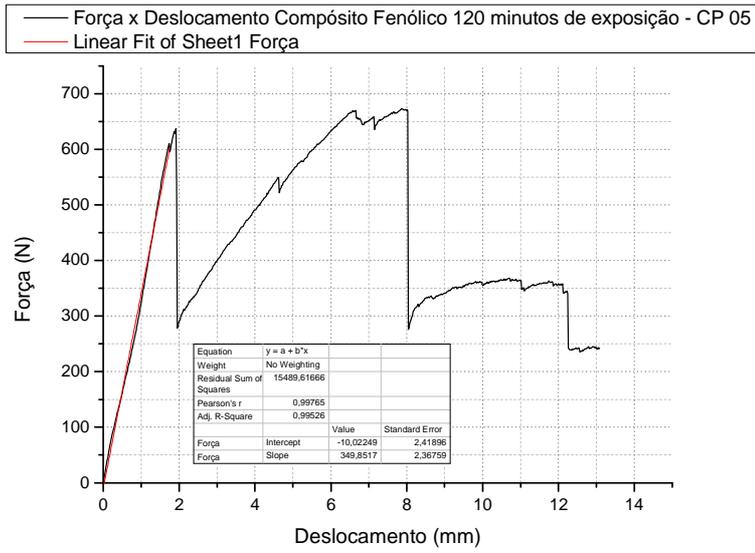


— Tensão x Deformação Compósito Fenólico 120 minutos de exposição CP 04



— Compósito Fenólico 120 minutos de exposição CP 04





E. Análise estatística para módulo do compósito isoftálico

| Módulo compósito Isoftálico (GPa) | | | | |
|-----------------------------------|------------|------------|------------|-------------|
| Como recebido | 30 minutos | 60 minutos | 90 minutos | 120 minutos |
| 16,19 | 19,00 | 17,53 | 18,64 | 13,69 |
| 21,57 | 19,92 | 20,64 | 22,62 | 12,58 |
| 16,36 | 14,51 | 14,51 | 14,39 | 20,15 |
| 21,34 | 18,54 | 20,86 | 16,31 | 19,98 |
| 20,97 | 17,42 | | 17,83 | 20,59 |

Paired Sample t Test (18/06/2016 09:01:46)

Notes

| | |
|------------|----------------------|
| X-Function | Paired Sample t Test |
| User Name | cjx4 |
| Time | 18/06/2016 09:01:46 |

Input Data

| | Data | Range |
|----------------|-----------------------------|---------|
| 1st Data Range | [Book1]Sheet1!30 minutos | [1:5] |
| 2nd Data Range | [Book1]Sheet1!como recebido | [1*:5*] |

Descriptive Statistics

| | N | Mean | SD | SEM |
|-----------------|---|--------|---------|---------|
| "30 minutos" | 5 | 17,86 | 2,08399 | 0,93199 |
| "como recebido" | 5 | 19,286 | 2,75763 | 1,23325 |
| Difference | | -1,426 | | |

Test Statistics

| t Statistic | DF | Prob> t |
|-------------|----|---------|
| -1,2809 | 4 | 0,26945 |

Null Hypothesis: mean1-mean2 = 0
 Alternative Hypothesis: mean1-mean2 <> 0
 At the 0.05 level, the difference of the population means is NOT significantly different with the test difference(0)

Paired Sample t Test (18/06/2016 09:02:19)

Notes

| | |
|------------|----------------------|
| X-Function | Paired Sample t Test |
| User Name | cjx4 |
| Time | 18/06/2016 09:02:19 |

Input Data

| | Data | Range |
|----------------|-----------------------------|-------|
| 1st Data Range | [Book1]Sheet1!como recebido | [1:5] |
| 2nd Data Range | [Book1]Sheet1!60 minutos | [1:5] |

Descriptive Statistics

| | N | Mean | SD | SEM |
|-----------------|---|--------|---------|---------|
| "como recebido" | 5 | 19,286 | 2,75763 | 1,23325 |
| "60 minutos" | 5 | 17,82 | 3,07604 | 1,37565 |
| Difference | | 1,466 | | |

Test Statistics

| t Statistic | DF | Prob> t |
|-------------|----|---------|
| 1,04211 | 4 | 0,3562 |

Null Hypothesis: mean1-mean2 = 0
 Alternative Hypothesis: mean1-mean2 <> 0
 At the 0.05 level, the difference of the population means is NOT significantly different with the test difference(0)

Paired Sample t Test (18/06/2016 09:06:33)

Notes

| | |
|------------|----------------------|
| X-Function | Paired Sample t Test |
| User Name | cjx4 |
| Time | 18/06/2016 09:06:33 |

Input Data

| | Data | Range |
|----------------|-----------------------------|-------|
| 1st Data Range | [Book1]Sheet1!como recebido | [1:4] |
| 2nd Data Range | [Book1]Sheet1!90 minutos | [1:4] |

Descriptive Statistics

| | N | Mean | SD | SEM |
|-----------------|---|--------|---------|---------|
| "como recebido" | 4 | 18,865 | 2,99295 | 1,49648 |
| "90 minutos" | 4 | 18,375 | 3,00597 | 1,50298 |
| Difference | | 0,49 | | |

Test Statistics

| t Statistic | DF | Prob> t |
|-------------|----|---------|
| 0,73387 | 3 | 0,51618 |

Null Hypothesis: mean1-mean2 = 0
 Alternative Hypothesis: mean1-mean2 <> 0
 At the 0.05 level, the difference of the population means is NOT significantly different with the test difference(0)

Paired Sample t Test (18/06/2016 09:03:05)

Notes

| | |
|------------|----------------------|
| X-Function | Paired Sample t Test |
| User Name | cjx4 |
| Time | 18/06/2016 09:03:05 |

Input Data

| | Data | Range |
|----------------|-----------------------------|-------|
| 1st Data Range | [Book1]Sheet1!como recebido | [1:5] |
| 2nd Data Range | [Book1]Sheet1!120 minutos | [1:5] |

Descriptive Statistics

| | N | Mean | SD | SEM |
|-----------------|---|--------|---------|---------|
| "como recebido" | 5 | 19,286 | 2,75763 | 1,23325 |
| "120 minutos" | 5 | 17,42 | 3,92326 | 1,75454 |
| Difference | | 1,866 | | |

Test Statistics

| | t Statistic | DF | Prob> t |
|--|-------------|----|---------|
| | 0,90024 | 4 | 0,41889 |

Null Hypothesis: mean1-mean2 = 0
 Alternative Hypothesis: mean1-mean2 <> 0
 At the 0.05 level, the difference of the population means is NOT significantly different with the test difference(0)

F. Análise estatística para deformação máxima do compósito isoftálico

| Deformação máxima compósito Isoftálico (mm/mm) | | | | |
|--|------------|------------|------------|-------------|
| Como recebido | 30 minutos | 60 minutos | 90 minutos | 120 minutos |
| 0,04073 | 0,02873 | 0,0269 | 0,02876 | 0,07870 |
| 0,03892 | 0,03892 | 0,0190 | 0,02542 | 0,05987 |
| 0,04487 | 0,03191 | 0,0273 | 0,05530 | 0,02038 |
| 0,03607 | 0,02512 | 0,0487 | 0,04662 | 0,04396 |
| 0,04139 | 0,03061 | 0,0305 | 0,02341 | 0,05356 |

Paired Sample t Test (18/06/2016 09:45:02)

Notes

| | |
|------------|----------------------|
| X-Function | Paired Sample t Test |
| User Name | cjx4 |
| Time | 18/06/2016 09:45:02 |

Input Data

| | Data | Range |
|----------------|-----------------------------|-------|
| 1st Data Range | [Book1]Sheet1!como recebido | [1:5] |
| 2nd Data Range | [Book1]Sheet1!30 minutos | [1:5] |

Descriptive Statistics

| | N | Mean | SD | SEM |
|-----------------|---|---------|---------|---------|
| "como recebido" | 5 | 0,04039 | 0,00324 | 0,00145 |
| "30 minutos" | 5 | 0,0312 | 0,00512 | 0,00229 |
| Difference | | 0,00919 | | |

Test Statistics

| t Statistic | DF | Prob> t |
|-------------|----|---------|
| 3,90476 | 4 | 0,01747 |

Null Hypothesis: mean1-mean2 = 0
 Alternative Hypothesis: mean1-mean2 <> 0
 At the 0.05 level, the difference of the population means is significantly different with the test difference(0)

Paired Sample t Test (18/06/2016 09:53:58)

Notes

| | |
|------------|----------------------|
| X-Function | Paired Sample t Test |
| User Name | cjx4 |
| Time | 18/06/2016 09:53:58 |

Input Data

| | Data | Range |
|----------------|-----------------------------|-------|
| 1st Data Range | [Book1]Sheet1!como recebido | [1:5] |
| 2nd Data Range | [Book1]Sheet1!60 minutos | [1:5] |

Descriptive Statistics

| | N | Mean | SD | SEM |
|-----------------|---|---------|---------|---------|
| "como recebido" | 5 | 0,04039 | 0,00324 | 0,00145 |
| "60 minutos" | 5 | 0,0298 | 0,01128 | 0,00504 |
| Difference | | 0,01059 | | |

Test Statistics

| t Statistic | DF | Prob> t |
|-------------|----|---------|
| 1,76878 | 4 | 0,15165 |

Null Hypothesis: mean1-mean2 = 0
 Alternative Hypothesis: mean1-mean2 <> 0
 At the 0.05 level, the difference of the population means is NOT significantly different with the test difference(0)

Paired Sample t Test (18/06/2016 09:45:34)

Notes

| | |
|------------|----------------------|
| X-Function | Paired Sample t Test |
| User Name | cjx4 |
| Time | 18/06/2016 09:45:34 |

Input Data

| | Data | Range |
|----------------|-----------------------------|-------|
| 1st Data Range | [Book1]Sheet1!como recebido | [1:5] |
| 2nd Data Range | [Book1]Sheet1!90 minutos | [1:5] |

Descriptive Statistics

| | N | Mean | SD | SEM |
|-----------------|---|---------|---------|---------|
| "como recebido" | 5 | 0,04039 | 0,00324 | 0,00145 |
| "90 minutos" | 5 | 0,0358 | 0,01432 | 0,00641 |
| Difference | | 0,00459 | | |

Test Statistics

| t Statistic | DF | Prob> t |
|-------------|----|---------|
| 0,73284 | 4 | 0,50429 |

Null Hypothesis: mean1-mean2 = 0
 Alternative Hypothesis: mean1-mean2 <> 0
 At the 0.05 level, the difference of the population means is NOT significantly different with the test difference(0)

Paired Sample t Test (18/06/2016 09:41:25)

Notes

| | |
|------------|----------------------|
| X-Function | Paired Sample t Test |
| User Name | cjx4 |
| Time | 18/06/2016 09:41:25 |

Input Data

| | Data | Range |
|----------------|-----------------------------|-------|
| 1st Data Range | [Book1]Sheet1!como recebido | [1:5] |
| 2nd Data Range | [Book1]Sheet1!120 minutos | [1:5] |

Descriptive Statistics

| | N | Mean | SD | SEM |
|-----------------|---|----------|---------|---------|
| "como recebido" | 5 | 0,04039 | 0,00324 | 0,00145 |
| "120 minutos" | 5 | 0,0514 | 0,0217 | 0,0097 |
| Difference | | -0,01101 | | |

Test Statistics

| t Statistic | DF | Prob> t |
|-------------|----|---------|
| -1,06294 | 4 | 0,34772 |

Null Hypothesis: mean1-mean2 = 0
 Alternative Hypothesis: mean1-mean2 <> 0
 At the 0.05 level, the difference of the population means is NOT significantly different with the test difference(0)

G. Análise estatística para resistência à flexão do compósito fenólico

| Resistência compósito Fenólico (MPa) | | | | |
|--------------------------------------|------------|------------|------------|-------------|
| Como recebido | 30 minutos | 60 minutos | 90 minutos | 120 minutos |
| 271,1 | 250,3 | 220,1 | 255,4 | 248,2 |
| 273,2 | 209,5 | 213,1 | 239,9 | 379,0 |
| 287,9 | 224,9 | 237,6 | 247,6 | 291,9 |
| 309,6 | 228,9 | 292,1 | 209,0 | 249,7 |
| 287,2 | 268,3 | 181,2 | 307,4 | 213,9 |

Paired Sample t Test (10/06/2016 10:22:33)

Notes

| | |
|------------|----------------------|
| X-Function | Paired Sample t Test |
| User Name | cjx4 |
| Time | 10/06/2016 10:22:33 |

Input Data

| | Data | Range |
|----------------|-----------------------------|---------|
| 1st Data Range | [Book1]Sheet1!30 minutos | [1*:5*] |
| 2nd Data Range | [Book1]Sheet1!Como recebido | [1*:5*] |

Descriptive Statistics

| | N | Mean | SD | SEM |
|-----------------|---|-----------|----------|----------|
| "30 minutos" | 5 | 236,37151 | 23,02467 | 10,29695 |
| "Como recebido" | 5 | 285,80357 | 15,40989 | 6,89151 |
| Difference | | -49,43206 | | |

Test Statistics

| t Statistic | DF | Prob> t |
|-------------|----|---------|
| -3,96272 | 4 | 0,01664 |

Null Hypothesis: mean1-mean2 = 0
 Alternative Hypothesis: mean1-mean2 <> 0
 At the 0.05 level, the difference of the population means is significantly different with the test difference(0)

Paired Sample t Test (10/06/2016 10:24:02)

Notes

| | |
|------------|----------------------|
| X-Function | Paired Sample t Test |
| User Name | cjx4 |
| Time | 10/06/2016 10:24:02 |

Input Data

| | Data | Range |
|----------------|-----------------------------|---------|
| 1st Data Range | [Book1]Sheet1!60 minutos | [1*:5*] |
| 2nd Data Range | [Book1]Sheet1!Como recebido | [1*:5*] |

Descriptive Statistics

| | N | Mean | SD | SEM |
|-----------------|---|-----------|----------|----------|
| "60 minutos" | 5 | 228,84167 | 40,83365 | 18,26136 |
| "Como recebido" | 5 | 285,80357 | 15,40989 | 6,89151 |
| Difference | | -56,9619 | | |

Test Statistics

| t Statistic | DF | Prob> t |
|-------------|----|---------|
| -4,00337 | 4 | 0,01608 |

Null Hypothesis: mean1-mean2 = 0
 Alternative Hypothesis: mean1-mean2 <> 0
 At the 0.05 level, the difference of the population means is significantly different with the test difference(0)

Paired Sample t Test (10/06/2016 10:27:48)

Notes

| | |
|------------|----------------------|
| X-Function | Paired Sample t Test |
| User Name | cjx4 |
| Time | 10/06/2016 10:27:48 |

Input Data

| | Data | Range |
|----------------|-----------------------------|---------|
| 1st Data Range | [Book1]Sheet1!90 minutos | [1*:5*] |
| 2nd Data Range | [Book1]Sheet1!Como recebido | [1*:5*] |

Descriptive Statistics

| | N | Mean | SD | SEM |
|-----------------|---|-----------|----------|----------|
| "90 minutos" | 5 | 251,86969 | 35,67589 | 15,95474 |
| "Como recebido" | 5 | 285,80357 | 15,40989 | 6,89151 |
| Difference | | -33,93388 | | |

Test Statistics

| t Statistic | DF | Prob> t |
|-------------|----|---------|
| -1,72445 | 4 | 0,15972 |

Null Hypothesis: mean1-mean2 = 0
 Alternative Hypothesis: mean1-mean2 <> 0
 At the 0.05 level, the difference of the population means is NOT significantly different with the test difference(0)

Paired Sample t Test (10/06/2016 10:28:50)

Notes

| | |
|------------|----------------------|
| X-Function | Paired Sample t Test |
| User Name | cjx4 |
| Time | 10/06/2016 10:28:50 |

Input Data

| | Data | Range |
|----------------|-----------------------------|---------|
| 1st Data Range | [Book1]Sheet1!120 minutos | [1*:5*] |
| 2nd Data Range | [Book1]Sheet1!Como recebido | [1*:5*] |

Descriptive Statistics

| | N | Mean | SD | SEM |
|-----------------|---|-----------|----------|----------|
| "120 minutos" | 5 | 276,55829 | 63,58716 | 28,43704 |
| "Como recebido" | 5 | 285,80357 | 15,40989 | 6,89151 |
| Difference | | -9,24528 | | |

Test Statistics

| t Statistic | DF | Prob> t |
|-------------|----|---------|
| -0,29038 | 4 | 0,78595 |

Null Hypothesis: mean1-mean2 = 0
 Alternative Hypothesis: mean1-mean2 <> 0
 At the 0.05 level, the difference of the population means is NOT significantly different with the test difference(0)

H. Análise estatística para módulo do composto fenólico

| Módulo composto Fenólico (GPa) | | | | |
|--------------------------------|------------|------------|------------|-------------|
| Como recebido | 30 minutos | 60 minutos | 90 minutos | 120 minutos |
| 27,3 | 25,2 | 30,0 | 27,0 | 32,8 |
| 26,5 | 28,9 | 24,4 | 27,3 | 31,3 |
| 26,3 | 28,1 | 28,8 | 32,1 | 30,7 |
| 27,5 | 24,8 | 31,6 | 27,3 | 32,1 |
| 27,1 | 30,3 | 26,3 | 29,0 | 27,1 |

Paired Sample t Test (18/06/2016 17:05:53)

Notes

| | |
|------------|----------------------|
| X-Function | Paired Sample t Test |
| User Name | cjx4 |
| Time | 18/06/2016 17:05:53 |

Input Data

| | Data | Range |
|----------------|-----------------------------|-------|
| 1st Data Range | [Book1]Sheet1!como recebido | [1:5] |
| 2nd Data Range | [Book1]Sheet1!30 minutos | [1:5] |

Descriptive Statistics

| | N | Mean | SD | SEM |
|-----------------|---|----------|---------|---------|
| "como recebido" | 5 | 26,94173 | 0,51679 | 0,23112 |
| "30 minutos" | 5 | 27,46791 | 2,38488 | 1,06655 |
| Difference | | -0,52618 | | |

Test Statistics

| t Statistic | DF | Prob> t |
|-------------|----|---------|
| -0,43479 | 4 | 0,68614 |

Null Hypothesis: mean1-mean2 = 0
 Alternative Hypothesis: mean1-mean2 <> 0
 At the 0.05 level, the difference of the population means is NOT significantly different with the test difference(0)

Paired Sample t Test (18/06/2016 17:06:49)

Notes

| | |
|------------|----------------------|
| X-Function | Paired Sample t Test |
| User Name | cjx4 |
| Time | 18/06/2016 17:06:49 |

Input Data

| | Data | Range |
|----------------|-----------------------------|-------|
| 1st Data Range | [Book1]Sheet1!como recebido | [1:5] |
| 2nd Data Range | [Book1]Sheet1!60 minutos | [1:5] |

Descriptive Statistics

| | N | Mean | SD | SEM |
|-----------------|---|----------|---------|---------|
| "como recebido" | 5 | 26,94173 | 0,51679 | 0,23112 |
| "60 minutos" | 5 | 28,21937 | 2,88598 | 1,29065 |
| Difference | | -1,27764 | | |

Test Statistics

| t Statistic | DF | Prob> t |
|-------------|----|---------|
| -1,09234 | 4 | 0,33606 |

Null Hypothesis: mean1-mean2 = 0
 Alternative Hypothesis: mean1-mean2 <> 0
 At the 0.05 level, the difference of the population means is NOT significantly different with the test difference(0)

Paired Sample t Test (18/06/2016 17:07:19)

Notes

| | |
|------------|----------------------|
| X-Function | Paired Sample t Test |
| User Name | cjx4 |
| Time | 18/06/2016 17:07:19 |

Input Data

| | Data | Range |
|----------------|-----------------------------|-------|
| 1st Data Range | [Book1]Sheet1!como recebido | [1:5] |
| 2nd Data Range | [Book1]Sheet1!90 minutos | [1:5] |

Descriptive Statistics

| | N | Mean | SD | SEM |
|-----------------|---|----------|---------|---------|
| "como recebido" | 5 | 26,94173 | 0,51679 | 0,23112 |
| "90 minutos" | 5 | 28,5381 | 2,13634 | 0,9554 |
| Difference | | -1,59637 | | |

Test Statistics

| t Statistic | DF | Prob> t |
|-------------|----|---------|
| -1,42756 | 4 | 0,22659 |

Null Hypothesis: mean1-mean2 = 0
 Alternative Hypothesis: mean1-mean2 <> 0
 At the 0.05 level, the difference of the population means is NOT significantly different with the test difference(0)

Paired Sample t Test (18/06/2016 17:07:47)

Notes

| | |
|------------|----------------------|
| X-Function | Paired Sample t Test |
| User Name | cjx4 |
| Time | 18/06/2016 17:07:47 |

Input Data

| | Data | Range |
|----------------|-----------------------------|-------|
| 1st Data Range | [Book1]Sheet1!como recebido | [1:5] |
| 2nd Data Range | [Book1]Sheet1!120 minutos | [1:5] |

Descriptive Statistics

| | N | Mean | SD | SEM |
|-----------------|---|----------|---------|---------|
| "como recebido" | 5 | 26,94173 | 0,51679 | 0,23112 |
| "120 minutos" | 5 | 30,78905 | 2,20005 | 0,98389 |
| Difference | | -3,84732 | | |

Test Statistics

| t Statistic | DF | Prob> t |
|-------------|----|---------|
| -3,91511 | 4 | 0,01732 |

Null Hypothesis: mean1-mean2 = 0
 Alternative Hypothesis: mean1-mean2 <> 0
 At the 0.05 level, the difference of the population means is significantly different with the test difference(0)

I. Análise estatística para deformação máxima à flexão do compósito fenólico

| Deformação máxima compósito Fenólico (mm/mm) | | | | |
|--|------------|------------|------------|-------------|
| Como recebido | 30 minutos | 60 minutos | 90 minutos | 120 minutos |
| 0,041 | 0,029 | 0,027 | 0,029 | 0,079 |
| 0,039 | 0,039 | 0,019 | 0,025 | 0,060 |
| 0,045 | 0,032 | 0,027 | 0,055 | 0,020 |
| 0,036 | 0,025 | 0,049 | 0,047 | 0,044 |
| 0,041 | 0,031 | 0,027 | 0,023 | 0,054 |

Paired Sample t Test (18/06/2016 09:45:02)

Notes

| | |
|------------|----------------------|
| X-Function | Paired Sample t Test |
| User Name | cjx4 |
| Time | 18/06/2016 09:45:02 |

Input Data

| | Data | Range |
|----------------|-----------------------------|-------|
| 1st Data Range | [Book1]Sheet1!como recebido | [1:5] |
| 2nd Data Range | [Book1]Sheet1!30 minutos | [1:5] |

Descriptive Statistics

| | N | Mean | SD | SEM |
|-----------------|---|---------|---------|---------|
| "como recebido" | 5 | 0,04039 | 0,00324 | 0,00145 |
| "30 minutos" | 5 | 0,0312 | 0,00512 | 0,00229 |
| Difference | | 0,00919 | | |

Test Statistics

| t Statistic | DF | Prob> t |
|-------------|----|---------|
| 3,90476 | 4 | 0,01747 |

Null Hypothesis: mean1-mean2 = 0
 Alternative Hypothesis: mean1-mean2 <> 0
 At the 0.05 level, the difference of the population means is significantly different with the test difference(0)

Paired Sample t Test (18/06/2016 09:53:58)

Notes

| | |
|------------|----------------------|
| X-Function | Paired Sample t Test |
| User Name | cjx4 |
| Time | 18/06/2016 09:53:58 |

Input Data

| | Data | Range |
|----------------|-----------------------------|-------|
| 1st Data Range | [Book1]Sheet1!como recebido | [1:5] |
| 2nd Data Range | [Book1]Sheet1!60 minutos | [1:5] |

Descriptive Statistics

| | N | Mean | SD | SEM |
|-----------------|---|---------|---------|---------|
| "como recebido" | 5 | 0,04039 | 0,00324 | 0,00145 |
| "60 minutos" | 5 | 0,0298 | 0,01128 | 0,00504 |
| Difference | | 0,01059 | | |

Test Statistics

| t Statistic | DF | Prob> t |
|-------------|----|---------|
| 1,76878 | 4 | 0,15165 |

Null Hypothesis: mean1-mean2 = 0
 Alternative Hypothesis: mean1-mean2 \neq 0
 At the 0.05 level, the difference of the population means is NOT significantly different with the test difference(0)

Paired Sample t Test (18/06/2016 09:45:34)

Notes

| | |
|------------|----------------------|
| X-Function | Paired Sample t Test |
| User Name | cjx4 |
| Time | 18/06/2016 09:45:34 |

Input Data

| | Data | Range |
|----------------|-----------------------------|-------|
| 1st Data Range | [Book1]Sheet1!como recebido | [1:5] |
| 2nd Data Range | [Book1]Sheet1!90 minutos | [1:5] |

Descriptive Statistics

| | N | Mean | SD | SEM |
|-----------------|---|---------|---------|---------|
| "como recebido" | 5 | 0,04039 | 0,00324 | 0,00145 |
| "90 minutos" | 5 | 0,0358 | 0,01432 | 0,00641 |
| Difference | | 0,00459 | | |

Test Statistics

| t Statistic | DF | Prob> t |
|-------------|----|---------|
| 0,73284 | 4 | 0,50429 |

Null Hypothesis: mean1-mean2 = 0
 Alternative Hypothesis: mean1-mean2 \neq 0
 At the 0.05 level, the difference of the population means is NOT significantly different with the test difference(0)

Paired Sample t Test (18/06/2016 09:41:25)

Notes

| | |
|------------|----------------------|
| X-Function | Paired Sample t Test |
| User Name | cjx4 |
| Time | 18/06/2016 09:41:25 |

Input Data

| | Data | Range |
|----------------|-----------------------------|-------|
| 1st Data Range | [Book1]Sheet1!como recebido | [1:5] |
| 2nd Data Range | [Book1]Sheet1!120 minutos | [1:5] |

Descriptive Statistics

| | N | Mean | SD | SEM |
|-----------------|---|----------|---------|---------|
| "como recebido" | 5 | 0,04039 | 0,00324 | 0,00145 |
| "120 minutos" | 5 | 0,0514 | 0,0217 | 0,0097 |
| Difference | | -0,01101 | | |

Test Statistics

| t Statistic | DF | Prob> t |
|-------------|----|---------|
| -1,06294 | 4 | 0,34772 |

Null Hypothesis: mean1-mean2 = 0
 Alternative Hypothesis: mean1-mean2 <> 0
 At the 0.05 level, the difference of the population means is NOT significantly different with the test difference(0)

J. Análise estatística para energia total (tenacidade) do compósito fenólico.

| Energia Total (J/mm ³) compósito Fenólico | | | | |
|---|------------|------------|------------|-------------|
| Como recebido | 30 minutos | 60 minutos | 90 minutos | 120 minutos |
| 7,8 | 7,8 | 7,3 | 7,7 | 7,8 |
| 5,1 | 7,1 | 8,3 | 6,6 | 3,1 |
| 8,8 | 6,7 | 6,9 | 9,1 | 1,4 |
| 7,3 | 6,5 | 1,5 | 9,6 | 9,5 |
| 8,1 | 7,1 | 5,6 | 1,6 | 8,2 |

Paired Sample t Test (18/06/2016 18:16:38)
Notes

| | |
|------------|----------------------|
| X-Function | Paired Sample t Test |
| User Name | cjx4 |
| Time | 18/06/2016 18:16:38 |

Input Data

| | Data | Range |
|----------------|-----------------------------|-------|
| 1st Data Range | [Book1]Sheet1!como recebido | [1:5] |
| 2nd Data Range | [Book1]Sheet1!30 minutos | [1:5] |

Descriptive Statistics

| | N | Mean | SD | SEM |
|-----------------|---|--------|---------|---------|
| "como recebido" | 5 | 7,394 | 1,39926 | 0,62577 |
| "30 minutos" | 5 | 7,0286 | 0,49657 | 0,22207 |
| Difference | | 0,3654 | | |

Test Statistics

| t Statistic | DF | Prob> t |
|-------------|----|---------|
| 0,52886 | 4 | 0,62489 |

Null Hypothesis: mean1-mean2 = 0

Alternative Hypothesis: mean1-mean2 \neq 0

At the 0.05 level, the difference of the population means is NOT significantly different with the test difference(0)

Paired Sample t Test (18/06/2016 18:17:09)
Notes

| | |
|------------|----------------------|
| X-Function | Paired Sample t Test |
| User Name | cjx4 |
| Time | 18/06/2016 18:17:09 |

Input Data

| | Data | Range |
|----------------|-----------------------------|-------|
| 1st Data Range | [Book1]Sheet1!como recebido | [1:5] |
| 2nd Data Range | [Book1]Sheet1!60 minutos | [1:5] |

Descriptive Statistics

| | N | Mean | SD | SEM |
|-----------------|---|-------|---------|---------|
| "como recebido" | 5 | 7,394 | 1,39926 | 0,62577 |
| "60 minutos" | 5 | 5,906 | 2,6689 | 1,19357 |
| Difference | | 1,488 | | |

Test Statistics

| t Statistic | DF | Prob> t |
|-------------|----|---------|
| 1,01445 | 4 | 0,36774 |

Null Hypothesis: mean1-mean2 = 0

Alternative Hypothesis: mean1-mean2 \neq 0

At the 0.05 level, the difference of the population means is NOT significantly different with the test difference(0)

Paired Sample t Test (18/06/2016 18:23:17)

Notes

| | |
|------------|----------------------|
| X-Function | Paired Sample t Test |
| User Name | cjx4 |
| Time | 18/06/2016 18:23:17 |

Input Data

| | Data | Range |
|----------------|-----------------------------|-------|
| 1st Data Range | [Book1]Sheet1!como recebido | [1:5] |
| 2nd Data Range | [Book1]Sheet1!90 minutos | [1:5] |

Descriptive Statistics

| | N | Mean | SD | SEM |
|-----------------|---|--------|---------|---------|
| "como recebido" | 5 | 7,394 | 1,39926 | 0,62577 |
| "90 minutos" | 5 | 6,9108 | 3,19058 | 1,42687 |
| Difference | | 0,4832 | | |

Test Statistics

| t Statistic | DF | Prob> t |
|-------------|----|---------|
| 0,30894 | 4 | 0,77279 |

Null Hypothesis: mean1-mean2 = 0
 Alternative Hypothesis: mean1-mean2 <> 0
 At the 0.05 level, the difference of the population means is NOT significantly different with the test difference(0)

Paired Sample t Test (18/06/2016 18:29:59)

Notes

| | |
|------------|----------------------|
| X-Function | Paired Sample t Test |
| User Name | cjx4 |
| Time | 18/06/2016 18:29:59 |

Input Data

| | Data | Range |
|----------------|-----------------------------|-------|
| 1st Data Range | [Book1]Sheet1!como recebido | [1:5] |
| 2nd Data Range | [Book1]Sheet1!120 minutos | [1:5] |

Descriptive Statistics

| | N | Mean | SD | SEM |
|-----------------|---|--------|---------|---------|
| "como recebido" | 5 | 7,394 | 1,39926 | 0,62577 |
| "120 minutos" | 5 | 6,0172 | 3,53383 | 1,58038 |
| Difference | | 1,3768 | | |

Test Statistics

| t Statistic | DF | Prob> t |
|-------------|----|---------|
| 0,84246 | 4 | 0,44695 |

Null Hypothesis: mean1-mean2 = 0
 Alternative Hypothesis: mean1-mean2 <> 0
 At the 0.05 level, the difference of the population means is NOT significantly different with the test difference(0)

K. Análise estatística para energia de iniciação do compósito fenólico.

| Energia de iniciação compósito Fenólico (J/mm ³) | | | | |
|--|------------|------------|------------|-------------|
| Como recebido | 30 minutos | 60 minutos | 90 minutos | 120 minutos |
| 1,4 | 1,3 | 0,6 | 1,2 | 1,0 |
| 1,3 | 0,8 | 1,2 | 0,9 | 3,1 |
| 1,6 | 1,1 | 1,0 | 0,9 | 1,4 |
| 1,7 | 1,6 | 1,5 | 0,8 | 1,3 |
| 1,5 | 1,2 | 0,7 | 1,6 | 0,9 |

Paired Sample t Test (18/06/2016 18:09:14)

Notes

| | |
|------------|----------------------|
| X-Function | Paired Sample t Test |
| User Name | cjx4 |
| Time | 18/06/2016 18:09:14 |

Input Data

| | Data | Range |
|----------------|-----------------------------|-------|
| 1st Data Range | [Book1]Sheet1!como recebido | [1:5] |
| 2nd Data Range | [Book1]Sheet1!30 minutos | [1:5] |

Descriptive Statistics

| | N | Mean | SD | SEM |
|-----------------|---|---------|---------|---------|
| "como recebido" | 5 | 1,508 | 0,13632 | 0,06097 |
| "30 minutos" | 5 | 1,19336 | 0,3038 | 0,13586 |
| Difference | | 0,31464 | | |

Test Statistics

| t Statistic | DF | Prob> t |
|-------------|----|---------|
| 3,16958 | 4 | 0,03387 |

Null Hypothesis: mean1-mean2 = 0
Alternative Hypothesis: mean1-mean2 <> 0
At the 0.05 level, the difference of the population means is significantly different with the test difference(0)

Paired Sample t Test (18/06/2016 18:09:38)

Notes

| | |
|------------|----------------------|
| X-Function | Paired Sample t Test |
| User Name | cjx4 |
| Time | 18/06/2016 18:09:38 |

Input Data

| | Data | Range |
|----------------|-----------------------------|-------|
| 1st Data Range | [Book1]Sheet1!como recebido | [1:5] |
| 2nd Data Range | [Book1]Sheet1!60 minutos | [1:5] |

Descriptive Statistics

| | N | Mean | SD | SEM |
|-----------------|---|---------|---------|---------|
| "como recebido" | 5 | 1,508 | 0,13632 | 0,06097 |
| "60 minutos" | 5 | 1,00502 | 0,33571 | 0,15013 |
| Difference | | 0,50298 | | |

Test Statistics

| t Statistic | DF | Prob> t |
|-------------|----|---------|
| 3,9357 | 4 | 0,01702 |

Null Hypothesis: mean1-mean2 = 0
 Alternative Hypothesis: mean1-mean2 <> 0
 At the 0.05 level, the difference of the population means is significantly different with the test difference(0)

Paired Sample t Test (18/06/2016 18:10:15)

Notes

| | |
|------------|----------------------|
| X-Function | Paired Sample t Test |
| User Name | cjx4 |
| Time | 18/06/2016 18:10:15 |

Input Data

| | Data | Range |
|----------------|-----------------------------|-------|
| 1st Data Range | [Book1]Sheet1!como recebido | [1:5] |
| 2nd Data Range | [Book1]Sheet1!90 minutos | [1:5] |

Descriptive Statistics

| | N | Mean | SD | SEM |
|-----------------|---|---------|---------|---------|
| "como recebido" | 5 | 1,508 | 0,13632 | 0,06097 |
| "90 minutos" | 5 | 1,08292 | 0,3383 | 0,15129 |
| Difference | | 0,42508 | | |

Test Statistics

| t Statistic | DF | Prob> t |
|-------------|----|---------|
| 2,37445 | 4 | 0,07645 |

Null Hypothesis: mean1-mean2 = 0
 Alternative Hypothesis: mean1-mean2 <> 0
 At the 0.05 level, the difference of the population means is NOT significantly different with the test difference(0)

Paired Sample t Test (18/06/2016 18:11:26)

Notes

| | |
|------------|----------------------|
| X-Function | Paired Sample t Test |
| User Name | cjx4 |
| Time | 18/06/2016 18:11:26 |

Input Data

| | Data | Range |
|----------------|-----------------------------|-------|
| 1st Data Range | [Book1]Sheet1!como recebido | [1:5] |
| 2nd Data Range | [Book1]Sheet1!120 minutos | [1:5] |

Descriptive Statistics

| | N | Mean | SD | SEM |
|-----------------|---|----------|---------|---------|
| "como recebido" | 5 | 1,508 | 0,13632 | 0,06097 |
| "120 minutos" | 5 | 1,54088 | 0,89813 | 0,40166 |
| Difference | | -0,03288 | | |

Test Statistics

| t Statistic | DF | Prob> t |
|-------------|----|---------|
| -0,07532 | 4 | 0,94358 |

Null Hypothesis: mean1-mean2 = 0
 Alternative Hypothesis: mean1-mean2 <> 0
 At the 0.05 level, the difference of the population means is NOT significantly different with the test difference(0)