

Sandberg LLP

40 Grosvenor Gardens LONDON SW1W 0EB
Tel: 020 7565 7000 Fax: 020 7565 7100
email: ho@sandberg.co.uk web: www.sandberg.co.uk

Testing Report

1.Customer : Buttonfix
2.Operator : NAF/AT
3.Lot No. : 50KN Compression
4.Date : 2019/6/28
5.Temperature: 22C
6.Test Style : 2. Compression
7.Speed : Single Speed V1= 2.00mm/min,

8.Specimen : MZ 618 A
9.Spec. Diam. : 10.000mm
10.Spec.Area : 78.539816mm²
11.Total Energy: 73.863J
12.Young's Modu. : Ym1=1000.852 , Ym2=0.000 , Ym3=0.000N/mm²
13.Notice :
14.Filename: D:\Report\50KN Compression\MZ 618 A Vertical shear.tst

	Load(kN)	Compress(mm)	Stress(N/mm ²)	Strain(%)
Peak	12.556	10.439	159.86	20.88
End	8.324	12.742	105.98	25.48
Ys1	0.000	0.000	0.00	0.00
Lower Yield	0.000	0.000	0.00	0.00



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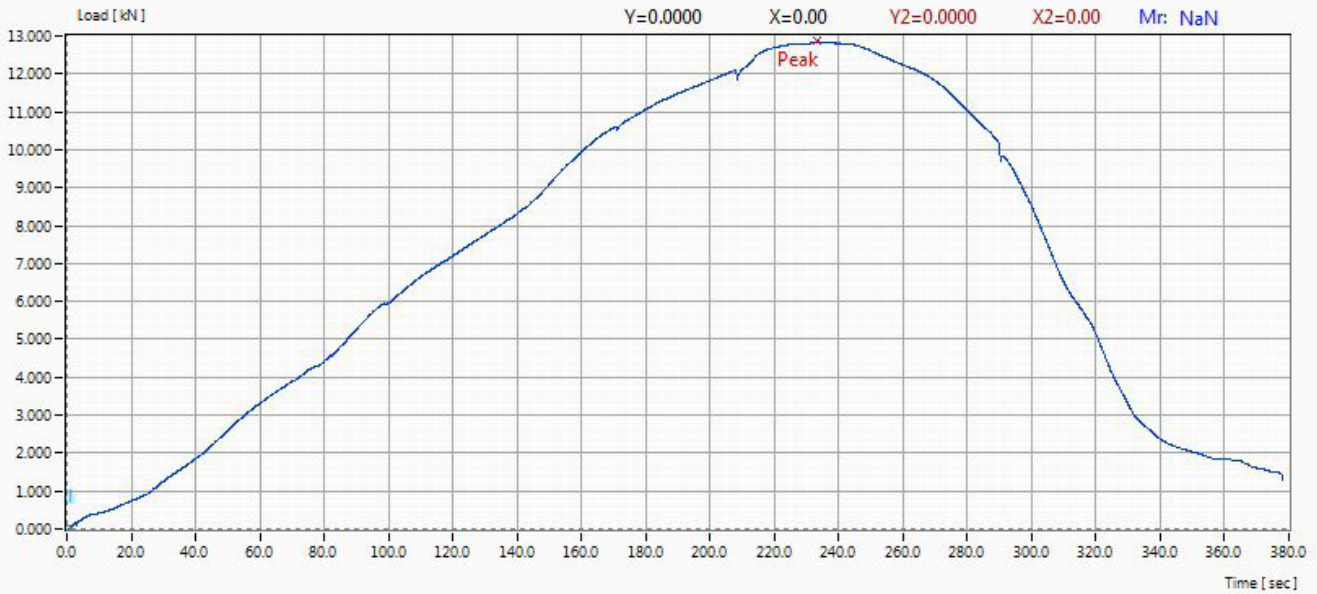
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6.Test Style : 2. Compression
7.Speed : Single Speed V1= 3.00mm/min,

8.Specimen : MZ 618 B
9.Spec. Diam. : 10.000mm
10.Spec.Area : 78.539816mm²
11.Total Energy: 81.300J
12.Young's Modu. : Ym1=880.813 , Ym2=0.000 , Ym3=0.000N/mm²
13.Notice :
14.Filename: D:\Report\50KN Compression\MZ 618 B Vertical Shear.tst

	Load(kN)	Compress(mm)	Stress(N/mm ²)	Strain(%)
Peak	12.854	11.758	163.66	23.52
End	10.140	14.376	129.11	28.75
Ys1	0.000	0.000	0.00	0.00
Lower Yield	0.000	0.000	0.00	0.00



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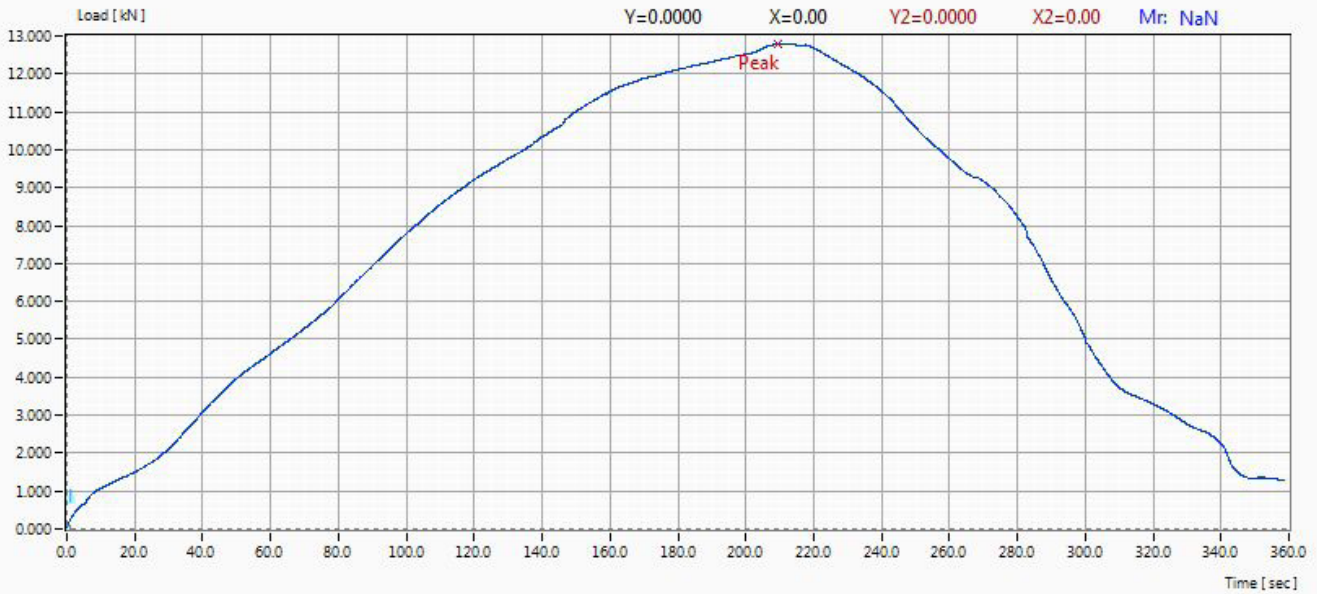
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7.Speed : Single Speed V1= 3.00mm/min,

8.Specimen : MZ 618 C
9.Spec. Diam. : 10.000mm
10.Spec.Area : 78.539816mm²
11.Total Energy: 77.733J
12.Young's Modu. : Ym1=979.580 , Ym2=0.000 , Ym3=0.000N/mm²
13.Notice :
14.FileName: D:\Report\50KN Compression\MZ 618 C Vertical Shear.tst

	Load(kN)	Compress(mm)	Stress(N/mm ²)	Strain(%)
Peak	12.785	10.403	162.78	20.81
End	7.940	14.193	101.09	28.39
Ys1	0.000	0.000	0.00	0.00
Lower Yield	0.000	0.000	0.00	0.00



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4.Date : 2019/6/28
5.Temperature: 22C
6.Test Style : 2. Compression
7.Speed : Single Speed V1= 3.00mm/min,

8.Specimen : MZ 619 A
9.Spec. Diam. : 10.000mm
10.Spec.Area : 78.539816mm²
11.Total Energy: 107.693J
12.Young's Modu. : Ym1=791.127 , Ym2=0.000 , Ym3=0.000N/mm²
13.Notice :
14.FileName: D:\Report\50KN Compression\MZ 619 A Horizontal Shear.tst

	Load(kN)	Compress(mm)	Stress(N/mm ²)	Strain(%)
Peak	13.366	15.376	170.18	30.75
End	3.229	21.522	41.11	43.04
Ys1	0.000	0.000	0.00	0.00
Lower Yield	0.000	0.000	0.00	0.00



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6.Test Style : 2. Compression
7.Speed : Single Speed V1= 3.00mm/min,

8.Specimen : MZ 619 B
9.Spec. Diam. : 10.000mm
10.Spec.Area : 78.539816mm²
11.Total Energy: 86.009J
12.Young's Modu. : Ym1=958.960 , Ym2=0.000 , Ym3=0.000N/mm²
13.Notice :
14.Filename: D:\Report\50KN Compression\MZ 619 B Horizontal Shear.tst

	Load(kN)	Compress(mm)	Stress(N/mm ²)	Strain(%)
Peak	13.260	11.938	168.83	23.88
End	9.212	16.577	117.29	33.15
Ys1	0.000	0.000	0.00	0.00
Lower Yield	0.000	0.000	0.00	0.00



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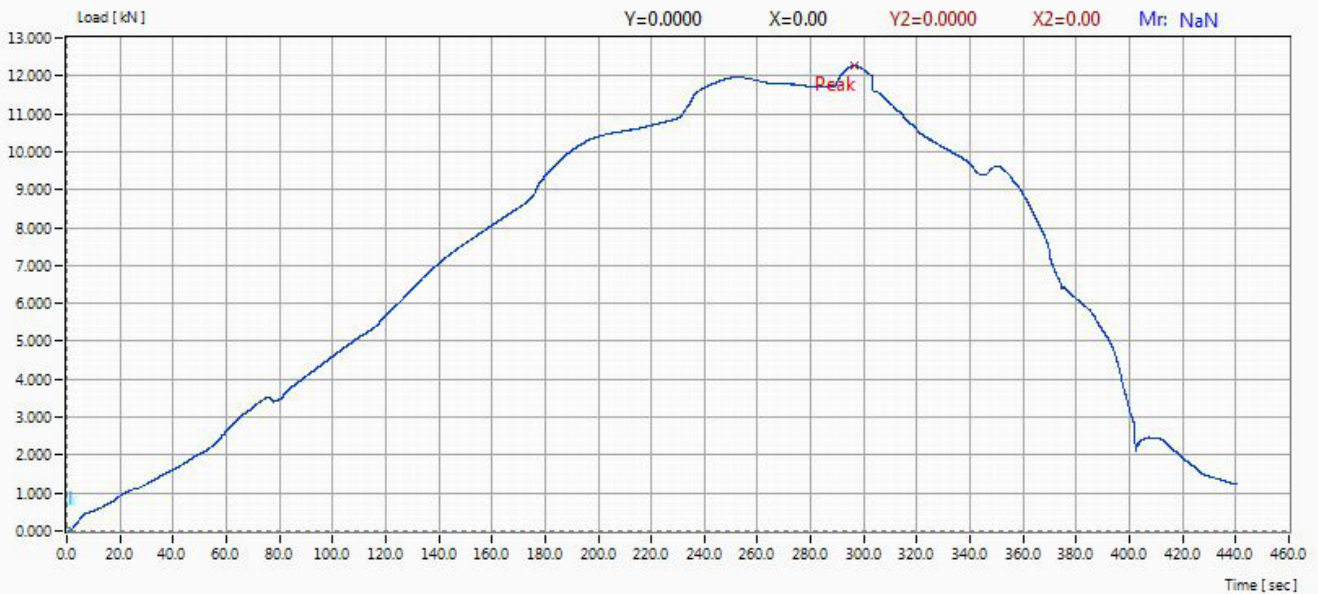
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6.Test Style : 2. Compression
7.Speed : Single Speed V1= 3.00mm/min,

8.Specimen : MZ 619 C
9.Spec. Diam. : 10.000mm
10.Spec.Area : 78.539816mm²
11.Total Energy: 102.053J
12.Young's Modu. : Ym1=711.098 , Ym2=0.000 , Ym3=0.000N/mm²
13.Notice :
14.FileName: D:\Report\50KN Compression\MZ 619 C Horizontal Shear.tst

	Load(kN)	Compress(mm)	Stress(N/mm ²)	Strain(%)
Peak	12.273	14.655	156.26	29.31
End	11.976	15.210	152.48	30.42
Ys1	0.000	0.000	0.00	0.00
Lower Yield	0.000	0.000	0.00	0.00



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1.Customer : Buttonfix
2.Operator : NAF/AT
3.Lot No. : 50KN Tension
4.Date : 2019/6/28
5.Temperature: 22C
6.Standard : MZ 620 A
7.Test Style : 1. Tension
8.Speed : Single Speed V1= 2.00mm/min,
9.Specimen : MZ 620 A
10.Spec.Length : 50.000mm
11.Spec. Diam. : 10.000mm
12.Spec.Area : 78.539816mm²
13.Total Energy: 20.767J
14.Young's Modu. : 1516.984N/mm²
15.Notice :
16.Filename: D:\Report\50KN Tension\MZ 620 A Pull Apart.tst

	Load(kN)	Elong.(mm)	Stress(N/mm ²)	Strain(%)
Peak	8.025	4.143	102.18	8.29
Break	2.828	5.703	36.01	11.41
Yield1	0.000	0.000	0.00	0.00



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6.Standard : MZ 620 B
7.Test Style : 1. Tension
8.Speed : Single Speed V1= 2.00mm/min,
9.Specimen : MZ 620 B
10.Spec.Length : 50.000mm
11.Spec. Diam. : 10.000mm
12.Spec.Area : 78.539816mm²
13.Total Energy: 19.043J
14.Young's Modu. : 1712.656N/mm²
15.Notice :
16.Filename: D:\Report\50KN Tension\MZ 620 B Pull Apart.tst

	Load(kN)	Elong.(mm)	Stress(N/mm ²)	Strain(%)
Peak	8.565	3.989	109.05	7.98
Break	6.484	5.057	82.56	10.11
Yield1	0.000	0.000	0.00	0.00



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6.Standard : MZ 620 C
7.Test Style : 1. Tension
8.Speed : Single Speed V1= 2.00mm/min,
9.Specimen : MZ 620 C
10.Spec.Length : 50.000mm
11.Spec. Diam. : 10.000mm
12.Spec.Area : 78.539816mm²
13.Total Energy: 20.320J
14.Young's Modu. : 1718.612N/mm²
15.Notice :
16.Filename: D:\Report\50KN Tension\MZ 620 C Pull Apart.tst

	Load(kN)	Elong.(mm)	Stress(N/mm ²)	Strain(%)
Peak	8.770	4.062	111.65	8.12
Break	3.229	6.889	41.11	13.78
Yield1	0.000	0.000	0.00	0.00

