

## DAFTAR PUSTAKA

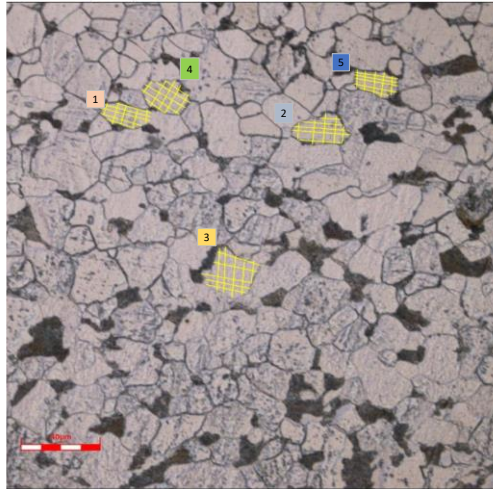
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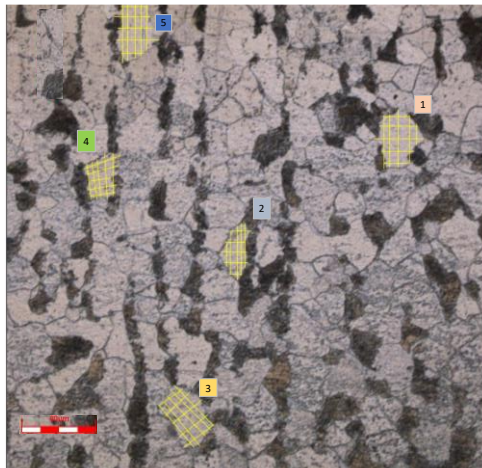
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## LAMPIRAN

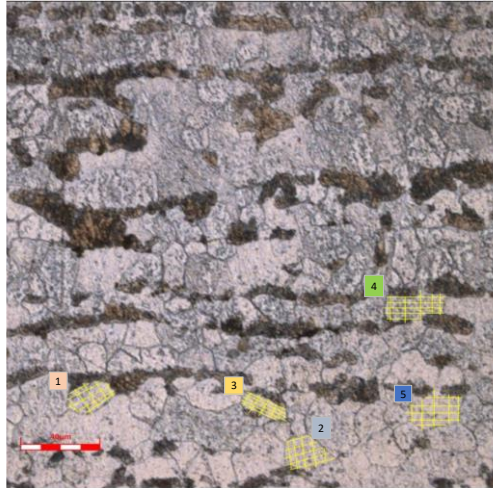
### Lampiran A Gambar Pengamatan Struktur Mikro Spesimen *RAW*



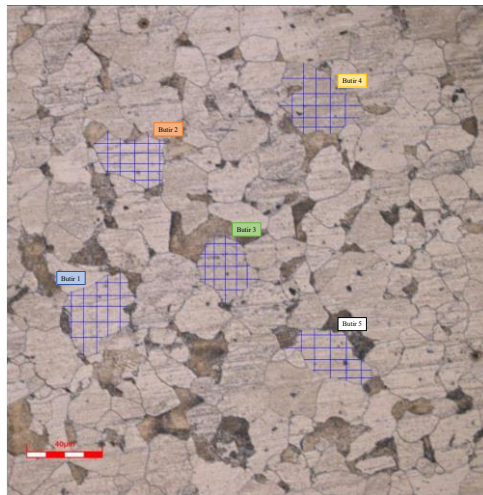
Lampiran A.1 Titik lokasi pengamatan mikro struktur spesimen GB-20G bagian A-atas



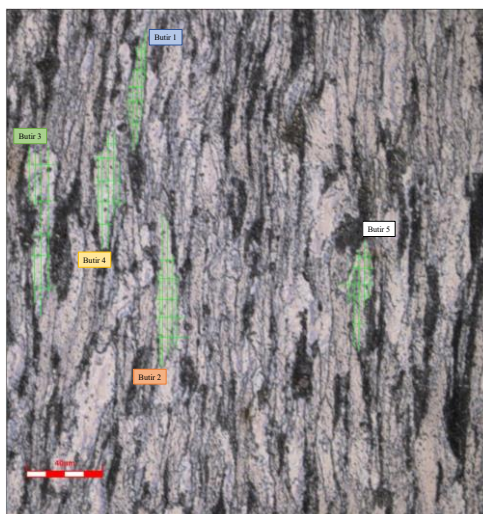
Lampiran A.2 Titik lokasi pengamatan mikro struktur spesimen GB-20G bagian A-tengah



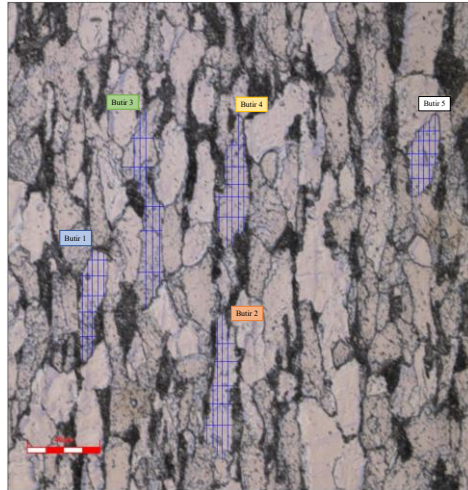
Lampiran A.3 Titik lokasi pengamatan mikro struktur spesimen GB-20G bagian A-bawah



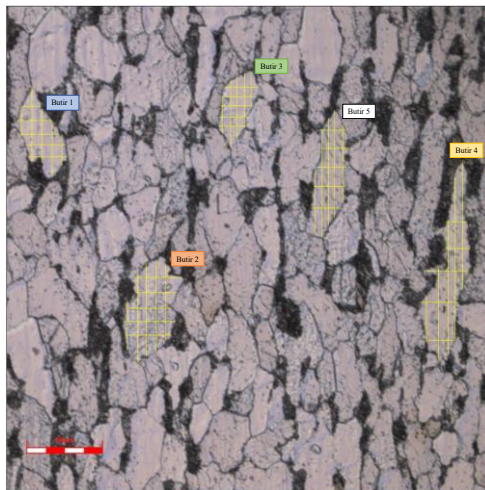
Lampiran A.4 Titik lokasi pengamatan mikro struktur spesimen GB-20G bagian B2



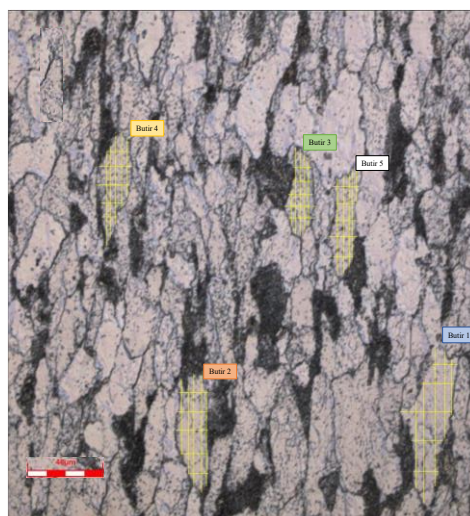
Lampiran A.5 Struktur mikro spesimen GB-20G bagian A-a *after creep*



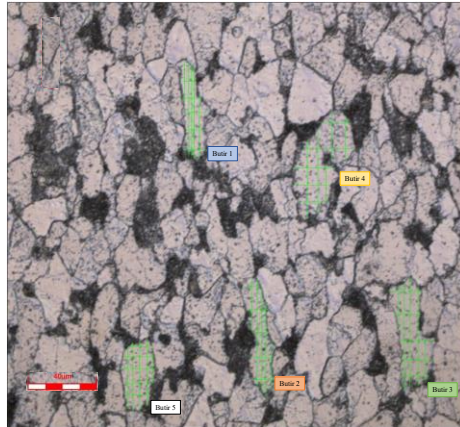
Lampiran A.6 Struktur mikro spesimen GB-20G bagian A-b *after creep*



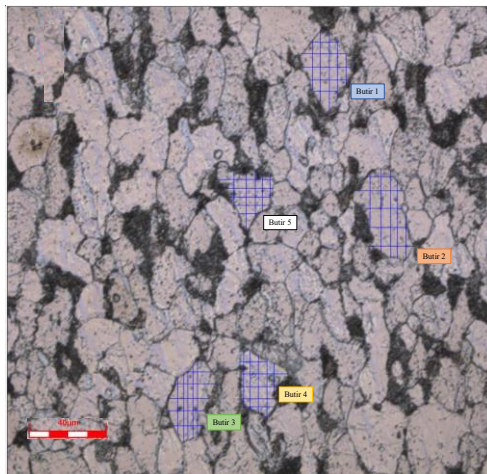
Lampiran A.7 Struktur mikro spesimen GB-20G bagian A-c *after creep*



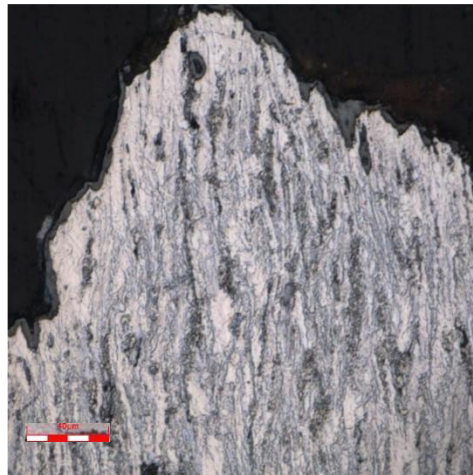
Lampiran A.8 Struktur mikro spesimen GB-20G bagian B-a *after creep*



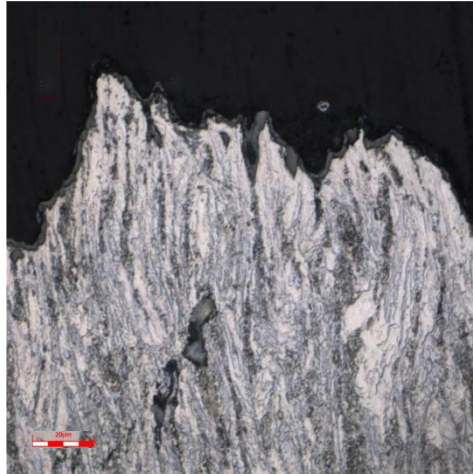
Lampiran A.9 Struktur mikro spesimen GB-20G bagian B-b *after creep*



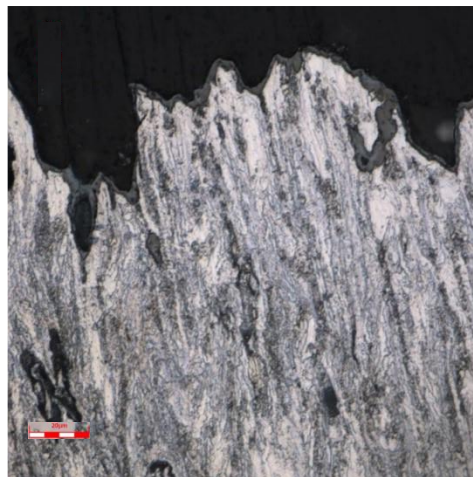
Lampiran A.10 Struktur mikro spesimen GB-20G bagian B-c *after creep*



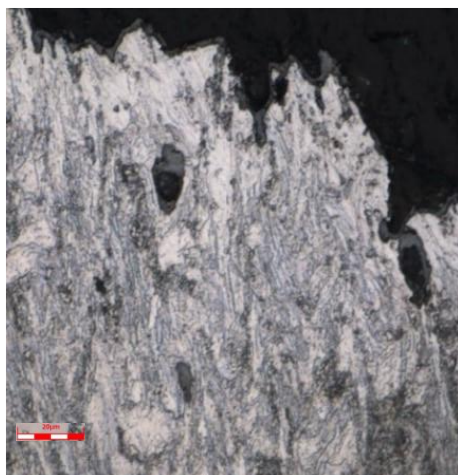
Lampiran A.11 Struktur mikro jenis patahan yang terjadi pada spesimen GB-20G *after tensile* bagian A-1



Lampiran A.12 Struktur mikro jenis patahan yang terjadi bagian A-2 spesimen GB-20G  
*after tensile*

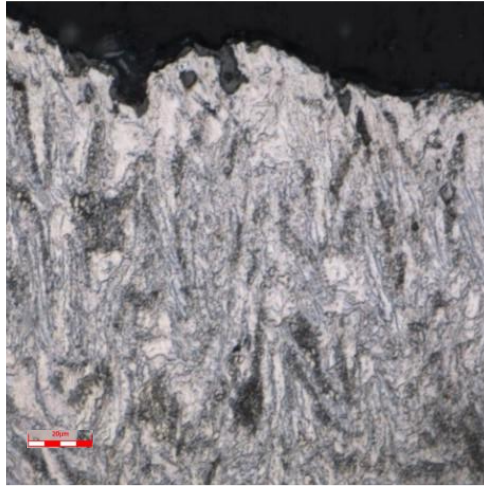


Lampiran A.13 Struktur mikro jenis patahan yang terjadi bagian A-3 spesimen GB-20G  
*after tensile*

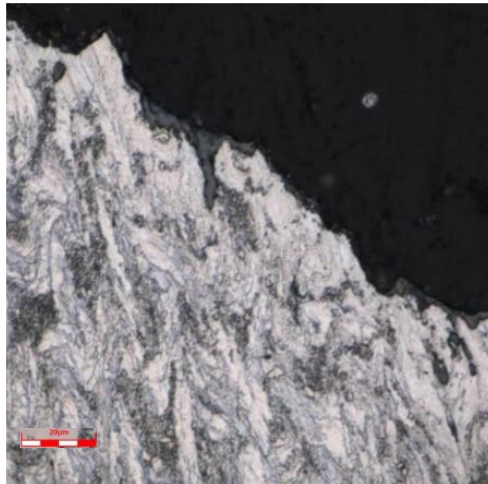


Lampiran A.14 Struktur mikro jenis patahan yang terjadi bagian B-1 spesimen GB-20G  
*after tensile*



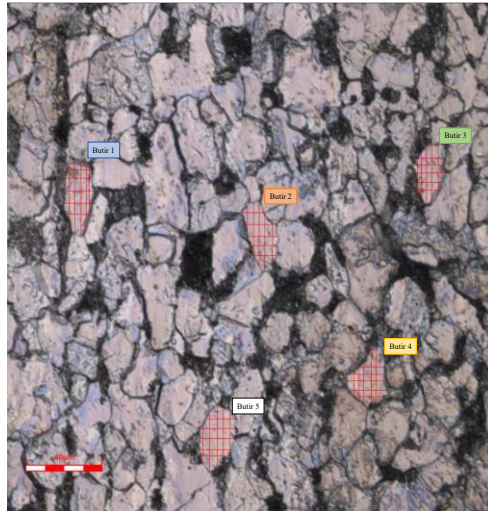


Lampiran A.15 Struktur mikro jenis patahan yang terjadi bagian B-2 spesimen GB-20G  
*after tensile*

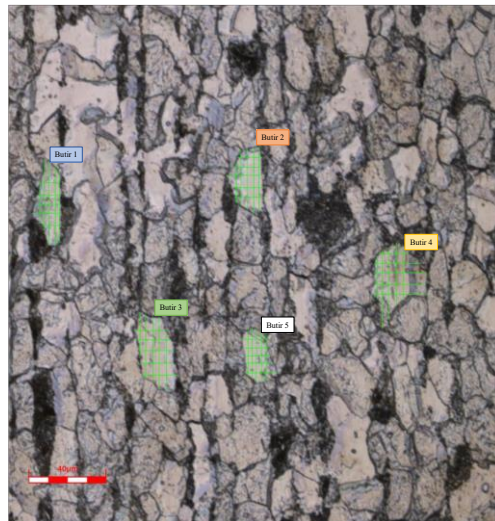


Lampiran A.16 Struktur mikro jenis patahan yang terjadi bagian B-3 spesimen GB-20G  
*after tensile*

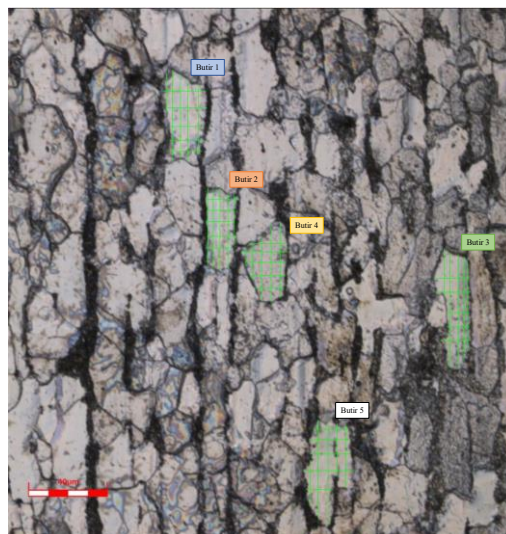
## Lampiran B Titik Lokasi Pengamatan Struktur Mikro Spesimen 4mm



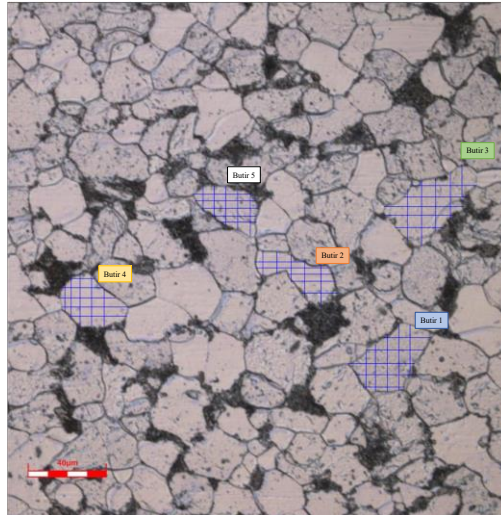
Lampiran B.1 Struktur mikro spesimen 4mm bagian A-atas *after creep*



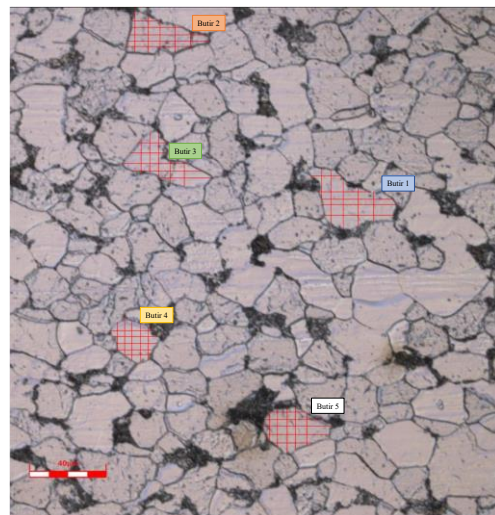
Lampiran B.2 Struktur mikro spesimen 4mm bagian A-tengah *after creep*



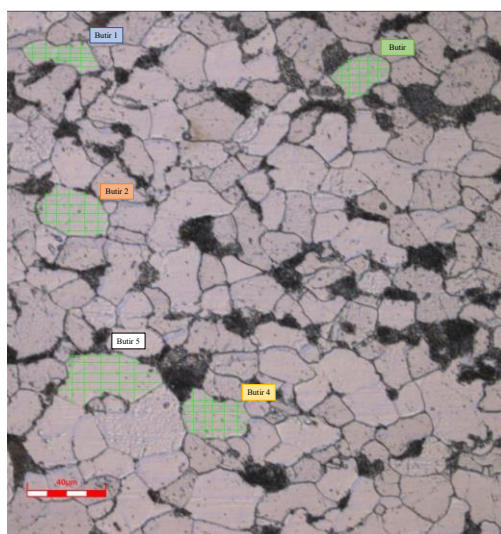
Lampiran B.3 Struktur mikro spesimen 4mm bagian A-bawah *after creep*



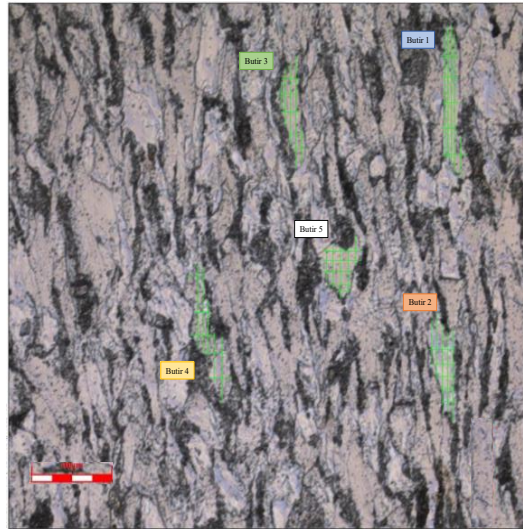
Lampiran B.4 Struktur mikro spesimen 4mm bagian B1 *after creep*



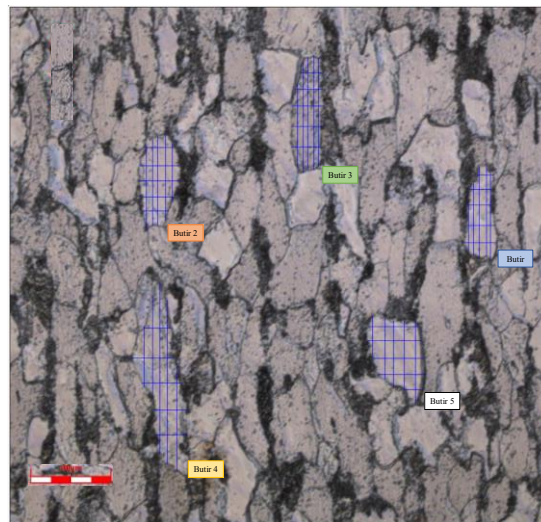
Lampiran B.5 Struktur mikro spesimen 4mm bagian B2 *after creep*



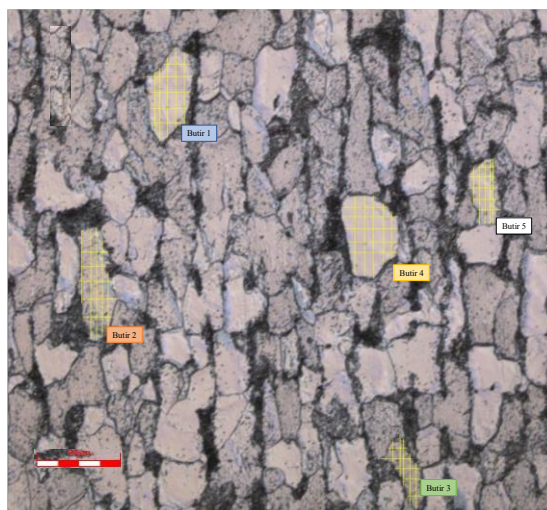
Lampiran B.6 Struktur mikro spesimen 4mm bagian B3 *after creep*



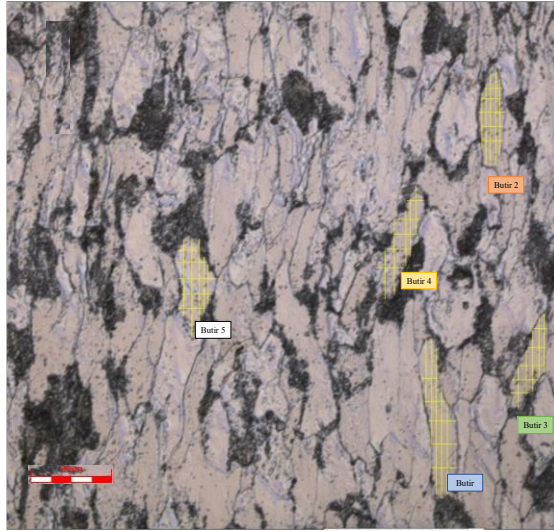
Lampiran B.7 Struktur mikro spesimen 4mm bagian A-a *after tensile*



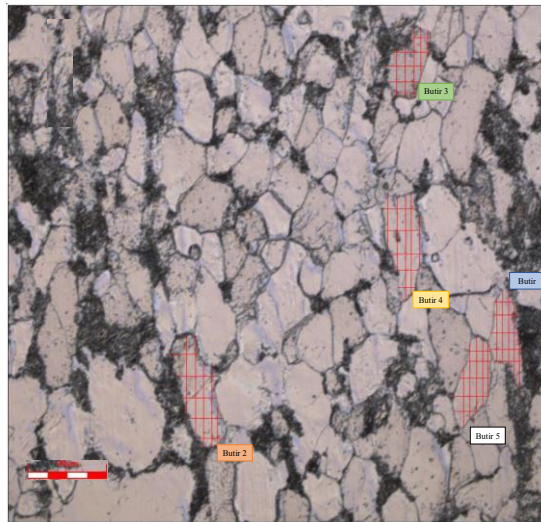
Lampiran B.8 Struktur mikro spesimen 4mm bagian A-b *after tensile*



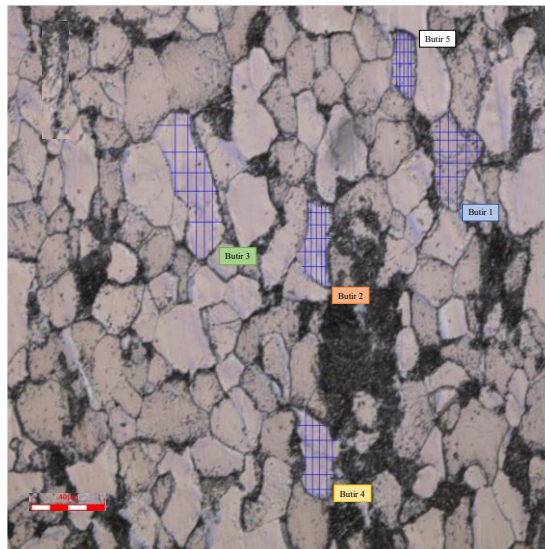
Lampiran B.9 Struktur mikro spesimen 4mm bagian A-c *after tensile*



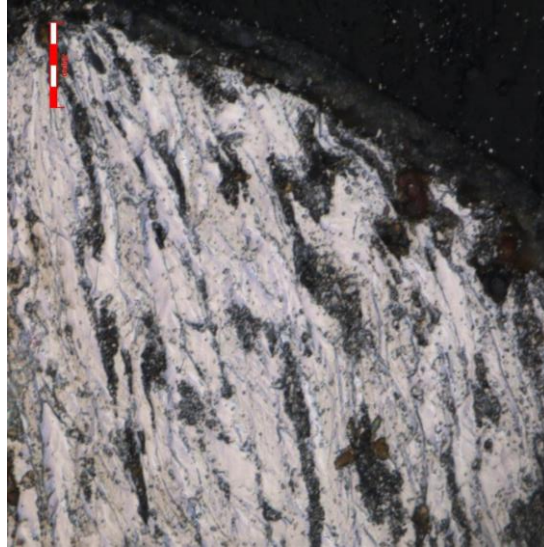
Lampiran B.10 Struktur mikro spesimen 4mm bagian B-a *after tensile*



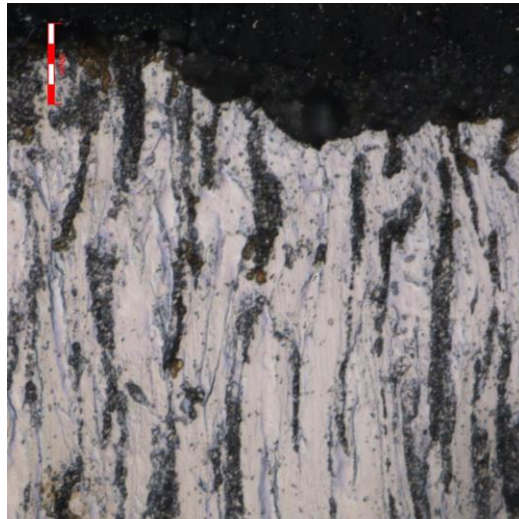
Lampiran B.11 Struktur mikro spesimen 4mm bagian B-b *after tensile*



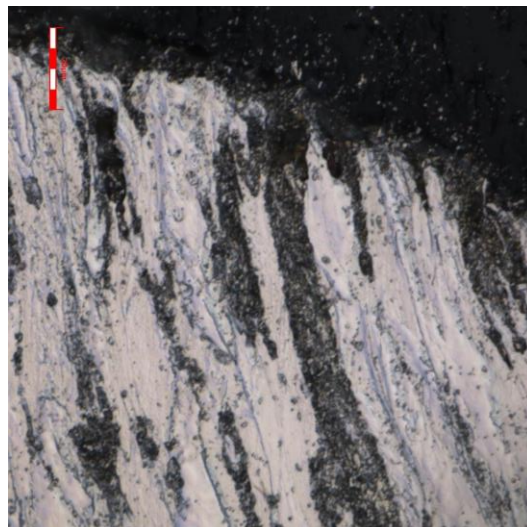
Lampiran B.12 Struktur mikro spesimen 4mm bagian B-c *after tensile*



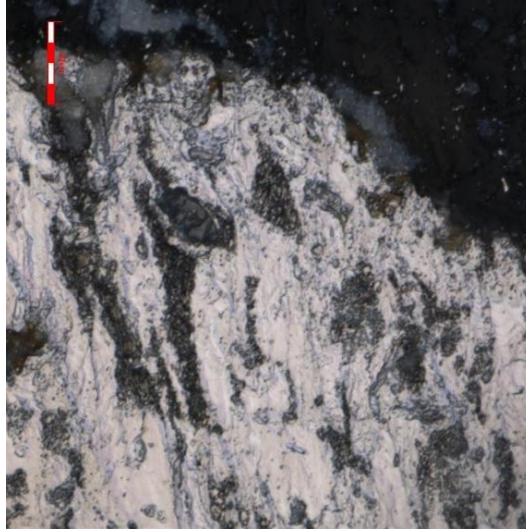
Lampiran B.13 Struktur mikro spesimen 4mm bagian A-1 setelah *after tensile*



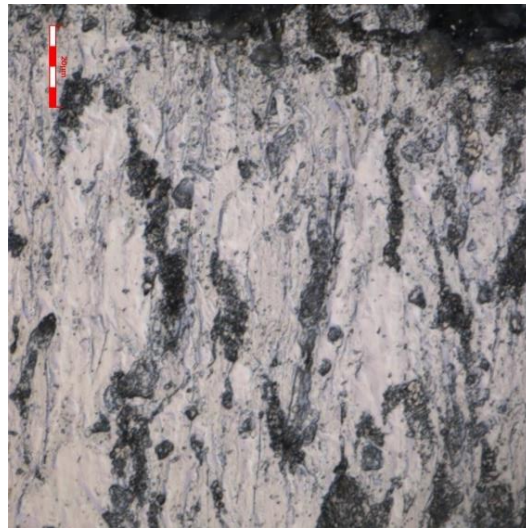
Lampiran B.14 Struktur mikro spesimen 4mm bagian A-2 *after tensile*



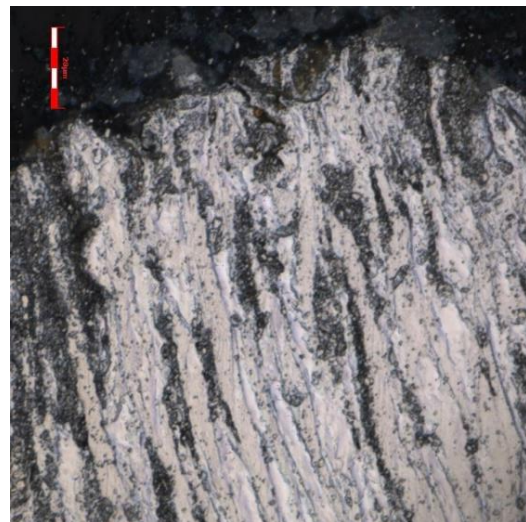
Lampiran B.15 Struktur mikro spesimen 4mm bagian A-3 *after tensile*



Lampiran B.16 Struktur mikro bentuk patahan spesimen 4mm bagian B-1 *after tensile*

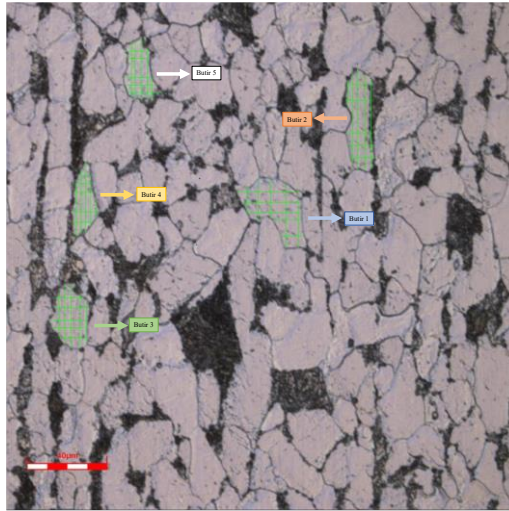


Lampiran B.17 Struktur mikro bentuk patahan spesimen 4mm bagian B-2 *after tensile*

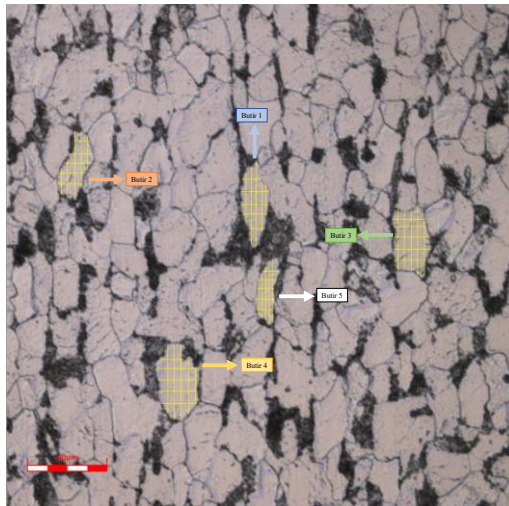


Lampiran B.18 Struktur mikro bentuk patahan spesimen 4mm bagian B-3 *after tensile*

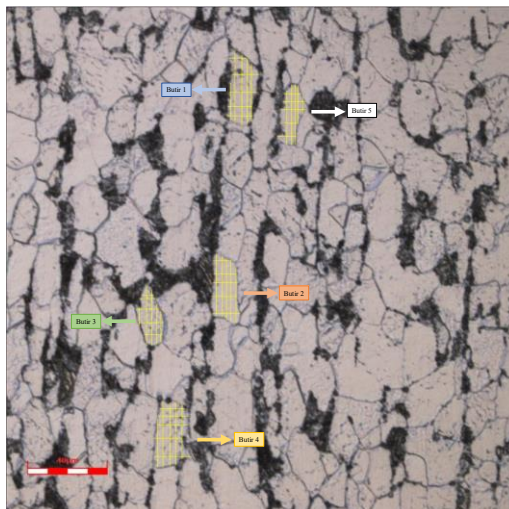
### Lampiran C Titik Lokasi Pengamatan Struktur Mikro Spesimen 6mm



Lampiran C.1 Struktur mikro spesimen 6mm bagian A-atas *after creep*

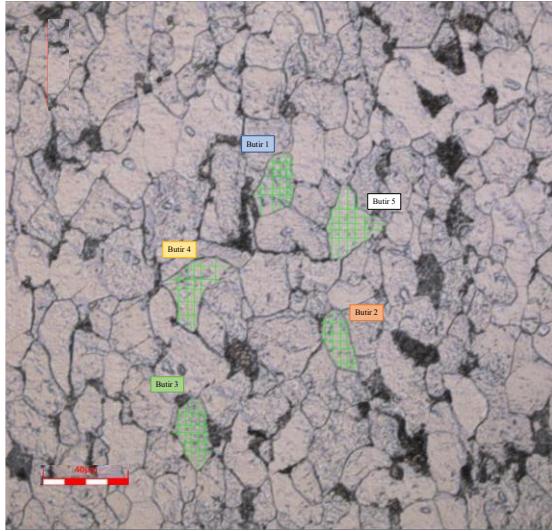


Lampiran C.2 Struktur mikro spesimen 6mm bagian A-tengah *after creep*

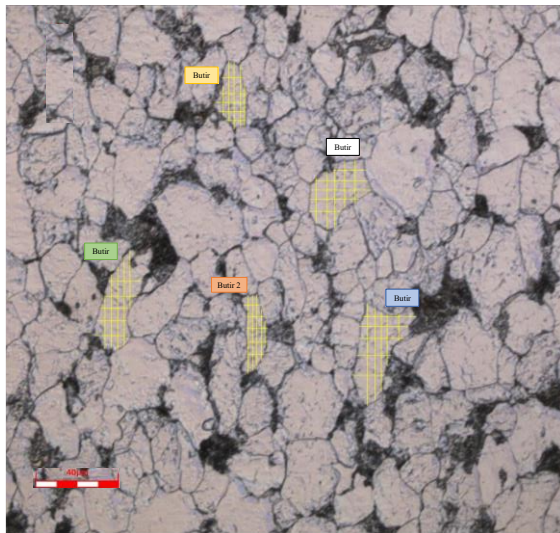


Lampiran C.3 Struktur mikro spesimen 6mm bagian A-bawah *after creep*

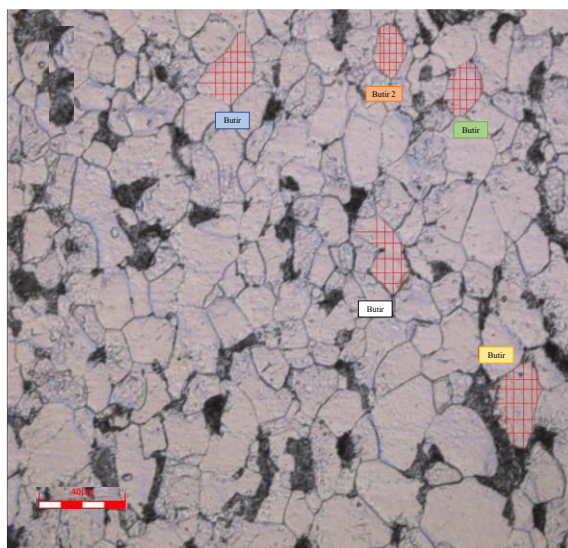




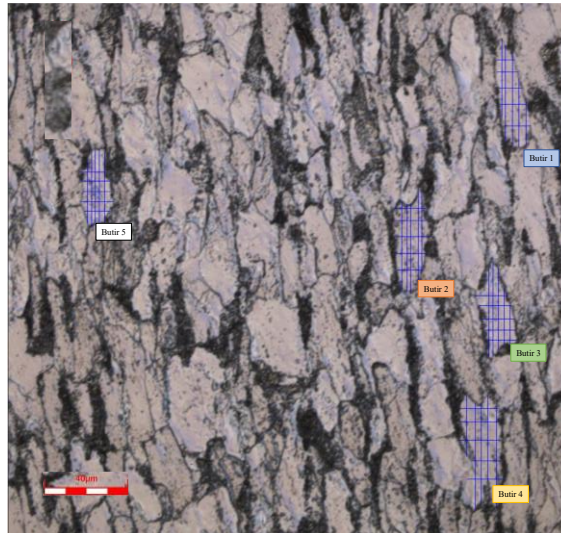
Lampiran C.4 Struktur mikro spesimen 6mm bagian B1 *after creep*



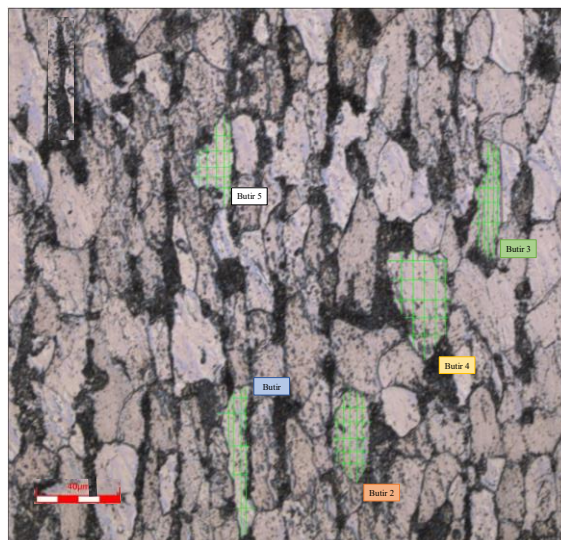
Lampiran C.5 Struktur mikro spesimen 6mm bagian B2 *after creep*



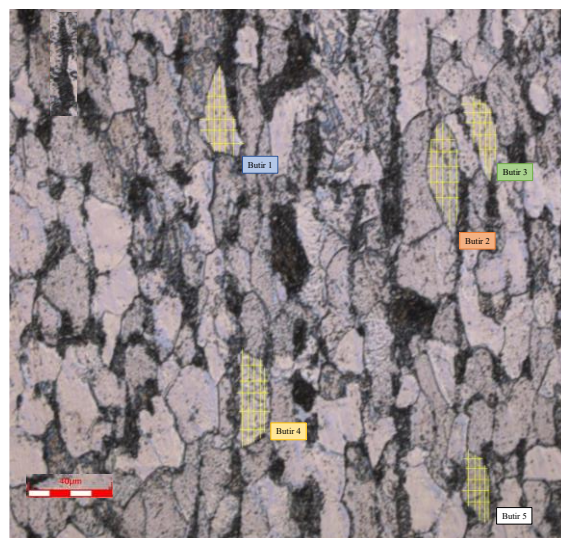
Lampiran C.6 Struktur mikro spesimen 6mm bagian B3 *after creep*



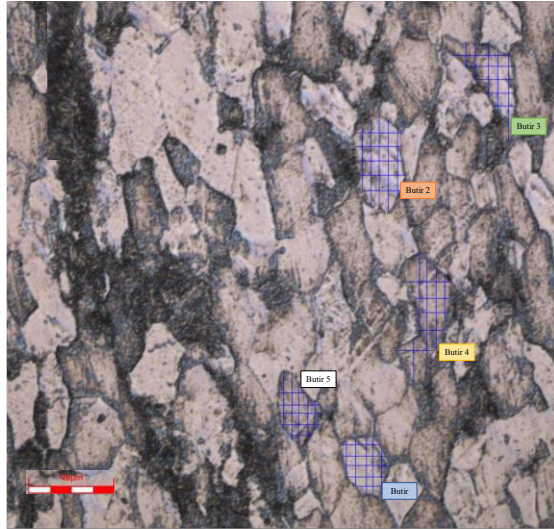
Lampiran C.7 Struktur mikro spesimen 6mm bagian A-a *after tensile*



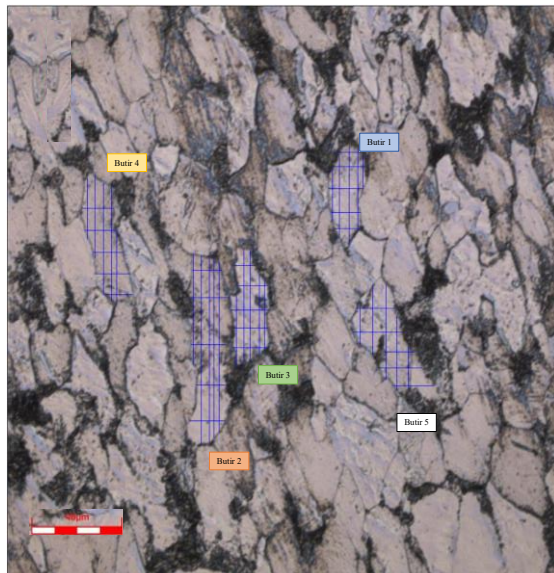
Lampiran C.8 Struktur mikro spesimen 6mm bagian A-b *after tensile*



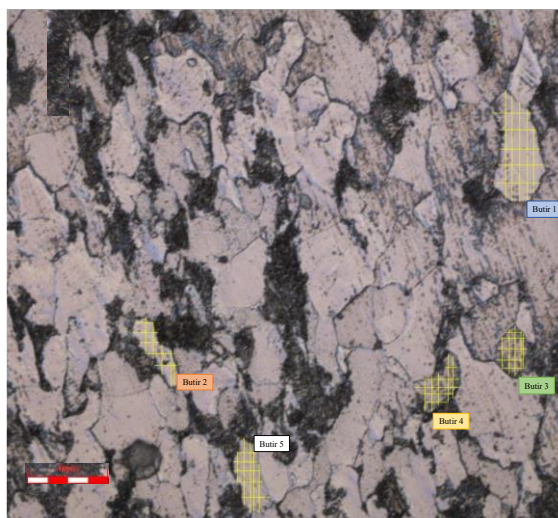
Lampiran C.9 Struktur mikro spesimen 6mm bagian A-c *after tensile*



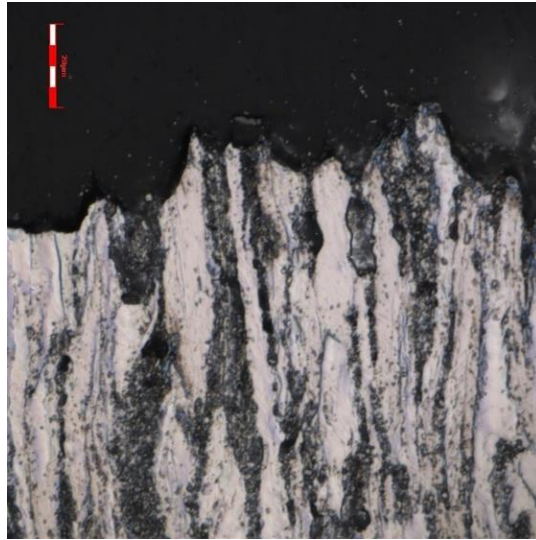
Lampiran C.10 Struktur mikro spesimen 6mm bagian B-a *after tensile*



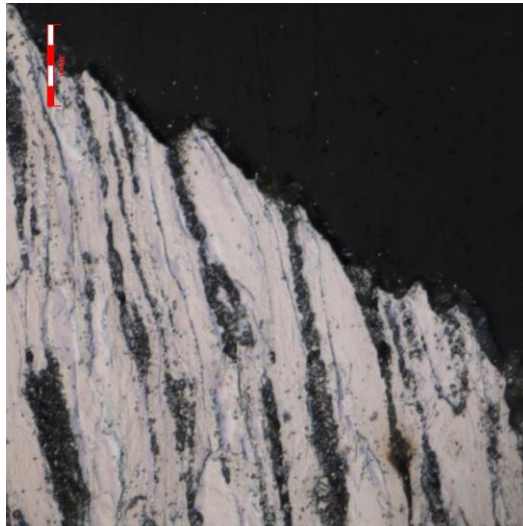
Lampiran C.11 Struktur mikro spesimen 6mm bagian B-b *after tensile*



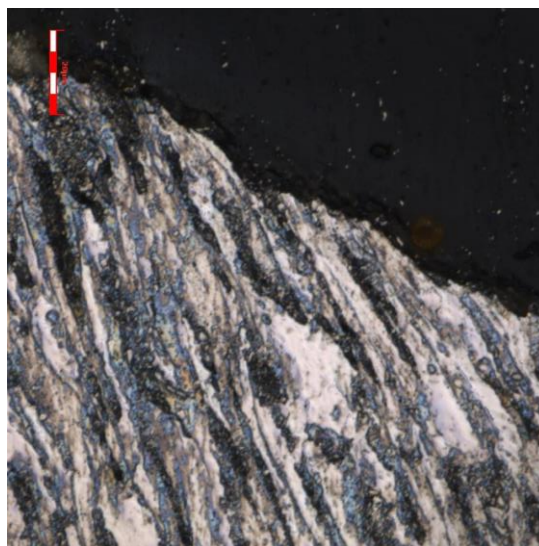
Lampiran C.12 Struktur mikro spesimen 6mm bagian B-c *after tensile*



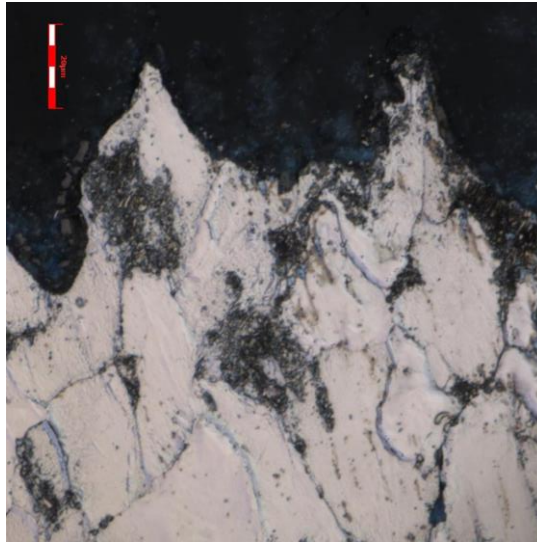
Lampiran C.13 Struktur mikro spesimen 6mm bagian A-1 *after tensile*



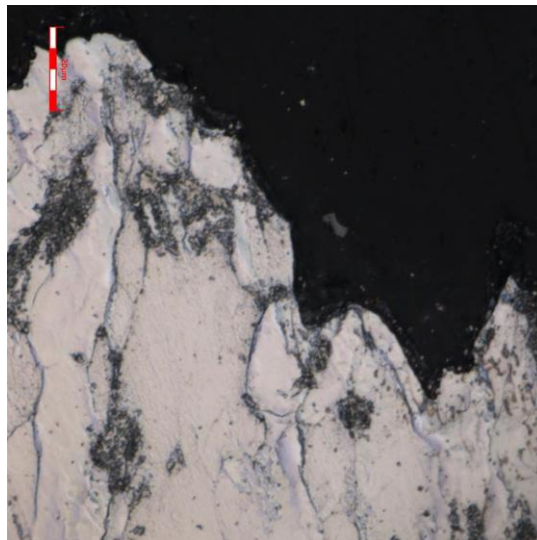
Lampiran C.14 Struktur mikro spesimen 6mm bagian A-2 *after tensile*



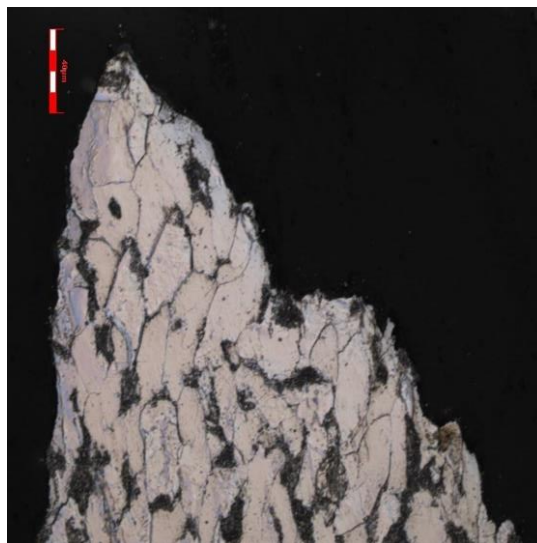
Lampiran C.15 Struktur mikro spesimen 6mm bagian A-3 *after tensile*



Lampiran C.16 Struktur mikro bentuk patahan spesimen 6mm bagian B-1 *after tensile*

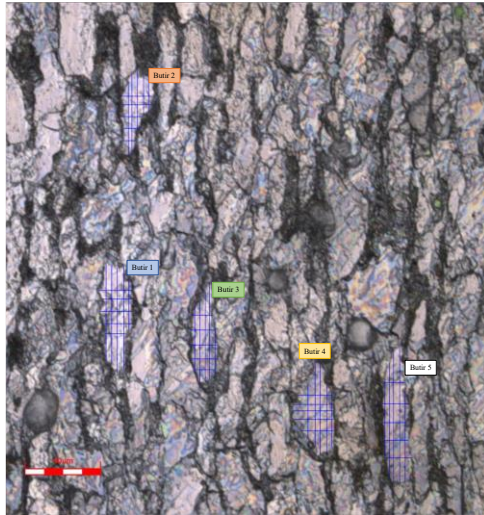


Lampiran C.17 Struktur mikro bentuk patahan spesimen 6mm bagian B-2 *after tensile*



Lampiran C.18 Struktur mikro bentuk patahan spesimen 6mm bagian B-3 *after tensile*

## Lampiran D Titik Lokasi Pengamatan Struktur Mikro Spesimen 8mm



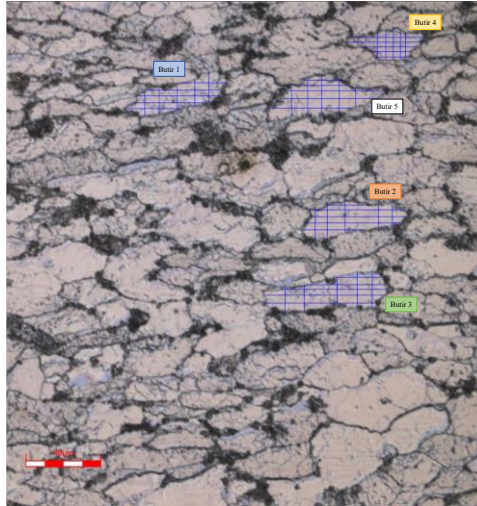
Lampiran D.1 Struktur mikro spesimen 8mm bagian A-atas *after creep*



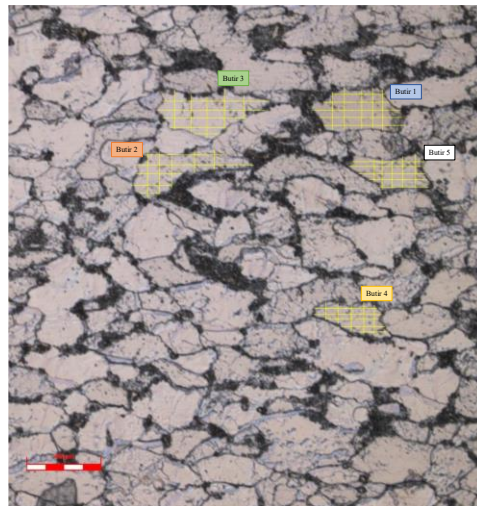
Lampiran D.2 Struktur mikro spesimen 8mm bagian A-tengah *after creep*



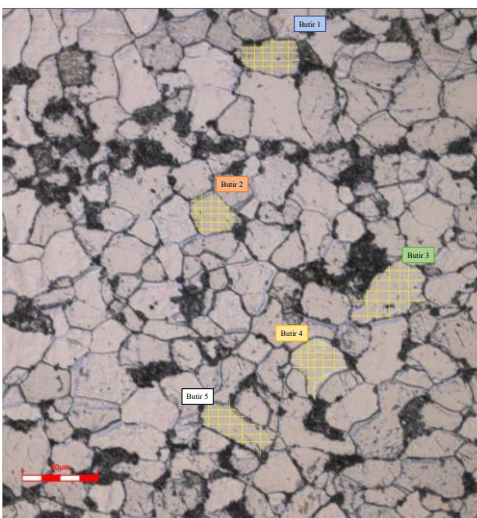
Lampiran D.3 Struktur mikro spesimen 8mm bagian A-bawah *after creep*



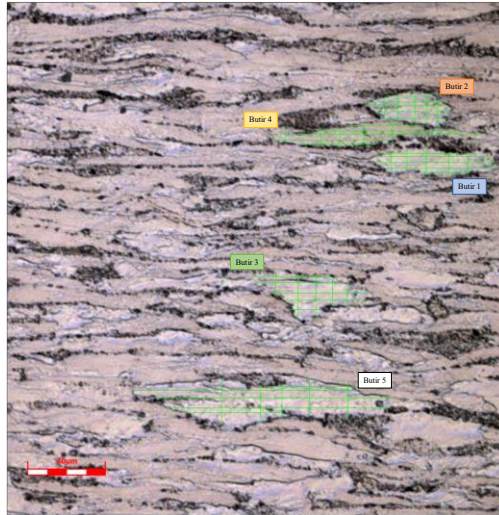
Lampiran D.4 Struktur mikro spesimen 8mm bagian B1 *after creep*



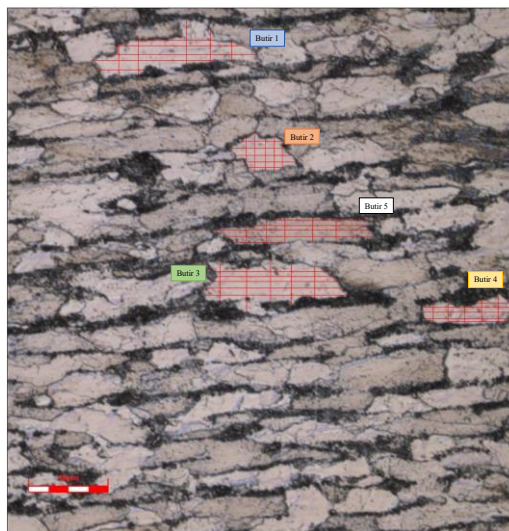
Lampiran D.5 Struktur mikro spesimen 8mm bagian B2 *after creep*



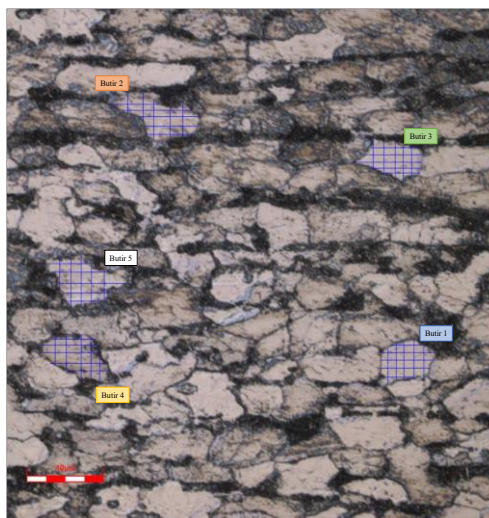
Lampiran D.6 Struktur mikro spesimen 8mm bagian B3 *after creep*



Lampiran D.7 Struktur mikro spesimen 8mm bagian A-a *after tensile*

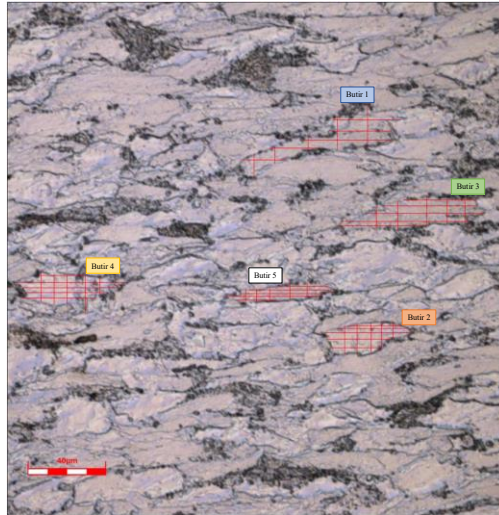


Lampiran D.8 Struktur mikro spesimen 8mm bagian A-b *after tensile*

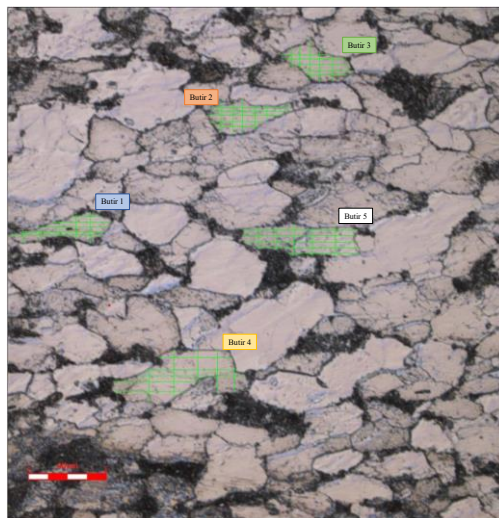


Lampiran D.9 Struktur mikro spesimen 8mm bagian A-c *after tensile*

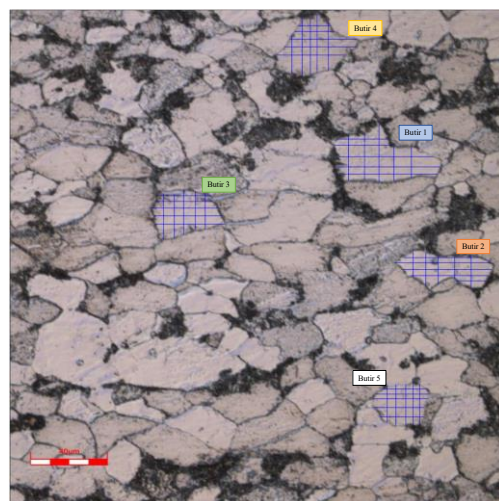




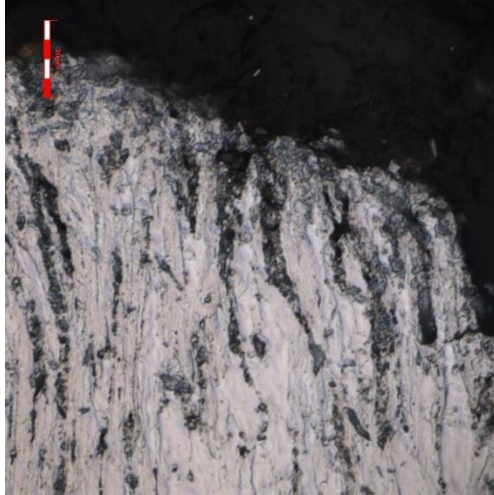
Lampiran D.10 Struktur mikro spesimen 8mm bagian B-a *after tensile*



Lampiran D.11 Struktur mikro spesimen 8mm bagian B-b *after tensile*



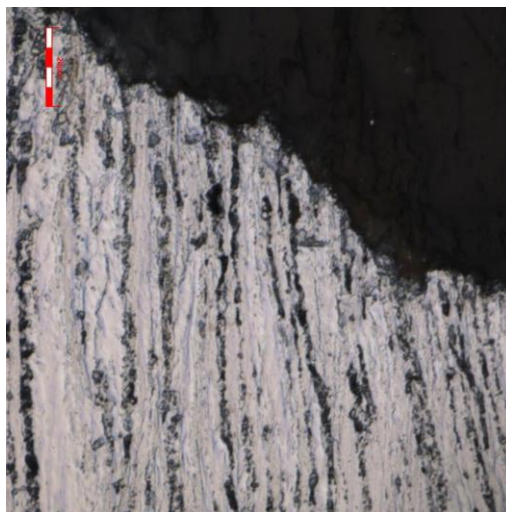
Lampiran D.12 Struktur mikro spesimen 8mm bagian B-c *after tensile*



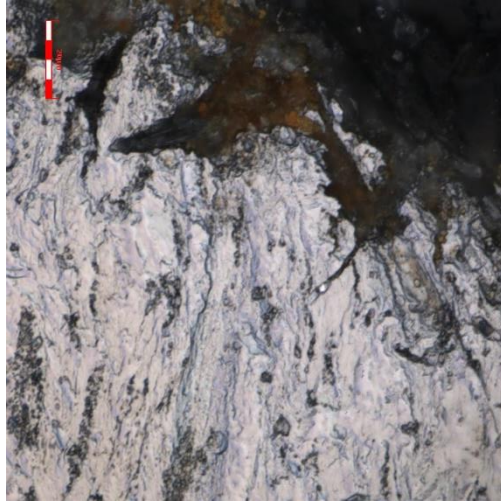
Lampiran D.13 Struktur mikro spesimen 8mm bagian A-1 *after tensile*



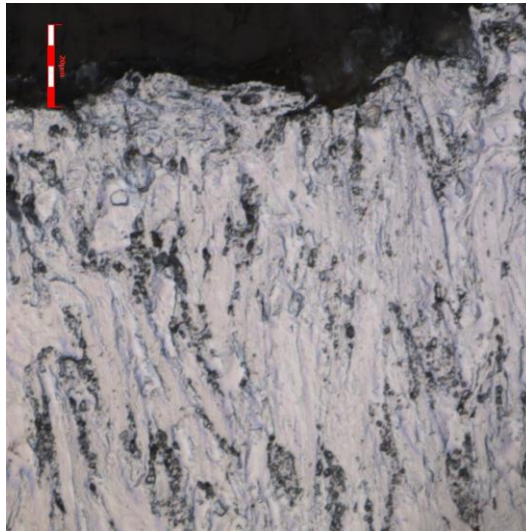
Lampiran D.14 Struktur mikro spesimen 8mm bagian A-2 *after tensile*



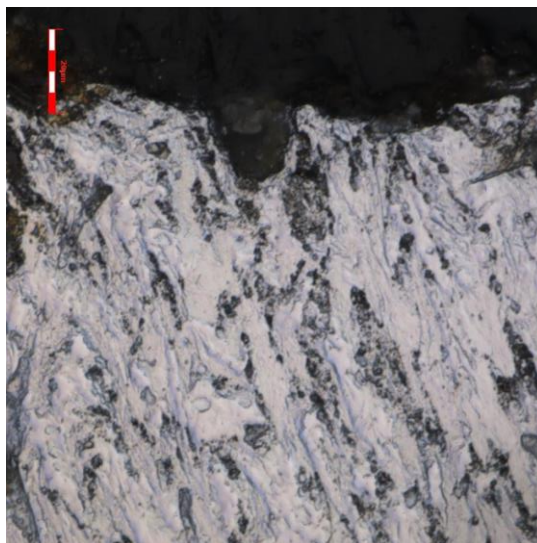
Lampiran D.15 Struktur mikro spesimen 8mm bagian A-3 *after tensile*



Lampiran D.16 Struktur mikro bentuk patahan spesimen 8mm bagian B-1 *after tensile*

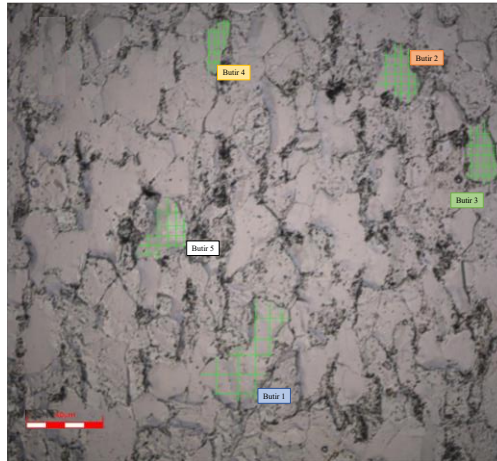


Lampiran D.17 Struktur mikro bentuk patahan spesimen 8mm bagian B-2 *after tensile*

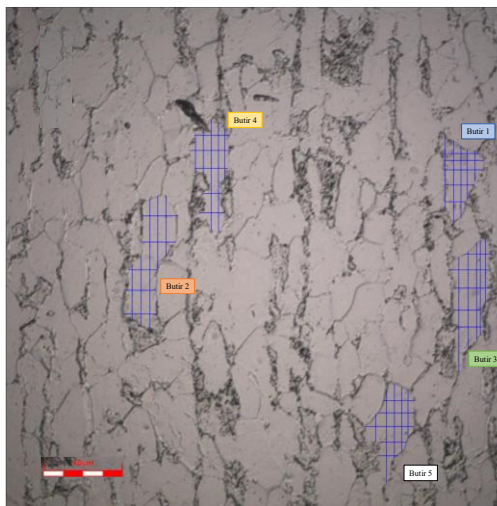


Lampiran D.18 Struktur mikro bentuk patahan spesimen 8mm bagian B-3 *after tensile*

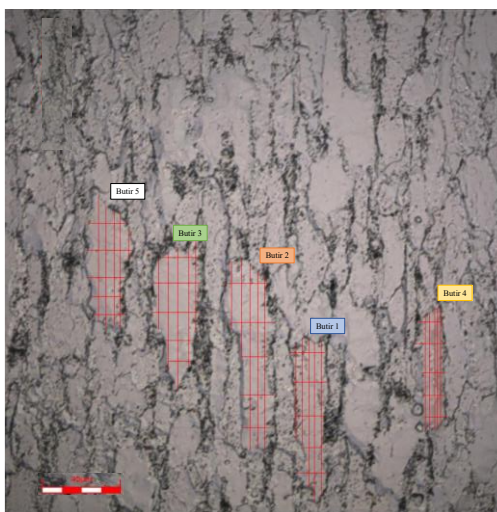
### Lampiran E Hasil Pengamatan *In-situ Metallography* pada Spesimen



Lampiran E. 1 *In-situ Metallography* spesimen 4mm bagian A-tengah *after creep*



Lampiran E. 2 *In-situ Metallography* spesimen 6mm bagian A-tengah *after creep*



Lampiran E. 3 *In-situ Metallography* spesimen 8mm bagian A-tengah *after creep*

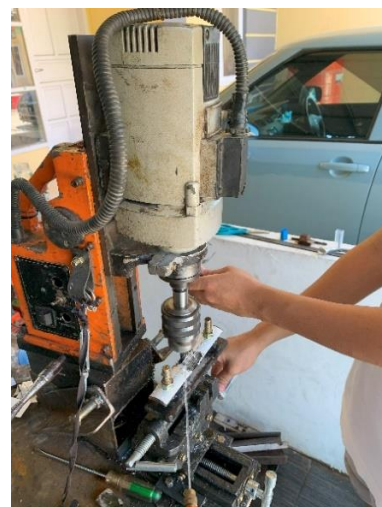
## Lampiran F Proses preparasi spesimen



Lampiran F. 1 Proses pemotongan material



Lampiran F. 2 Proses pemotongan material



Lampiran F. 3 Proses pemotongan spesimen



Lampiran F. 4 Proses pemotongan spesimen



Lampiran F. 5 Proses pemotongan spesimen



Lampiran F. 6 Proses penghalusan area sisi samping spesimen



Lampiran F. 7 Proses pemotongan spesimen



Lampiran F. 8 Proses penghalusan spesimen



Lampiran F. 9 Pengujian kekerasan pada spesiman



Lampiran F. 10 Proses pengamatan struktur mikro



Lampiran F. 11 Proses pengujian kuat tarik pada spesimen



Lampiran F. 12 Proses pengujian kuat tarik pada spesimen



Lampiran G Inspeksi Sertifikat Material

SD-WF-JZ-24  
江苏省常州市西郊邹区镇 邮编: 213144  
Zouqu Town, West Suburbs of Changzhou City,  
Jiangsu province, China. Post Code: 213144  
Tel: 0519-883832158 Fax: 0519-83632723  
http://www.shengdechina.com

常州盛德无缝钢管有限公司 产品质量证明书  
INSPECTION CERTIFICATE

盛德钢管 T52710620-2016 CHANGZHOU SHENGDE SEAMLESS STEEL TUBE CO.,LTD.

合同号 C201603899  
CONTACT  
收货单位 东方电气集团东方锅炉股份有限公司  
PURCHASER

生产许可证号 TS2710620-2020 质保书编号 SHEET NO. 162649

制造方法 冷轧  
MANUFACTURE METHOD COLD DRAWN

管坯供方 中天钢铁  
SUPPLIER OF BILLETS ZHONGTIAN

产品标准 GB1898-2015+GB5310-2008  
PRODUCT STANDARD

规格 尺寸  
SIZE

Table with columns for Steel Grade, Heat No., Lot No., Dimensions (Outer Diameter, Wall Thickness, Length), Weight, Pieces, Bundles, Technological Properties (Expansion, Flaring, Wiping, Hydro), Crack Detection (High Flow, Ultrasonic), and Mechanical Properties (Tensile, Yield, Elongation, Impact).

Table for Mechanical Properties and Metallography, including sections for Strength (Tensile, Yield), Toughness (Impact), Hardness, and Metallography (Grain Size).

注: THE BLIND ZONES FOR ET/UT HAVE BEEN ELIMINATED.  
1. 缺陷盲区已切除。  
2. 酸洗控蚀。  
3. 交货状态: 正火 (NORMALIZATION) : 900℃保温 20 分钟。  
4. LA: 化学成分分析, PA: 成品分析 (For Leadle analysis, PA stands for product analysis)  
5. 本钢管未经补焊和堆焊 (NO REPAIRS BY WELDING HAVE BEEN PERFORMED)  
6. 附件管坯质保书 (THE BILLET CERTIFICATE IS ATTACHED) (随炉炉用温度 400℃)  
备注 REMARK  
THE REQUIREMENTS.  
质量证明书章 MUSS CERTIFY SEAL.



质保日期 2016年9月17日  
ISSUED DATE  
蒋雪英 蒋雪英  
ISSUED BY  
蒋雪英 蒋雪英  
2016.9.24  
2016.9.24

## Lampiran H Data Pengujian Kekerasan

### Lampiran H. 1 Data Pengujian Kekerasan Spesimen RAW

	B1			Average	B2			Average	B3			Average	Total Average
HV	156,4	154,2	158	156,2	158,9	151,2	159,4	156,5	153,4	158,1	156,6	156,0333333	156,2
HRB	81,8	81,1	82,3	81,733		80,1	82,7	81,4	80,8	82,3	81,9	81,667	81,6

### Lampiran H. 2 Data Pengujian Kekerasan Spesimen 4 mm

	B1			Average	B2			Average	B3			Average	Total Average
HV	107,1	106,9	104,9	106,3	111,6	110,6	112,2	111,466	110,4	110,6	109,8	110,266	109,344
HRB	59	58,8	57,3	58,366	61,9	61,6	62,1	61,866	61,5	61,6	61,1	61,433	60,5

### Lampiran H. 3 Data Pengujian Kekerasan Spesimen 6 mm

	B1			Average	B2			Average	B3			Average	Total Average
HV	119,4	118,1	117,7	118,4	117,2	118,9	117,7	117,933	121,6	120,4	117,7	119,9	117,744
HRB	66,2	65,5	65,4	65,7	65,2	66	65,4	65,533	67,7	66,9	65,4	66,666	65,9

### Lampiran H. 4 Data Pengujian Kekerasan Spesimen 8 mm

	B1			Average	B2			Average	B3			Average	Total Average
HV	117,5	117,7	117	117,4	114,9	114,5	115,2	114,866	117,9	117,6	116,8	117,433	116,567
HRB	65,3	65,4	65,1	65,266	63,9	63,6	64,1	63,866	65,5	65,4	65	65,3	65,3

**Lampiran I Data Pengukuran *Grain Ratio***

**Lampiran I.4 Data Pengukuran *Grain Ratio* Spesimen RAW**

<b><i>Section A-atas</i></b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	9,389	21,165	0,443
2	12,413	21,636	0,573
3	20,120	23,090	0,871
4	13,986	18,814	0,743
5	10,974	20,608	0,532
<i>Grain Ratio Average</i>			0,664

<b><i>Section A-tengah</i></b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	18,257	24,778	0,737
2	10,633	23,323	0,456
3	18,488	29,970	0,617
4	15,823	21,360	0,741
5	17,154	29,342	0,585
<i>Grain Ratio Average</i>			0,684

<b><i>Section A-Bawah</i></b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	11,994	18,960	0,633
2	14,940	19,135	0,781
3	8,860	22,805	0,389
4	12,358	26,826	0,461
5	14,970	22,556	0,664
<i>Grain Ratio Average</i>			0,585

<b>Section B1</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	14,545	18,909	0,769
2	17,990	19,686	0,914
3	20,965	21,542	0,973
4	17,354	28,662	0,605
5	16,392	26,065	0,629
<i>Grain Ratio Average</i>			0,843

<b>Section B2</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	22.721	26.433	0,859
2	16.802	20.865	0,805
3	20.514	18.608	1,102
4	29.091	32.351	0,899
5	25.379	15.147	1,675
<i>Grain Ratio Average</i>			1,068

<b>Section B3</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	20,336	17,247	1,179
2	17,990	16,772	1,073
3	20,965	17,542	1,195
4	17,354	18,662	0,930
5	20,344	16,690	1,219
<i>Grain Ratio Average</i>			1,125

**Lampiran I.5** Data Pengukuran *Grain Ratio* Spesimen 4 mm

<b>Section A-atas</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	13,196	33,439	0,394
2	13,529	24,029	0,563
3	14,128	24,146	0,585
4	16,591	20,867	0,795
5	16,291	24,562	0,663
<i>Grain Ratio Average</i>			0,600

<b>Section A-tengah</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	11,738	33,979	0,839
2	14,919	28,092	0,531
3	17,430	30,037	0,580
4	24,150	30,411	0,794
5	13,896	24,661	0,563
<i>Grain Ratio Average</i>			0,562

<b>Section A-Bawah</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	18,349	35,689	0,514
2	14,573	35,120	0,414
3	14,614	44,963	0,325
4	19,120	26,290	0,727
5	19,519	34,979	0,558
<i>Grain Ratio Average</i>			0,507

<b>Section B1</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	25,520	27,664	0,922
2	14,505	25,122	0,577
3	24,374	32,748	0,744
4	20,710	24,822	0,834
5	17,445	25,919	0,637
<i>Grain Ratio Average</i>			0,750

<b>Section B2</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	20,293	30,802	0.658
2	14,952	31,625	0,472
3	16,175	25,885	0,624
4	17,839	19,370	0,920
5	18,588	27,482	0,676
<i>Grain Ratio Average</i>			0,670

<b>Section B3</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	11,217	27,842	0,402
2	20,283	30,650	0,661
3	16,300	22,700	0,718
4	20,200	29,000	0,696
5	22,100	42,300	0,522
<i>Grain Ratio Average</i>			0.600

<b>Section A-a</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	9,100	56,550	0,160
2	10,100	34,750	0,290
3	8,825	30,650	0,287
4	10,300	33,350	0,308
5	14,800	19,700	0,751
<i>Grain Ratio Average</i>			0,359

<b>Section A-b</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	11,457	38,041	0,301
2	15,127	39,638	0,381
3	13,229	52,368	0,252
4	16,025	59,208	0,270
5	20,817	31,251	0,666
<i>Grain Ratio Average</i>			0,374

<b>Section A-c</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	17,400	37,133	0,468
2	13,900	46,250	0,300
3	10,050	20,750	0,484
4	23,600	35,617	0,662
5	11,133	29,633	0,375
<i>Grain Ratio Average</i>			0,458

<b>Section B-a</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	10,633	50,471	0,211
2	9,897	39,064	0,253
3	9,485	25,710	0,369
4	10,933	27,457	0,398
5	13,679	34,022	0,402
<i>Grain Ratio Average</i>			0,327

<b>Section B-b</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	12,025	32,981	0,365
2	15,717	37,672	0,417
3	14,395	23,925	0,602
4	13,223	37,721	0,351
5	12,674	32,981	0,384
<i>Grain Ratio Average</i>			0,424

<b>Section B-c</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	19,653	31,251	0,629
2	11,407	32,586	0,350
3	18,147	43,332	0,419
4	14,802	31,151	0,475
5	9,922	28,942	0,343
<i>Grain Ratio Average</i>			0,443



**Lampiran I.6 Data Pengukuran Grain Ratio Spesimen 6 mm**

<b>Section A-atas</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	22,800	22,300	1,022
2	12,350	40,250	0,307
3	15,925	26,500	0,601
4	9,450	26,000	0,363
5	13,925	24,850	0,560
<i>Grain Ratio Average</i>			0,571

<b>Section A-tengah</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	11,266	29,745	0,379
2	11,707	22,165	0,528
3	16,574	30,952	0,535
4	18,221	31,501	0,578
5	8,670	26,084	0,332
<i>Grain Ratio Average</i>			0,471

<b>Section A-Bawah</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	12,031	30,453	0,395
2	11,607	30,477	0,381
3	9,211	20,368	0,452
4	15,027	29,604	0,508
5	9,735	23,081	0,422
<i>Grain Ratio Average</i>			0,432

<b>Section B1</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	14,432	23,950	0,603
2	12,442	20,156	0,617
3	14,134	26,161	0,540
4	16,042	23,979	0,669
5	21,748	26,227	0,829
<i>Grain Ratio Average</i>			0,652

<b>Section B2</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	19,170	33,897	0,566
2	8,112	29,055	0,279
3	14,253	34,171	0,417
4	11,432	24,936	0,458
5	20,618	23,913	0,862
<i>Grain Ratio Average</i>			0,517

<b>Section B3</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	18,269	24,907	0,734
2	11,561	20,422	0,566
3	12,919	18,857	0,685
4	17,267	30,410	0,568
5	14,832	21,478	0,691
<i>Grain Ratio Average</i>			0,649

<b>Section A-a</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	9,983	36,533	0,273
2	13,900	41,675	0,334
3	14,200	34,350	0,413
4	16,450	43,300	0,380
5	12,717	34,217	0,372
<i>Grain Ratio Average</i>			0,354

<b>Section A-b</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	9,550	39,475	0,242
2	14,716	37,300	0,395
3	10,175	43,600	0,233
4	22,900	42,050	0,545
5	12,850	30,200	0,425
<i>Grain Ratio Average</i>			0,368

<b>Section A-c</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	13.712	30.436	0,451
2	12.780	36.776	0,348
3	11.520	26.958	0,427
4	12.805	39.713	0,322
5	10.084	26.301	0,383
<i>Grain Ratio Average</i>			0,386

<b>Section B-a</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	17,589	22,565	0,779
2	20,268	38,407	0,528
3	17,872	25,435	0,703
4	15,825	33,398	0,474
5	15,792	24,612	0,642
<i>Grain Ratio Average</i>			0,625

<b>Section B-b</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	12,900	30,950	0,417
2	15,775	74,725	0,211
3	14,200	39,650	0,358
4	14,550	39,350	0,370
5	18,650	28,550	0,653
<i>Grain Ratio Average</i>			0,402

<b>Section B-c</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	18,821	46,993	0,400
2	10,051	15,825	0,635
3	10,696	19,919	0,537
4	13,329	18,646	0,715
5	11,020	27,956	0,394
<i>Grain Ratio Average</i>			0,536

**Lampiran I.7** Data Pengukuran *Grain Ratio* Spesimen 8 mm

<b>Section A-atas</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	14,888	44,838	0,332
2	11,278	28,033	0,402
3	12,141	37,095	0,327
4	19,494	34,606	0,563
5	12,473	54,324	0,230
<i>Grain Ratio Average</i>			0,371

<b>Section A-tengah</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	12,810	47,435	0,270
2	8,557	25,877	0,331
3	10,816	34,592	0,313
4	9,421	40,092	0,235
5	25,919	59,065	0,439
<i>Grain Ratio Average</i>			0,317

<b>Section A-Bawah</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	12,675	47,200	0,269
2	7,567	26,633	0,284
3	31,383	30,100	1,043
4	9,417	55,500	0,170
5	12,767	21,400	0,597
<i>Grain Ratio Average</i>			0,472

<b>Section B1</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	20,202	39,438	0,512
2	16,200	32,424	0,500
3	18,671	40,786	0,458
4	12,880	27,582	0,467
5	14,727	33,847	0,435
<i>Grain Ratio Average</i>			0,474

<b>Section B2</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	13,453	34,305	0,392
2	14,681	41,086	0,357
3	14,906	48,877	0,305
4	14,013	28,810	0,486
5	15,883	38,480	0,413
<i>Grain Ratio Average</i>			0,391

<b>Section B3</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	14,827	27,856	0,532
2	17,323	20,992	0,825
3	22,664	27,557	0,822
4	21,350	21,999	0,970
5	15,326	23,339	0,657
<i>Grain Ratio Average</i>			0,761

<b>Section A-a</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	11,482	48,075	0,239
2	13,229	35,528	0,372
3	15,975	38,240	0,418
4	9,311	63,501	0,147
5	18,321	88,462	0,207
<i>Grain Ratio Average</i>			0,277

<b>Section A-b</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	15,650	51,700	0,303
2	14,383	23,650	0,608
3	19,050	63,475	0,300
4	10,525	36,200	0,291
5	10,750	56,300	0,191
<i>Grain Ratio Average</i>			0,339

<b>Section A-c</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	18,067	22,025	0,820
2	14,375	28,575	0,503
3	16,075	26,700	0,602
4	17,400	26,650	0,653
5	19,200	25,050	0,766
<i>Grain Ratio Average</i>			0,669

<b>Section B-a</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	12,530	31,052	0,404
2	12,930	33,248	0,389
3	12,963	51,170	0,253
4	14,194	41,335	0,343
5	6,906	35,927	0,192
<i>Grain Ratio Average</i>			0,316

<b>Section B-b</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	9,346	33,894	0,276
2	13,408	33,421	0,401
3	13,383	26,667	0,502
4	17,595	43,265	0,407
5	12,910	52,087	0,248
<i>Grain Ratio Average</i>			0,367

<b>Section B-c</b>			
<i>Grain</i>	<i>Horizontal line Average</i>	<i>Vertical line Average</i>	<i>Ratio</i>
1	22,000	40,950	0,537
2	14,450	37,825	0,382
3	21,225	32,300	0,657
4	26,867	28,684	0,937
5	20,633	25,575	0,807
<i>Grain Ratio Average</i>			0,664



## Lampiran J Ukuran Dimensi Spesimen *Over-heating Creep*

### Lampiran J. 1 Dimensi Spesimen 4 mm

Sebelum *Overheating Creep*

W1		W2		W3		W4		W5	
A	6,29	A	6,07	A	5,97	A	6,05	A	6,28
B	6,33	B	6,06	B	6,03	B	6,09	B	5,34
C	6,19	C	5,83	C	5,79	C	5,87	C	6,24
Wave	6,27		5,986667		5,93		6,003333		5,953333

T1		T2		T3		T4		T5	
A	4,63	A	4,59	A	4,64	A	4,63	A	4,69
B	4,58	B	4,57	B	4,59	B	4,52	B	4,62
Tave	4,605		4,58		4,615		4,575		4,655
		A1	A2	A3	A4	A5			
		28,87335	27,41893	27,36695	27,46525	27,71277			

Setelah *Overheating Creep*

W1		W2		W3		W4		W5	
A	5,87	A	5,26	A	5,1	A	5,52	A	5,84
B	5,88	B	5,27	B	5,16	B	5,55	B	6,06
C	5,87	C	5,02	C	4,95	C	5,49	C	5,56
Wave	5,873333		5,183333		5,07		5,52		5,82

T1		T2		T3		T4		T5	
A	4,24	A	3,85	A	3,88	A	3,94	A	4,94
B	4,19	B	3,87	B	3,76	B	4,11	B	4,28
Tave	4,215		3,86		3,82		4,025		4,61
		A1	A2	A3	A4	A5			
		24,7561	20,00767	19,3674	22,218	26,8302			

Sebelum Tensil

W1		W2		W3		W4		W5	
A	5,96	A	5,48	A	5,4	A	5,67	A	6,07
B	5,97	B	5,55	B	5,46	B	5,8	B	6,19
C	5,93	C	5,61	C	5,37	C	5,76	C	6,11
Wave	5,953333		5,546667		5,41		5,743		6,123
T1		T2		T3		T4		T5	
A	4,2	A	3,98	A	3,96	A	4,18	A	4,37
B	4,3	B	4,07	B	4,08	B	4,36	B	4,35
Tave	4,25		4,025		4,02		4,27		4,36
		A1	A2	A3	A4	A5			
		25,30167	22,32533	21,7482	24,52403	26,69773			

## Lampiran J. 2 Dimensi Spesimen 6 mm

Sebelum *Overheating Creep*

W1		W2		W3		W4		W5	
A	6,16	A	6,08	A	6,06	A	6,16	A	6,28
B	6,21	B	6,12	B	6,1	B	6,1	B	6,19
C	6,2	C	6,16	C	6,08	C	6,08	C	6,25
W ave	6,19		6,12		6,08		6,113333		6,24
T1		T2		T3		T4		T5	
A	4,56	A	4,53	A	4,51	A	4,52	A	4,56
B	4,54	B	4,5	B	4,53	B	4,52	B	4,57
T average	4,55		4,515		4,52		4,52		4,565
		A1	A2	A3	A4	A5			
		28,1645	27,6318	27,4816	27,63227	28,4856			

Setelah *Overheating Creep*

W1		W2		W3		W4		W5	
A	6,06	A	5,82	A	5,75	A	5,41	A	6
B	6,10	B	5,74	B	5,66	B	5,58	B	5,92
C	6,03	C	5,67	C	5,62	C	5,71	C	5,86
W ave	6,063333		5,743333		5,676667		5,566667		5,926667
T1		T2		T3		T4		T5	
A	4,43	A	4,12	A	4,03	A	3,92	A	4,05
B	4,48	B	4,08	B	4,00	B	3,97	B	4,06
Tave	4,455		4,1		4,015		3,945		4,055
		A1	A2	A3	A4	A5			
		27,01215	23,54767	22,79182	21,9605	24,03263			

Sebelum Tensil

W1		W2		W3		W4		W5	
A	5,95	A	5,52	A	5,38	A	5,24	A	5,86
B	5,97	B	5,5	B	5,37	B	5,3	B	5,84
C	5,94	C	5,38	C	5,22	C	5,19	C	5,68
W ave	5,953333		5,466667		5,323333		5,243333		5,793333
T1		T2		T3		T4		T5	
A	4,14	A	3,81	A	3,76	A	3,72	A	3,94
B	4,02	B	3,77	B	3,75	B	3,76	B	3,97
Tave	4,08		3,79		3,755		3,74		3,955
		A1	A2	A3	A4	A5			
		24,2896	20,71867	19,98912	19,61007	22,91263			

### Lampiran J. 3 Dimensi Spesimen 8 mm

W1		W2		W3		W4		W5	
A	5,95	A	5,52	A	5,38	A	5,24	A	
B	5,97	B	5,5	B	5,37	B	5,3	B	
C	5,94	C	5,38	C	5,22	C	5,19	C	
W ave	5,953333		5,466667		5,323333		5,243333		5,79

T1		T2		T3		T4		T5	
A	4,14	A	3,81	A	3,76	A	3,72	A	
B	4,02	B	3,77	B	3,75	B	3,76	B	
T average	4,08		3,79		3,755		3,74		3
		A1	A2	A3	A4	A5			
		24,2896	20,71867	19,98912	19,61007	22,91263			

Sebelum *Overheating Creep*

W1		W2		W3		W4		W5	
A	6,39	A	6,23	A	6,14	A	6,10	A	6,21
B	6,33	B	6,28	B	6,07	B	6,09	B	6,25
C	6,45	C	6,12	C	6,09	C	6,05	C	6,29
W ave	6,39		6,21		6,10		6,08		6,25
T1		T2		T3		T4		T5	
A	4,58	A	4,59	A	4,56	A	4,6	A	4,57
B	4,55	B	4,6	B	4,59	B	4,6	B	4,65
T average	4,565		4,595		4,575		4,6		4,61
		A1	A2	A3	A4	A5			
		29,17035	28,53495	27,9075	27,968	28,8125			

Setelah *Overheating Creep*

W1		W2		W3		W4		W5	
A	6,28	A	5,74	A	5,12	A	4,72	A	5,58
B	6,24	B	5,78	B	5,07	B	4,70	B	5,66
C	6,26	C	5,67	C	5,02	C	4,65	C	5,53
W ave	6,26		5,73		5,07		4,69		5,59
T1		T2		T3		T4		T5	
A	4,47	A	4,38	A	3,89	A	3,62	A	4,38
B	4,49	B	4,26	B	3,63	B	3,60	B	4,32
T ave	4,48		4,32		3,76		3,61		4,35
		A1	A2	A3	A4	A5			
		28,0448	24,7536	19,0632	16,9309	24,3165			

Sebelum Tensil

W1		W2		W3		W4		W5	
A	5,98	A	5,51	A	4,89	A	4,44	A	5,1
B	5,83	B	5,52	B	4,94	B	4,54	B	5,07

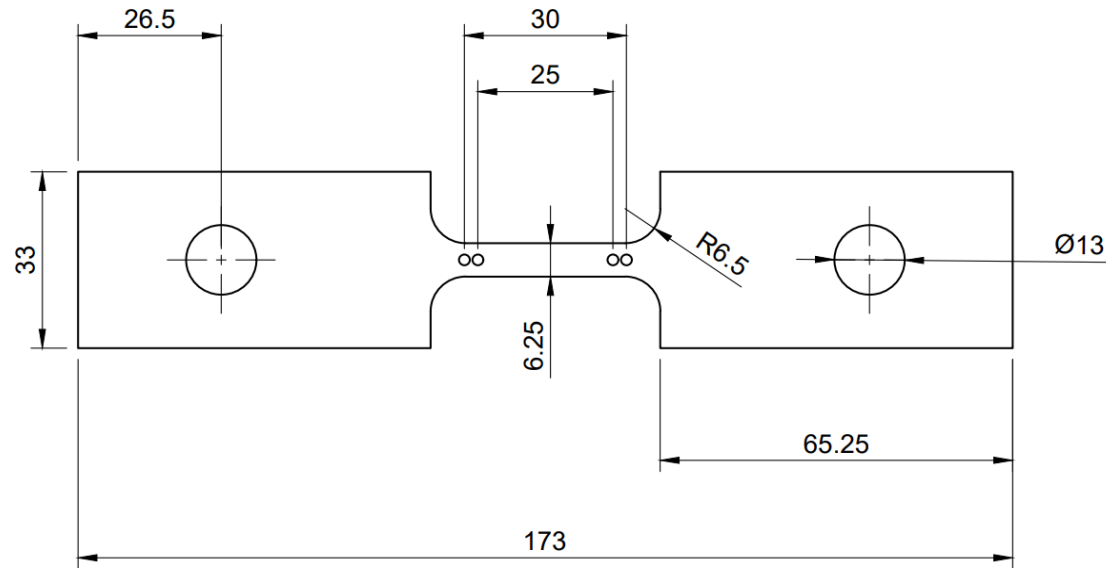
C	5,97	C	5,57	C	4,85	C	4,5	C	5,04
W ave	5,926667		5,533333		4,893333		4,493333		5,07
T1		T2		T3		T4		T5	
A	4,26	A	3,8	A	3,62	A	3,35	A	3,91
B	4,25	B	3,76	B	3,77	B	3,37	B	3,74
T ave	4,255		3,78		3,695		3,36		3,825
		A1	A2	A3	A4	A5			
		25,21797	20,916	18,08087	15,0976	19,39275			

W1		W2		W3		W4		W5	
A	5,98	A	5,51	A	4,89	A	4,44	A	
B	5,83	B	5,52	B	4,94	B	4,54	B	
C	5,97	C	5,57	C	4,85	C	4,5	C	
W ave	5,926667		5,533333		4,893333		4,493333		

T1		T2		T3		T4		T5	
A	4,26	A	3,8	A	3,62	A	3,35	A	
B	4,25	B	3,76	B	3,77	B	3,37	B	
T average	4,255		3,78		3,695		3,36		
		A1	A2	A3	A4	A5			
		25,21797	20,916	18,08087	15,0976	19,39275			

**Lampiran K Data Hasil Pengujian Spesimen *Creep-Rupture***

<i>Material/Specimen</i>		<b>GB 5310 20G</b>	<b>4</b>
<i>Machine</i>		<b>BCTM (BM)</b>	
<i>Mass/test load</i>		75,1 kgs	
<i>Temperature Set</i>		550 °C	
<i>Start to Temperature</i>	<i>Time</i>	06.55 WITA	
	<i>Date</i>	Rabu, 7 September 2022	
<i>Finish at Temperature</i>	<i>Expansion</i>	1,06 mm	
	<i>Time</i>	08.50 WITA	
	<i>Date</i>	Rabu, 7 September 2022	
	<i>Duration</i>	1 Jam 55 menit	
<i>Duration (Heating Homogen)</i>		65 menit	
<i>Start loading</i>	<i>Time</i>	10.00 WITA	
	<i>Date</i>	Rabu, 7 September 2022	
	<i>Expansion</i>	1,985 mm	
<i>Break/Fracture</i>	<i>Time</i>	13.20 WITA	
	<i>Date</i>	Jumat, 9 September 2022	
	<i>Length at Fracture (Dial)</i>	16,637 mm	



<b>MATERIAL :</b>			<b>GB 5310 20G</b>			<b>SPECIMEN :</b>		<b>4</b>							
<b>A (mm)</b>	<b>B (mm)</b>	<b>C (mm)</b>	<b>D (mm)</b>	<b>F (mm)</b>	<b>H (mm)</b>	<b>L (mm)</b>	<b>Width/W (mm)</b>		<b>Thickness/t (mm)</b>				<b>Applied For Test (mm<sup>2</sup>)</b>		
65,25	26,5	30	13	33	25	173	W <sub>1</sub> :	6,32	t <sub>1A</sub> :	4,77	t <sub>1B</sub> :	4,76	t <sub>1AVE</sub> :	4,77	30,1148
							W <sub>2</sub> :	6,11	t <sub>2A</sub> :	4,77	t <sub>2B</sub> :	4,78	t <sub>2AVE</sub> :	4,78	29,1753
							W <sub>3</sub> :	6,06	t <sub>3A</sub> :	4,74	t <sub>3B</sub> :	4,76	t <sub>3AVE</sub> :	4,75	28,7850
							W <sub>4</sub> :	6,20	t <sub>4A</sub> :	4,75	t <sub>4B</sub> :	4,77	t <sub>4AVE</sub> :	4,76	29,5120
							W <sub>5</sub> :	6,50	t <sub>5A</sub> :	4,76	t <sub>5B</sub> :	4,75	t <sub>5AVE</sub> :	4,76	30,9075
							W <sub>AVE</sub> :	<b>6,24</b>	t <sub>MIN</sub> :	<b>4,74</b>	t <sub>MIN</sub> :	<b>4,75</b>	t <sub>AVEtot</sub> :	4,75	<b>A<sub>min</sub></b>
							W <sub>MIN</sub> :	<b>6,06</b>	N/A				t <sub>MIN</sub> :	<b>4,75</b>	<b>28,7850</b>

<b>CREEP-RUPTURE DATA</b>													
<b>MATERIAL</b>		<b>GB 5310 20G</b>			<b>SPECIMEN</b>		<b>4</b>		<b>THICKNESS</b>			<b>Minimum (mm)</b>	<b>4,74</b>
<b>TEMPERATURE</b>		<b>550°C</b>			<b>LOAD/MASS</b>		<b>75,1 kg</b>					<b>Average (mm)</b>	<b>4,75</b>
<b>No.</b>	<b>Date</b>	<b>Time</b>			<b>Duration (hour)</b>	<b>Length /l (mm)</b>	<b>No.</b>	<b>Date</b>	<b>Time</b>			<b>Duration (hour)</b>	<b>Length /l (mm)</b>
		<b>Hour</b>	<b>Min.</b>	<b>Sec.</b>					<b>Hour</b>	<b>Min.</b>	<b>Sec.</b>		
1	7/09/2022 Start Load	10	00	00	--	1,98	58	--	14	45	00	--	4,06
2		10	05	00	--	2,04	59	--	14	50	00	--	4,08
3	--	10	10	00	--	2,092	60	--	14	55	00	--	4,106
4	--	10	15	00	--	2,14	61	--	15	00	00	--	4,13
5	--	10	20	00	--	2,20	62	--	15	05	00	--	4,15
6	--	10	25	00	--	2,248	63	--	15	10	00	--	4,17
7	--	10	30	00	--	2,30	64	--	15	15	00	--	4,189
8	--	10	35	00	--	2,35	65	--	15	20	00	--	4,21
9	--	10	40	00	--	2,40	66	--	15	25	00	--	4,23
10	--	10	45	00	--	2,445	67	--	15	30	00	--	4,248
11	--	10	50	00	--	2,49	68	--	15	35	00	--	4,267
12	--	10	55	00	--	2,54	69	--	15	40	00	--	4,29
13	--	11	00	00	--	2,58	70	--	15	45	00	--	4,30
14	--	11	05	00	--	2,630	71	--	15	50	00	--	4,32
15	--	11	10	00	--	2,675	72	--	15	55	00	--	4,339
16	--	11	15	00	--	2,719	73	--	16	00	00	--	4,36
17	--	11	20	00	--	2,76	74	--	16	05	00	--	4,37
18	--	11	25	00	--	2,805	75	--	16	10	00	--	4,39
19	--	11	30	00	--	2,85	76	--	16	15	00	--	4,406
20	--	11	35	00	--	2,889	77	--	16	20	00	--	4,42
21	--	11	40	00	--	2,93	78	--	16	25	00	--	4,44
22	--	11	45	00	--	2,97	79	--	16	30	00	--	4,45
23	--	11	50	00	--	3,009	80	--	16	35	00	--	4,468
24	--	11	55	00	--	3,048	81	--	16	40	00	--	4,48
25	--	12	00	00	--	3,087	82	--	16	45	00	--	4,50
26	--	12	05	00	--	3,12	83	--	16	50	00	--	4,51
27	--	12	10	00	--	3,16	84	--	16	55	00	--	4,53
28	--	12	15	00	--	3,20	85	--	17	00	00	--	4,540
29	--	12	20	00	--	3,23	86	--	17	05	00	--	4,55
30	--	12	25	00	--	3,270	87	--	17	10	00	--	4,56
31	--	12	30	00	--	3,30	88	--	17	15	00	--	4,57
32	--	12	35	00	--	3,34	89	--	17	20	00	--	4,575

33	--	12	40	00	--	3,37	90	--	17	25	00	--	4,583
34	--	12	45	00	--	3,407	91	--	17	30	00	--	4,59
35	--	12	50	00	--	3,439	92	--	17	35	00	--	4,597
36	--	12	55	00	--	3,47	93	--	17	40	00	--	4,608
37	--	13	00	00	--	3,50	94	--	17	45	00	--	4,612
38	--	13	05	00	--	3,53	95	--	17	50	00	--	4,624
39	--	13	10	00	--	3,57	96	--	17	55	00	--	4,628
40	--	13	15	00	--	3,60	97	--	18	00	00	--	4,638
41	--	13	20	00	--	3,63	98	--	18	05	00	--	4,644
42		13	25	00	--	3,65	99	--	18	10	00	--	4,647
43	--	13	30	00	--	3,684	100	--	18	15	00	--	4,65
44	--	13	35	00	--	3,712	101	--	18	20	00	--	4,658
45	--	13	40	00	--	3,740	102	--	18	25	00	--	4,668
46	--	13	45	00	--	3,77	103	--	18	30	00	--	4,67
47	--	13	50	00	--	3,79	104	--	18	35	00	--	4,68
48	--	13	55	00	--	3,82	105	--	18	40	00	--	4,69
49	--	14	00	00	--	3,847	106	--	18	45	00	--	4,705
50	--	14	05	00	--	3,87	107	--	18	50	00	--	4,708
51	--	14	10	00	--	3,90	108	--	18	55	00	--	4,71
52	--	14	15	00	--	3,92	109	--	19	00	00	--	4,715
53	--	14	20	00	--	3,95	110	--	19	05	00	--	4,718
54	--	14	25	00	--	3,97	111	--	19	10	00	--	4,723
55	--	14	30	00	--	3,994	112	--	19	15	00	--	4,728
56	--	14	35	00	--	4,02	113	--	19	20	00	--	4,73
57	--	14	40	00	--	4,04	114	--	19	25	00	--	4,739



<b>CREEP-RUPTURE DATA</b>													
<b>MATERIAL</b>		<b>GB 5310 20G</b>			<b>SPECIMEN</b>		<b>4</b>		<b>THICKNESS</b>			<b>Minimum (mm)</b>	<b>4,74</b>
<b>TEMPERATURE</b>		<b>550°C</b>			<b>LOAD/MASS</b>		<b>75,1 kg</b>					<b>Average (mm)</b>	<b>4,75</b>
<b>No.</b>	<b>Date</b>	<b>Time</b>			<b>Duration (hour)</b>	<b>Length /l (mm)</b>	<b>No.</b>	<b>Date</b>	<b>Time</b>			<b>Duration (hour)</b>	<b>Length /l (mm)</b>
		<b>Hour</b>	<b>Min.</b>	<b>Sec.</b>					<b>Hour</b>	<b>Min.</b>	<b>Sec.</b>		
115	--	19	30	00	--	4,749	172	--	00	15	00	--	5,022
116	--	19	35	00	--	4,75	173	--	00	20	00	--	5,022
117	--	19	40	00	--	4,759	174	--	00	25	00	--	5,03
118	--	19	45	00	--	4,765	175	--	00	30	00	--	5,034
119	--	19	50	00	--	4,77	176	--	00	35	00	--	5,043
120	--	19	55	00	--	4,774	177	--	00	40	00	--	5,045
121	--	20	00	00	--	4,783	178	--	00	45	00	--	5,05
122	--	20	05	00	--	4,786	179	--	00	50	00	--	5,054
123	--	20	10	00	--	4,795	180	--	00	55	00	--	5,06
124	--	20	15	00	--	4,798	181	--	01	00	00	--	5,065
125	--	20	20	00	--	4,8	182	--	01	05	00	--	5,068
126	--	20	25	00	--	4,804	183	--	01	10	00	--	5,073
127	--	20	30	00	--	4,809	184	--	01	15	00	--	5,078
128	--	20	35	00	--	4,813	185	--	01	20	00	--	5,085
129	--	20	40	00	--	4,815	186	--	01	25	00	--	5,09
130	--	20	45	00	--	4,819	187	--	01	30	00	--	5,095
131	--	20	50	00	--	4,822	188	--	01	35	00	--	5,097
132	--	20	55	00	--	4,83	189	--	01	40	00	--	5,1
133	--	21	00	00	--	4,835	190	--	01	45	00	--	5,105
134	--	21	05	00	--	4,835	191	--	01	50	00	--	5,11
135	--	21	10	00	--	4,842	192	--	01	55	00	--	5,115
136	--	21	15	00	--	4,85	193	--	02	00	00	--	5,12
137	--	21	20	00	--	4,855	194	--	02	05	00	--	5,124
138	--	21	25	00	--	4,868	195	--	02	10	00	--	5,126
139	--	21	30	00	--	4,868	196	--	02	15	00	--	5,13
140	--	21	35	00	--	4,869	197	--	02	20	00	--	5,133
141	--	21	40	00	--	4,875	198	--	02	25	00	--	5,136
142	--	21	45	00	--	4,897	199	--	02	30	00	--	5,14
143	--	21	50	00	--	4,889	200	--	02	35	00	--	5,144
144	--	21	55	00	--	4,89	201	--	02	40	00	--	5,146
145	--	22	00	00	--	4,895	202	--	02	45	00	--	5,148
146	--	22	05	00	--	4,9	203	--	02	50	00	--	5,15
147	--	22	10	00	--	4,9	204	--	02	55	00	--	5,155
148	--	22	15	00	--	4,905	205	--	03	00	00	--	5,157
149	--	22	20	00	--	4,913	206	--	03	05	00	--	5,16

150	--	22	25	00	--	4,92	207	--	03	10	00	--	5,165
151	--	22	30	00	--	4,92	208	--	03	15	00	--	5,175
152	--	22	35	00	--	4,927	209	--	03	20	00	--	5,176
153	--	22	40	00	--	4,932	210	--	03	25	00	--	5,18
154	--	22	45	00	--	4,933	211	--	03	30	00	--	5,182
155	--	22	50	00	--	4,952	212	--	03	35	00	--	5,188
156	--	22	55	00	--	4,945	213	--	03	40	00	--	5,193
157	--	23	00	00	--	4,95	214	--	03	45	00	--	5,197
158	--	23	05	00	--	4,956	215	--	03	50	00	--	5,2
159	--	23	10	00	--	4,963	216	--	03	55	00	--	5,205
160	--	23	15	00	--	4,967	217	--	04	00	00	--	5,21
161	--	23	20	00	--	4,97	218	--	04	05	00	--	5,216
162	--	23	25	00	--	4,974	219	--	04	10	00	--	5,218
163	--	23	30	00	--	4,98	220	--	04	15	00	--	5,22
164	--	23	35	00	--	4,984	221	--	04	20	00	--	5,226
165	--	23	40	00	--	4,992	222	--	04	25	00	--	5,228
166	--	23	45	00	--	4,994	223	--	04	30	00	--	5,234
167	--	23	50	00	--	4,999	224	--	04	35	00	--	5,24
168	--	23	55	00	--	5,006	225	--	04	40	00	--	5,242
169	08/09/2022	00	00	00	--	5,01	226	--	04	45	00	--	5,247
170	--	00	05	00	--	5,01	227	--	04	50	00	--	5,252
171	--	00	10	00	--	5,018	228	--	04	55	00	--	5,26

<b>CREEP-RUPTURE DATA</b>														
<b>MATERIAL</b>		<b>GB 5310 20G</b>			<b>SPECIMEN</b>		<b>4</b>		<b>THICKNESS</b>			<b>Minimum (mm)</b>		<b>4,74</b>
<b>TEMPERATURE</b>		<b>550°C</b>			<b>LOAD/MASS</b>		<b>75,1 kg</b>					<b>Average (mm)</b>		<b>4,75</b>
<b>No.</b>	<b>Date</b>	<b>Time</b>			<b>Duration (hour)</b>	<b>Length /l (mm)</b>	<b>No.</b>	<b>Date</b>	<b>Time</b>			<b>Duration (hour)</b>	<b>Length /l (mm)</b>	
		<b>Hour</b>	<b>Min.</b>	<b>Sec.</b>					<b>Hour</b>	<b>Min.</b>	<b>Sec.</b>			
229	--	05	00	00	--	5,266	286	--	09	45	00	--	5,557	
230	--	05	05	00	--	5,27	287	--	09	50	00	--	5,564	
231	--	05	10	00	--	5,27	288	--	09	55	00	--	5,57	
232	--	05	15	00	--	5,28	289	--	10	00	00	--	5,58	
233	--	05	20	00	--	5,288	290	--	10	05	00	--	5,585	
234	--	05	25	00	--	5,29	291	--	10	10	00	--	5,59	
235	--	05	30	00	--	5,294	292	--	10	15	00	--	5,596	
236	--	05	35	00	--	5,3	293	--	10	20	00	--	5,6	
237	--	05	40	00	--	5,302	294	--	10	25	00	--	5,608	
238	--	05	45	00	--	5,308	295	--	10	30	00	--	5,612	
239	--	05	50	00	--	5,313	296	--	10	35	00	--	5,62	
240	--	05	55	00	--	5,318	297	--	10	40	00	--	5,626	
241	--	06	00	00	--	5,322	298	--	10	45	00	--	5,63	
242	--	06	05	00	--	5,328	299	--	10	50	00	--	5,638	
243	--	06	10	00	--	5,331	300	--	10	55	00	--	5,64	
244	--	06	15	00	--	5,339	301	--	11	00	00	--	5,648	
245	--	06	20	00	--	5,349	302	--	11	05	00	--	5,65	
246	--	06	25	00	--	5,35	303	--	11	10	00	--	5,657	
247	--	06	30	00	--	5,359	304	--	11	15	00	--	5,66	
248	--	06	35	00	--	5,359	305	--	11	20	00	--	5,67	
249	--	06	40	00	--	5,36	306	--	11	25	00	--	5,676	
250	--	06	45	00	--	5,365	307	--	11	30	00	--	5,682	
251	--	06	50	00	--	5,37	308	--	11	35	00	--	5,69	
252	--	06	55	00	--	5,375	309	--	11	40	00	--	5,698	
253	--	07	00	00	--	5,381	310	--	11	45	00	--	5,702	
254	--	07	05	00	--	5,389	311	--	11	50	00	--	5,708	
255	--	07	10	00	--	5,399	312	--	11	55	00	--	5,713	
256	--	07	15	00	--	5,4	313	--	12	00	00	--	5,718	
257	--	07	20	00	--	5,405	314	--	12	05	00	--	5,723	
258	--	07	25	00	--	5,41	315	--	12	10	00	--	5,73	
259	--	07	30	00	--	5,415	316	--	12	15	00	--	5,734	
260	--	07	35	00	--	5,419	317	--	12	20	00	--	5,74	
261	--	07	40	00	--	5,425	318	--	12	25	00	--	5,748	
262	--	07	45	00	--	5,43	319	--	12	30	00	--	5,753	
263	--	07	50	00	--	5,439	320	--	12	35	00	--	5,758	

264	--	07	55	00	--	5,445	321	--	12	40	00	--	5,763
265	--	08	00	00	--	5,45	322	--	12	45	00	--	5,77
266	--	08	05	00	--	5,455	323	--	12	50	00	--	5,775
267	--	08	10	00	--	5,46	324	--	12	55	00	--	5,78
268	--	08	15	00	--	5,462	325	--	13	00	00	--	5,79
269	--	08	20	00	--	5,467	326	--	13	05	00	--	5,792
270	--	08	25	00	--	5,471	327	--	13	10	00	--	5,795
271	--	08	30	00	--	5,475	328	--	13	15	00	--	5,802
272	--	08	35	00	--	5,48	329	--	13	20	00	--	5,807
273	--	08	40	00	--	5,485	330	--	13	25	00	--	5,812
274	--	08	45	00	--	5,49	331	--	13	30	00	--	5,818
275	--	08	50	00	--	5,495	332	--	13	35	00	--	5,823
276	--	08	55	00	--	5,502	333	--	13	40	00	--	5,83
277	--	09	00	00	--	5,51	334	--	13	45	00	--	5,839
278	--	09	05	00	--	5,511	335	--	13	50	00	--	5,845
279	--	09	10	00	--	5,52	336	--	13	55	00	--	5,85
280	--	09	15	00	--	5,53	337	--	14	00	00	--	5,858
281	--	09	20	00	--	5,534	338	--	14	05	00	--	5,87
282	--	09	25	00	--	5,538	339	--	14	10	00	--	5,876
283	--	09	30	00	--	5,54	340	--	14	15	00	--	5,882
284	--	09	35	00	--	5,548	341	--	14	20	00	--	5,888
285	--	09	40	00	--	5,55	342	--	14	25	00	--	5,894

<b>CREEP-RUPTURE DATA</b>														
<b>MATERIAL</b>		<b>GB 5310 20G</b>			<b>SPECIMEN</b>		<b>4</b>		<b>THICKNESS</b>			<b>Minimum (mm)</b>		<b>4,74</b>
<b>TEMPERATURE</b>		<b>550°C</b>			<b>LOAD/MASS</b>		<b>75,1 kg</b>					<b>Average (mm)</b>		<b>4,75</b>
<b>No.</b>	<b>Date</b>	<b>Time</b>			<b>Duration (hour)</b>	<b>Length /l (mm)</b>	<b>No.</b>	<b>Date</b>	<b>Time</b>			<b>Duration (hour)</b>	<b>Length /l (mm)</b>	
		<b>Hour</b>	<b>Min.</b>	<b>Sec.</b>					<b>Hour</b>	<b>Min.</b>	<b>Sec.</b>			
343	--	14	30	00	--	5,9	400	--	19	15	00	--	6,31	
344	--	14	35	00	--	5,908	401	--	19	20	00	--	6,318	
345	--	14	40	00	--	5,913	402	--	19	25	00	--	6,322	
346	--	14	45	00	--	5,92	403	--	19	30	00	--	6,33	
347	--	14	50	00	--	5,934	404	--	19	35	00	--	6,34	
348	--	14	55	00	--	5,94	405	--	19	40	00	--	6,355	
349	--	15	00	00	--	5,95	406	--	19	45	00	--	6,36	
350	--	15	05	00	--	5,958	407	--	19	50	00	--	6,367	
351	--	15	10	00	--	5,963	408	--	19	55	00	--	6,375	
352	--	15	15	00	--	5,97	409	--	20	00	00	--	6,383	
353	--	15	20	00	--	5,974	410	--	20	05	00	--	6,39	
354	--	15	25	00	--	5,98	411	--	20	10	00	--	6,396	
355	--	15	30	00	--	5,99	412	--	20	15	00	--	6,4	
356	--	15	35	00	--	5,997	413	--	20	20	00	--	6,412	
357	--	15	40	00	--	6,003	414	--	20	25	00	--	6,42	
358	--	15	45	00	--	6,01	415	--	20	30	00	--	6,429	
359	--	15	50	00	--	6,022	416	--	20	35	00	--	6,438	
360	--	15	55	00	--	6,03	417	--	20	40	00	--	6,45	
361	--	16	00	00	--	6,04	418	--	20	45	00	--	6,463	
362	--	16	05	00	--	6,045	419	--	20	50	00	--	6,472	
363	--	16	10	00	--	6,05	420	--	20	55	00	--	6,48	
364	--	16	15	00	--	6,062	421	--	21	00	00	--	6,5	
365	--	16	20	00	--	6,068	422	--	21	05	00	--	6,5	
366	--	16	25	00	--	6,074	423	--	21	10	00	--	6,502	
367	--	16	30	00	--	6,082	424	--	21	15	00	--	6,512	
368	--	16	35	00	--	6,093	425	--	21	20	00	--	6,528	
369	--	16	40	00	--	6,1	426	--	21	25	00	--	6,54	
370	--	16	45	00	--	6,107	427	--	21	30	00	--	6,548	
371	--	16	50	00	--	6,12	428	--	21	35	00	--	6,56	
372	--	16	55	00	--	6,13	429	--	21	40	00	--	6,568	
373	--	17	00	00	--	6,136	430	--	21	45	00	--	6,575	
374	--	17	05	00	--	6,14	431	--	21	50	00	--	6,583	
375	--	17	10	00	--	6,149	432	--	21	55	00	--	6,59	
376	--	17	15	00	--	6,15	433	--	22	00	00	--	6,605	
377	--	17	20	00	--	6,16	434	--	22	05	00	--	6,613	

378	--	17	25	00	--	6,17	435	--	22	10	00	--	6,623
379	--	17	30	00	--	6,176	436	--	22	15	00	--	6,63
380	--	17	35	00	--	6,188	437	--	22	20	00	--	6,643
381	--	17	40	00	--	6,2	438	--	22	25	00	--	6,65
382	--	17	45	00	--	6,21	439	--	22	30	00	--	6,658
383	--	17	50	00	--	6,215	440	--	22	35	00	--	6,668
384	--	17	55	00	--	6,223	441	--	22	40	00	--	6,68
385	--	18	00	00	--	6,23	442	--	22	45	00	--	6,692
386	--	18	05	00	--	6,235	443	--	22	50	00	--	6,7
387	--	18	10	00	--	6,239	444	--	22	55	00	--	6,718
388	--	18	15	00	--	6,239	445	--	23	00	00	--	6,72
389	--	18	20	00	--	6,245	446	--	23	05	00	--	6,73
390	--	18	25	00	--	6,25	447	--	23	10	00	--	6,742
391	--	18	30	00	--	6,257	448	--	23	15	00	--	6,75
392	--	18	35	00	--	6,27	449	--	23	20	00	--	6,763
393	--	18	40	00	--	6,275	450	--	23	25	00	--	6,775
394	--	18	45	00	--	6,283	451	--	23	30	00	--	6,784
395	--	18	50	00	--	6,293	452	--	23	35	00	--	6,798
396	--	18	55	00	--	6,305	453	--	23	40	00	--	6,805
397	--	19	00	00	--	6,306	454	--	23	45	00	--	6,817
398	--	19	05	00	--	6,308	455	--	23	50	00	--	6,821
399	--	19	10	00	--	6,31	456	--	23	55	00	--	6,834

<b>CREEP-RUPTURE DATA</b>													
<b>MATERIAL</b>		<b>GB 5310 20G</b>			<b>SPECIMEN</b>		<b>4</b>		<b>THICKNESS</b>			<b>Minimum (mm)</b>	<b>4,74</b>
<b>TEMPERATURE</b>		<b>550°C</b>			<b>LOAD/MASS</b>		<b>75,1 kg</b>					<b>Average (mm)</b>	<b>4,75</b>
<b>No.</b>	<b>Date</b>	<b>Time</b>			<b>Duration (hour)</b>	<b>Length /l (mm)</b>	<b>No.</b>	<b>Date</b>	<b>Time</b>			<b>Duration (hour)</b>	<b>Length /l (mm)</b>
		<b>Hour</b>	<b>Min.</b>	<b>Sec.</b>					<b>Hour</b>	<b>Min.</b>	<b>Sec.</b>		
457	09/09/2022	00	00	00	--	6,848	514	--	04	45	00	--	7,613
458	--	00	05	00	--	6,856	515	--	04	50	00	--	7,628
459	--	00	10	00	--	6,87	516	--	04	55	00	--	7,64
460	--	00	15	00	--	6,883	517	--	05	00	00	--	7,652
461	--	00	20	00	--	6,89	518	--	05	05	00	--	7,667
462	--	00	25	00	--	6,903	519	--	05	10	00	--	7,69
463	--	00	30	00	--	6,916	520	--	05	15	00	--	7,703
464	--	00	35	00	--	6,928	521	--	05	20	00	--	7,72
465	--	00	40	00	--	6,942	522	--	05	25	00	--	7,732
466	--	00	45	00	--	6,954	523	--	05	30	00	--	7,754
467	--	00	50	00	--	6,965	524	--	05	35	00	--	7,775
468	--	00	55	00	--	6,972	525	--	05	40	00	--	7,793
469	--	01	00	00	--	6,984	526	--	05	45	00	--	7,808
470	--	01	05	00	--	6,995	527	--	05	50	00	--	7,825
471	--	01	10	00	--	7,018	528	--	05	55	00	--	7,842
472	--	01	15	00	--	7,02	529	--	06	00	00	--	7,86
473	--	01	20	00	--	7,033	530	--	06	05	00	--	7,88
474	--	01	25	00	--	7,045	531	--	06	10	00	--	7,895
475	--	01	30	00	--	7,055	532	--	06	15	00	--	7,912
476	--	01	35	00	--	7,07	533	--	06	20	00	--	7,933
477	--	01	40	00	--	7,08	534	--	06	25	00	--	7,95
478	--	01	45	00	--	7,092	535	--	06	30	00	--	7,967
479	--	01	50	00	--	7,107	536	--	06	35	00	--	7,985
480	--	01	55	00	--	7,12	537	--	06	40	00	--	8,005
481	--	02	00	00	--	7,145	538	--	06	45	00	--	8,024
482	--	02	05	00	--	7,147	539	--	06	50	00	--	8,048
483	--	02	10	00	--	7,158	540	--	06	55	00	--	8,062
484	--	02	15	00	--	7,173	541	--	07	00	00	--	8,078
485	--	02	20	00	--	7,186	542	--	07	05	00	--	8,1
486	--	02	25	00	--	7,2	543	--	07	10	00	--	8,127
487	--	02	30	00	--	7,213	544	--	07	15	00	--	8,143
488	--	02	35	00	--	7,224	545	--	07	20	00	--	8,163
489	--	02	40	00	--	7,238	546	--	07	25	00	--	8,185
490	--	02	45	00	--	7,25	547	--	07	30	00	--	8,21
491	--	02	50	00	--	7,27	548	--	07	35	00	--	8,225

<b>492</b>	--	02	55	00	--	7,282	<b>549</b>	--	07	40	00	--	8,244
<b>493</b>	--	03	00	00	--	7,296	<b>550</b>	--	07	45	00	--	8,26
<b>494</b>	--	03	05	00	--	7,308	<b>551</b>	--	07	50	00	--	8,28
<b>495</b>	--	03	10	00	--	7,32	<b>552</b>	--	07	55	00	--	8,302
<b>496</b>	--	03	15	00	--	7,336	<b>553</b>	--	08	00	00	--	8,32
<b>497</b>	--	03	20	00	--	7,35	<b>554</b>	--	08	05	00	--	8,343
<b>498</b>	--	03	25	00	--	7,367	<b>555</b>	--	08	10	00	--	8,366
<b>499</b>	--	03	30	00	--	7,378	<b>556</b>	--	08	15	00	--	8,385
<b>500</b>	--	03	35	00	--	7,392	<b>557</b>	--	08	20	00	--	8,402
<b>501</b>	--	03	40	00	--	7,403	<b>558</b>	--	08	25	00	--	8,428
<b>502</b>	--	03	45	00	--	7,419	<b>559</b>	--	08	30	00	--	8,45
<b>503</b>	--	03	50	00	--	7,433	<b>560</b>	--	08	35	00	--	8,472
<b>504</b>	--	03	55	00	--	7,452	<b>561</b>	--	08	40	00	--	8,494
<b>505</b>	--	04	00	00	--	7,467	<b>562</b>	--	08	45	00	--	8,52
<b>506</b>	--	04	05	00	--	7,482	<b>563</b>	--	08	50	00	--	8,546
<b>507</b>	--	04	10	00	--	7,498	<b>564</b>	--	08	55	00	--	8,56
<b>508</b>	--	04	15	00	--	7,513	<b>565</b>	--	09	00	00	--	8,582
<b>509</b>	--	04	20	00	--	7,542	<b>566</b>	--	09	05	00	--	8,606
<b>510</b>	--	04	25	00	--	7,55	<b>567</b>	--	09	10	00	--	8,633
<b>511</b>	--	04	30	00	--	7,563	<b>568</b>	--	09	15	00	--	8,65
<b>512</b>	--	04	35	00	--	7,58	<b>569</b>	--	09	20	00	--	8,68
<b>513</b>	--	04	40	00	--	7,594	<b>570</b>	--	09	25	00	--	8,7



<b>CREEP-RUPTURE DATA</b>														
<b>MATERIAL</b>		<b>GB 5310 20G</b>			<b>SPECIMEN</b>		<b>4</b>		<b>THICKNESS</b>			<b>Minimum (mm)</b>		<b>4,74</b>
<b>TEMPERATURE</b>		<b>550°C</b>			<b>LOAD/MASS</b>		<b>75,1 kg</b>					<b>Average (mm)</b>		<b>4,75</b>
<b>No.</b>	<b>Date</b>	<b>Time</b>			<b>Duration (hour)</b>	<b>Length /l (mm)</b>	<b>No.</b>	<b>Date</b>	<b>Time</b>			<b>Duration (hour)</b>	<b>Length /l (mm)</b>	
		<b>Hour</b>	<b>Min.</b>	<b>Sec.</b>					<b>Hour</b>	<b>Min.</b>	<b>Sec.</b>			
571	--	09	30	00	--	8,723	628	--	14	15	00	--	10,542	
572	--	09	35	00	--	8,75	629	--	14	20	00	--	10,583	
573	--	09	40	00	--	8,775	630	--	14	25	00	--	10,63	
574	--	09	45	00	--	8,8	631	--	14	30	00		10,678	
575	--	09	50	00	--	8,82	632	--	14	35	00		10,718	
576	--	09	55	00	--	8,85	633	--	14	40	00		10,76	
577	--	10	00	00	--	8,872	634	--	14	45	00		10,808	
578	--	10	05	00	--	8,9	635	--	14	50	00		10,865	
579	--	10	10	00	--	8,92	636	--	14	55	00		10,9	
580	--	10	15	00	--	8,945	637	--	15	00	00		10,954	
581	--	10	20	00	--	8,974	638	--	15	05	00		11	
582	--	10	25	00	--	9,002	639	--	15	10	00		11,055	
583	--	10	30	00	--	9,03	640	--	15	15	00		11,1	
584	--	10	35	00	--	9,056	641	--	15	20	00		11,16	
585	--	10	40	00	--	9,08	642	--	15	25	00		11,21	
586	--	10	45	00	--	9,11	643	--	15	30	00		11,26	
587	--	10	50	00	--	9,14	644	--	15	35	00		11,32	
588	--	10	55	00	--	9,16	645	--	15	40	00		11,38	
589	--	11	00	00	--	9,194	646	--	15	45	00		11,438	
590	--	11	05	00	--	9,218	647	--	15	50	00		11,5	
591	--	11	10	00	--	9,248	648	--	15	55	00		11,565	
592	--	11	15	00	--	9,278	649	--	16	00	00		11,63	
593	--	11	20	00	--	9,31	650	--	16	05	00		11,69	
594	--	11	25	00	--	9,36	651	--	16	10	00		11,75	
595	--	11	30	00	--	9,37	652	--	16	15	00		11,823	
596	--	11	35	00	--	9,395	653	--	16	20	00		11,895	
597	--	11	40	00	--	9,43	654	--	16	25	00		11,975	
598	--	11	45	00	--	9,46	655	--	16	30	00		12,047	
599	--	11	50	00	--	9,484	656	--	16	35	00		12,114	
600	--	11	55	00	--	9,517	657	--	16	40	00		12,184	
601	--	12	00	00	--	9,55	658	--	16	45	00		12,264	
602	--	12	05	00	--	9,58	659	--	16	50	00		12,345	
603	--	12	10	00	--	9,61	660	--	16	55	00		12,427	
604	--	12	15	00	--	9,648	661	--	17	00	00		12,515	
605	--	12	20	00	--	9,678	662	--	17	05	00		12,6	

606	--	12	25	00	--	9,713	663	--	17	10	00		12,69
607	--	12	30	00	--	9,74	664	--	17	15	00		12,786
608	--	12	35	00	--	9,78	665	--	17	20	00		12,886
609	--	12	40	00	--	9,813	666	--	17	25	00		12,987
610	--	12	45	00	--	9,842	667	--	17	30	00		13,09
611	--	12	50	00	--	9,88	668	--	17	35	00		13,21
612	--	12	55	00	--	9,91	669	--	17	40	00		13,32
613	--	13	00	00	--	9,952	670	--	17	45	00		13,453
614	--	13	05	00	--	9,982	671	--	17	50	00		13,58
615	--	13	10	00	--	10,028	672	--	17	55	00		13,717
616	--	13	15	00	--	10,064	673	--	18	00	00		13,87
617	--	13	20	00	--	10,1	674	--	18	05	00		14,027
618	--	13	25	00	--	10,135	675	--	18	10	00		14,21
619	--	13	30	00	--	10,172	676	--	18	15	00		14,4
620	--	13	35	00	--	10,21	677	--	18	20	00	--	14,62
621	--	13	40	00	--	10,252	678	--	18	25	00	--	14,86
622	--	13	45	00	--	10,295	679	--	18	30	00	--	15,09
623	--	13	50	00	--	10,335	680	--	18	35	00	--	15,48
624	--	13	55	00	--	10,374	681	--	18	40	00	--	15,918
625	--	14	00	00	--	10,417	682	Fracture	18	45	00	--	16,637
626	--	14	05	00	--	10,456	683	--					
627	--	14	10	00	--	10,49	684	--					
<b>TOTAL LENGTH</b>												<b>16,637</b>	
<b>TOTAL TIME CREEP-RUPTURE (HOURS)</b>												<b>55 Hours 45 minute</b>	

**Lampiran L Data Laju Creep**

<i>Section</i>	<i>Displacement Awal</i>	<i>Displacement Akhir</i>	<i>Total <math>d\varepsilon</math></i>	<i>Waktu Awal</i>	<i>Waktu Akhir</i>	<i>Total <math>dt</math></i>	<i>Laju Creep <math>d\varepsilon/dt</math></i>
1	4,954	5,165	0,211	455	710	255	0,0008
2	5,175	5,415	0,240	715	970	255	0,0009
3	5,419	5,708	0,289	975	1230	255	0,0011
4	5,713	6,050	0,337	1235	1490	255	0,0013
5	6,062	6,429	0,367	195	450	255	0,0014
						<i><math>d\varepsilon/dt</math> Ave</i>	0,0011