LAMPIRAN

CURRICULUM VITAE

Nama Panggilan : Mang Rai
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E-mail : raiwijaya002@gmail.com

DATA PRIBADI

Nama	: I Gede Nyoman Rai wijaya
Tempat, Tanggal Lahir	: Pejaten, 3 Maret 1996
Jenis Kelamin	: Laki-Laki
Agama	: Hindu
Pekerjaan	: Mahasiswa
Status	: Belum Menikah
Warga Negara	: Indonesia
Alamat Asal	: Br Dalem, Desa Pejaten,Kecamatan Kediri, Tabanan, Bali.
Hobi	: Memancing
Cita – cita	: Wirausaha
Motto hidup	: Restu orang tua adalah segalanya

PENDIDIKAN FORMAL

2001 – 2002	: TK Cipta Karya
2002 – 2008	: SD Negeri 1 Pejaten
2008 – 2011	: SMP Negeri 2 Kediri
2011 – 2014	: SMK PGRI 2 Badung
2014 - 2017	: Program Studi D3 Teknik Mesin, Jurusan Teknik Mesin, Politeknik Negeri Bali.
2018 – 2020	: Program Studi S1 Teknik Mesin, Fakultas Teknologi Industri, Institut Teknologi Nasional Malang

PENGALAMAN BERORGANISASI

1. Ketua STT. Jati Laksana Br. Dalem, Desa Pejaten, Kediri, Tabanan, Bali periode 2014-2016
2. Anggota STT. Jati Laksana Br. Dalem, Desa Pejaten, Kediri, Tabanan, Bali periode 2016-Sekarang

PELATIHAN

1. Peserta Aksi Sosial Mahasiswa Politeknik Negeri Bali tahun 2014.
2. Praktek Kerja Lapangan di AGUNG TOYOTA tahun 2016
3. Peserta Studi Ekskursi Kegiatan Kunjungan Industri Mahasiswa Jurusan Teknik Mesin Politeknik Negeri Bali tahun 2016

Malang, 7 Februari 2020

Saya yang bersangkutan,

I Gede Nyoman Rai Wijaya

PERHITUNGAN PENGUJIAN TARIK

Perhitungan pengujian tarik yaitu untuk mengetahui tegangan pada tiap spesimen menggunakan rumus :

$$\sigma = \frac{P}{Ao} \quad \ldots\ldots\ldots\ldots (4)$$

Dimana :

σ = Tegangan (N/mm^2)

P = Beban Tarik (N)

Ao = Luas penampang specimen awal (mm^2)

- **30% Campuran Karet**

Spesimen ke 1

$$\sigma = \frac{P}{Ao}$$
$$= \frac{1335}{231}$$
$$= 5{,}77\ Kgf/mm^2$$
$$= 56{,}58\ MPa$$

Spesimen ke 2

$$\sigma = \frac{P}{Ao}$$
$$= \frac{1476}{231}$$
$$= 3{,}38\ Kgf/mm^2$$
$$= 62{,}56\ MPa$$

Spesimen ke 3

$$\sigma = \frac{P}{Ao}$$
$$= \frac{1502}{231}$$
$$= 6{,}50\ Kgf/mm^2$$
$$= 63{,}74\ MPa$$

- **40% Campuran Karet**

Spesimen ke 1

$$\sigma = \frac{P}{Ao}$$
$$= \frac{1959}{231}$$
$$= 8{,}48\ Kgf/mm^2$$
$$= 83{,}16\ MPa$$

Spesimen ke 2

$$\sigma = \frac{P}{Ao}$$
$$= \frac{1757}{231}$$
$$= 7{,}60\ Kgf/mm^2$$
$$= 74{,}53\ MPa$$

Spesimen ke 3

$$\sigma = \frac{P}{Ao}$$
$$= \frac{1529}{231}$$
$$= 6{,}61\ Kgf/mm^2$$
$$= 64{,}82\ \text{MPa}$$

- 50% Campuran Karet

Spesimen ke 1

$$\sigma = \frac{P}{Ao}$$
$$= \frac{1387}{231}$$

= 6,00 Kgf/mm^2

= 58,83 MPa

Spesimen ke 2

$$\sigma = \frac{P}{Ao}$$

$$= \frac{1327}{231}$$

= 5,74 Kgf/mm^2

= 56,29 MPa

Spesimen ke 3

$$\sigma = \frac{P}{Ao}$$

$$= \frac{1354}{231}$$

= 5,86 Kgf/mm^2

= 57,46 MPa

PERHITUNGAN PENGUJIAN IMPACT

Pada perhitungan pengujian impact untuk mencari energi dan harga impact dengan menggunakan rumus :

$$E = W \times R [\cos(\beta) - \cos(\alpha)] \quad \ldots\ldots\ldots (5)$$

Keterangan :

E : Energi (joule)
W : Weight of hammer
R : Panjang lengan bandul
β : Sudut akhir bandul
α : Sudut awal bandul

Harga impact dapat dihitung dengan rumus :

$$HI = \frac{E}{Ao} \quad \ldots\ldots\ldots (6)$$

Keterangan :

HI : Harga impact (joule)
E : Energi untuk mematahkan material
A_0 : Luas penampang terkecil takik (cm^2)

- 30% Campuran Karet

  Spesimen ke 1

  E = W X R [cos (β) – cos (α)]
  = 26,32 x 0,647 x [cos (34) – cos (45)]
  = 17, 048 x (0,828 – 0, 706)
  = 17,048 x 0,122
  = 2,079 j
  = 0,002079 Kj

  A_0 = b x h
  = 10 x 8
  = 80 mm2
  = 0,00008 m2

$$HI = \frac{E}{Ao}$$

$$= \frac{0{,}002079}{0{,}00008}$$

$$= 25{,}98 \text{ Kj/m2}$$

Spesimen ke 2

E = W X R [cos (β) – cos (α)]

= 26,32 x 0,647 x [cos (35) – cos (45)]

= 17, 048 x (0,819 – 0, 706)

= 17,048 x 0,113

= 1,926 j

= 0,001926 Kj

A_0 = b x h

= 10 x 8

= 80 mm2

= 0,00008 m2

$$HI = \frac{E}{Ao}$$

$$= \frac{0{,}001926}{0{,}00008}$$

$$= 24{,}07 \text{ Kj/m2}$$

Spesimen ke 3

E = W X R [cos (β) – cos (α)]

= 26,32 x 0,647 x [cos (35) – cos (45)]

= 17, 048 x (0,819 – 0, 706)

= 17,048 x 0,113

= 1,926 j

= 0,001926 Kj

A_0 = b x h

= 10 x 8

= 80 mm2

= 0,00008 m2

$$HI = \frac{E}{Ao}$$

$$= \frac{0{,}001926}{0{,}00008}$$

= 24,07 Kj/m2

- 40% Campuran Karet

Spesimen ke 1

E = W X R [cos (β) – cos (α)]

= 26,32 x 0,647 x [cos (34) – cos (45)]

= 17, 048 x (0,828 – 0, 706)

= 17,048 x 0,122

= 2,079 j

= 0,002079 Kj

A_0 = b x h

= 10 x 8

= 80 mm2

= 0,00008 m2

$$HI = \frac{E}{Ao}$$

$$= \frac{0{,}002079}{0{,}00008}$$

= 25,98 Kj/m2

Spesimen ke 2

E = W X R [cos (β) – cos (α)]

= 26,32 x 0,647 x [cos (33) – cos (45)]

= 17, 048 x (0,838 – 0, 706)

= 17,048 x 0,132

= 2,250 j

= 0,00225 Kj

A_0 = b x h

= 10 x 8

= 80 mm2

= 0,00008 m2

$HI = \frac{E}{Ao}$

$= \frac{0,00225}{0,00008}$

= 28,12 Kj/m2

Spesimen ke 3

E = W X R [cos (β) – cos (α)]

= 26,32 x 0,647 x [cos (33) – cos (45)]

= 17, 048 x (0,838 – 0, 706)

= 17,048 x 0,132

= 2,250 j

= 0,00225 Kj

A_0 = b x h

= 10 x 8

= 80 mm2

= 0,00008 m2

$HI = \frac{E}{Ao}$

$= \frac{0,00225}{0,00008}$

= 28,12 Kj/m2

- 50% Campuran Karet

Spesimen ke 1

E = W X R [cos (β) – cos (α)]

= 26,32 x 0,647 x [cos (32) – cos (45)]

= 17, 048 x (0,847 – 0, 706)

= 17,048 x 0,141

= 2,403 j

= 0,002403 Kj

A_0 = b x h

= 10 x 8

= 80 mm2

= 0,00008 m2

$HI = \frac{E}{Ao}$

$= \frac{0,002403}{0,00008}$

= 30,03 Kj/m2

Spesimen ke 2

E = W X R [cos (β) – cos (α)]

= 26,32 x 0,647 x [cos (33) – cos (45)]

= 17, 048 x (0,838 – 0, 706)

= 17,048 x 0,132

= 2,250 j

= 0,00225 Kj

A_0 = b x h

= 10 x 8

= 80 mm2

= 0,00008 m2

$HI = \frac{E}{Ao}$

$= \frac{0,00225}{0,00008}$

= 28,12 Kj/m2

Spesimen ke 3

E = W X R [cos (β) – cos (α)]

= 26,32 x 0,647 x [cos (32) – cos (45)]

= 17, 048 x (0,847 – 0, 706)

= 17,048 x 0,141

= 2,403 j

= 0,002403 Kj

A_0 = b x h

= 10 x 8

= 80 mm2

= 0,00008 m2

$$HI = \frac{E}{Ao}$$

$$= \frac{0{,}002403}{0{,}00008}$$

= 30,03 Kj/m2

INSTITUT TEKNOLOGI NASIONAL MALANG
FAKULTAS TEKNOLOGI INDUSTRI JURUSAN TEKNIK MESIN
LABORATORIUM PENGUJIAN MATERIAL
Jl. Raya Karanglo Km. 2 Telp. (0341) 417636 Ext. 511 Malang

DATA PENGUJIAN IMPAK

Nama : **I Gede Nyoman Rai Wijaya**
NIM/ : **1811921**
Jurusan : Teknik Mesin S1
Hari / Tanggal : Kamis / 11 Desember 2019
Specimen : **Komposit Serat Karbon, Anyaman Kawat, Karet dan Rami**

Variasi Prosentase Karet	Jumlah Sample	l (mm)	b (mm)	t (mm)	h (mm)	Luas (mm^2)	α (^{0})	β (^{0})	Energi (Joule)	HI (Joule/mm)
30 %	1	55	10	10	8	80	45	34	2,0764	0,0260
	2	55	10	10	8	80	45	35	1,9080	0,0239
	3	55	10	10	8	80	45	35	1,9080	0,0239
40 %	1	55	10	10	8	80	45	34	2,0764	0,0260
	2	55	10	10	8	80	45	33	2,2404	0,0280
	3	55	10	10	8	80	45	33	2,2404	0,0280
50 %	1	55	10	10	8	80	45	32	2,4001	0,0300
	2	55	10	10	8	80	45	33	2,2404	0,0280
	3	55	10	10	8	80	45	32	2,4001	0,0300

Malang, 11 Desember 2019
Kepala Laboratorium Uji Material

Ir.Teguh Rahardjo, MT
NIP. 195706011992021001

INSTITUT TEKNOLOGI NASIONAL MALANG
FAKULTAS TEKNOLOGI INDUSTRI JURUSAN TEKNIK MESIN
LABORATORIUM PENGUJIAN MATERIAL
Jl. Raya Karanglo Km. 2 Telp. (0341) 417636 Ext. 511 Malang

Nama : **I Gede Nyoman Rai Wijaya**
NIM/ : **1811921**
Jurusan : Teknik Mesin S1
Hari / Tanggal : Kamis / 11 Desember 2019
Specimen : **Komposit Serat Karbon, Anyaman Kawat, Karet dan Rami**

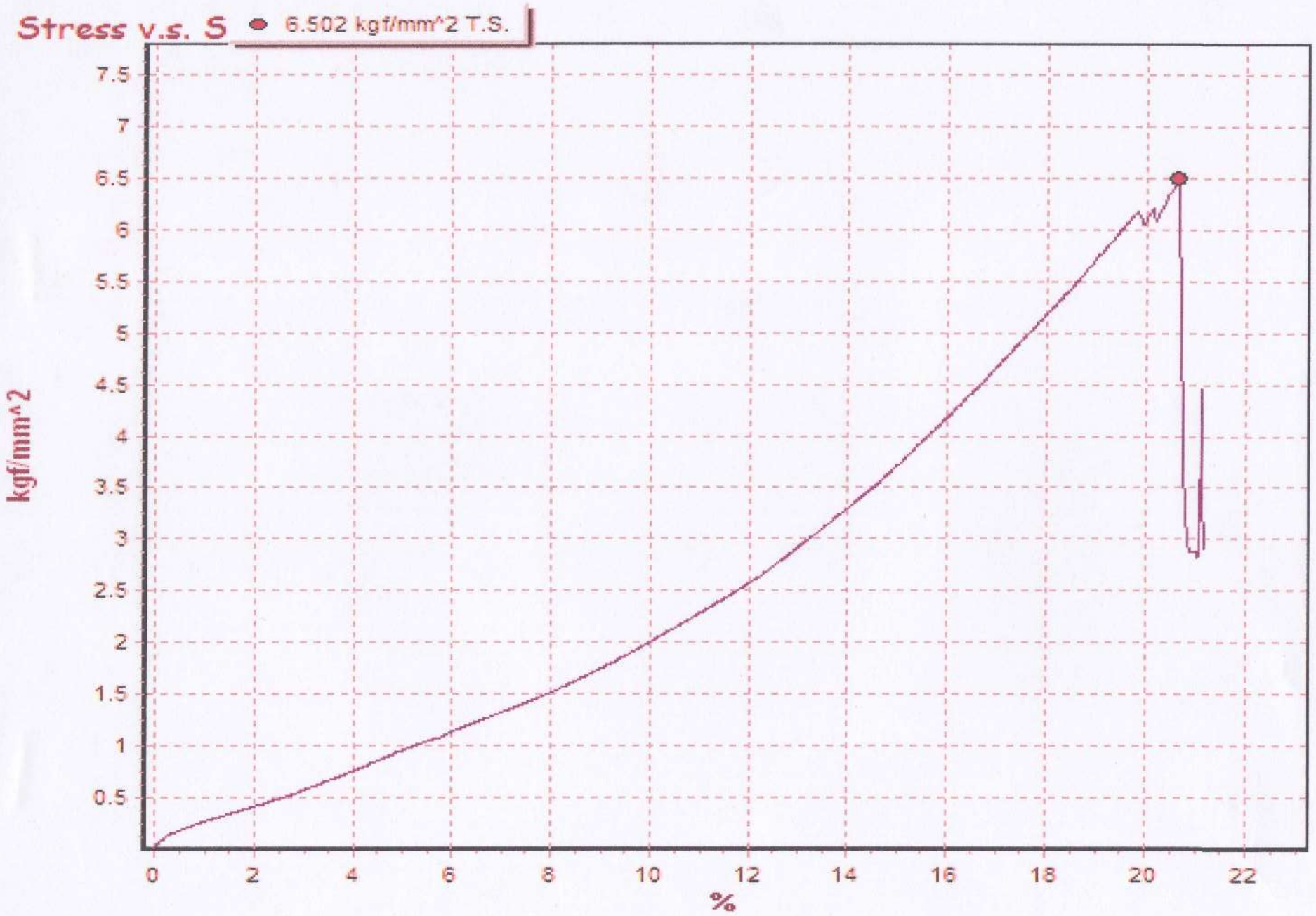
TEST REPORT PENGUJIAN TARIK

No	Variasi Prosentase Karet	Jumlah Speciment	Area Mm^2	Max Force Kgf	0.2 % Y.S Kgf/mm^2	Tensile Straing Kgf/mm^2	Elongition (%)
1	30 %	1	231	1335	2,284	5,74	22
		2	231	1476	2,31	6,39	22
		3	231	1502	2,66	6,50	21
2	40 %	1	231	1959	3,61	8,48	19
		2	231	1757	6,14	7,60	20
		3	231	1529	2,81	6,62	19
3	50 %	1	231	1387	2,61	6,01	19
		2	231	1327	2,43	5,74	20
		3	231	1354	3,13	8,46	25

Malang, 11 Desember 2019
Kepala Laboratorium Pengujian Material

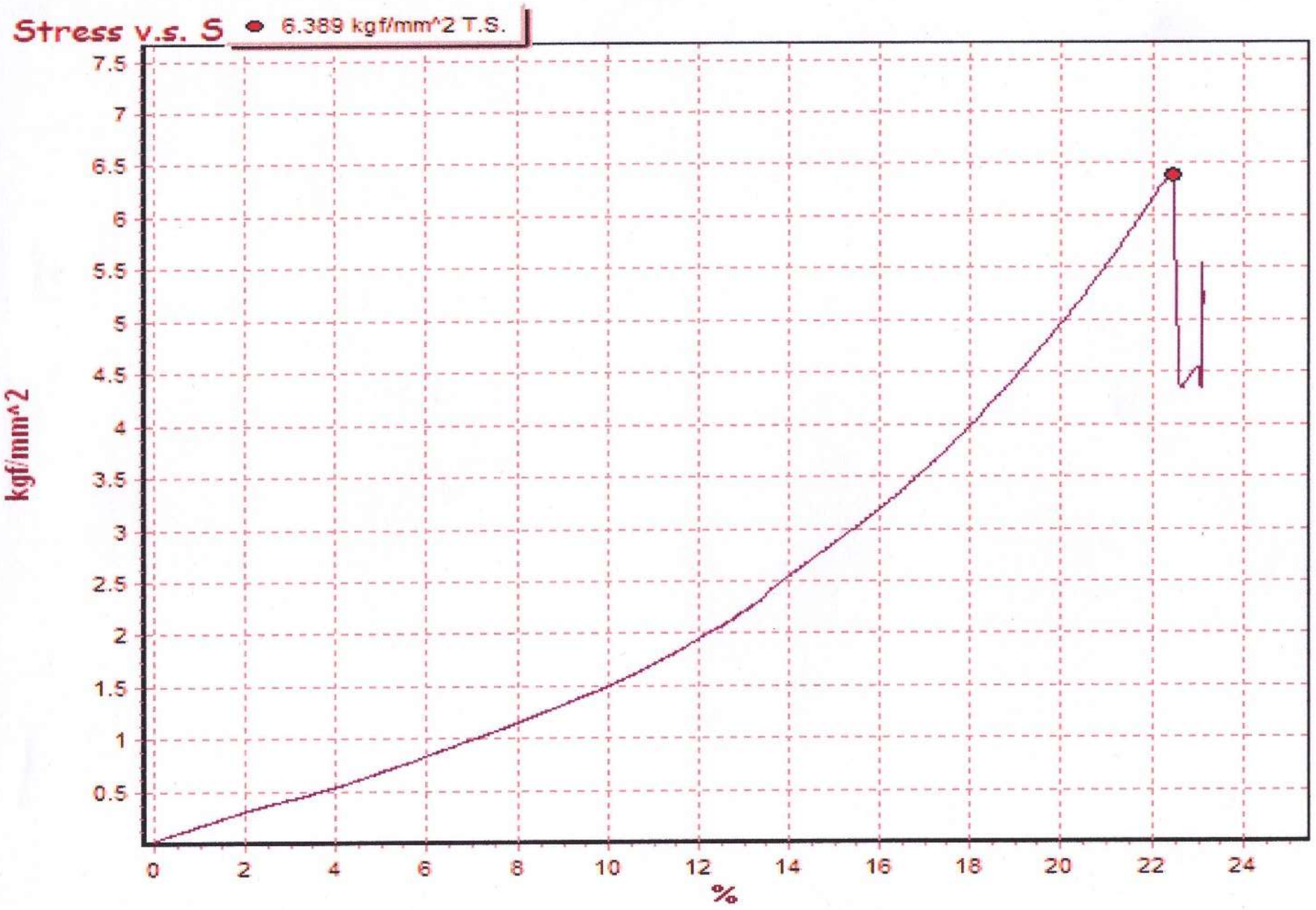
Ir.Tegun Rahardjo, MT
NIP. 195706011992021001

30 % C


Stress v.s. S
6.502 kgf/mm^2 T.S.
kgf/mm^2
7.5
7
6.5
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
2
4
6
8
10
12
14
16
18
20
22
%

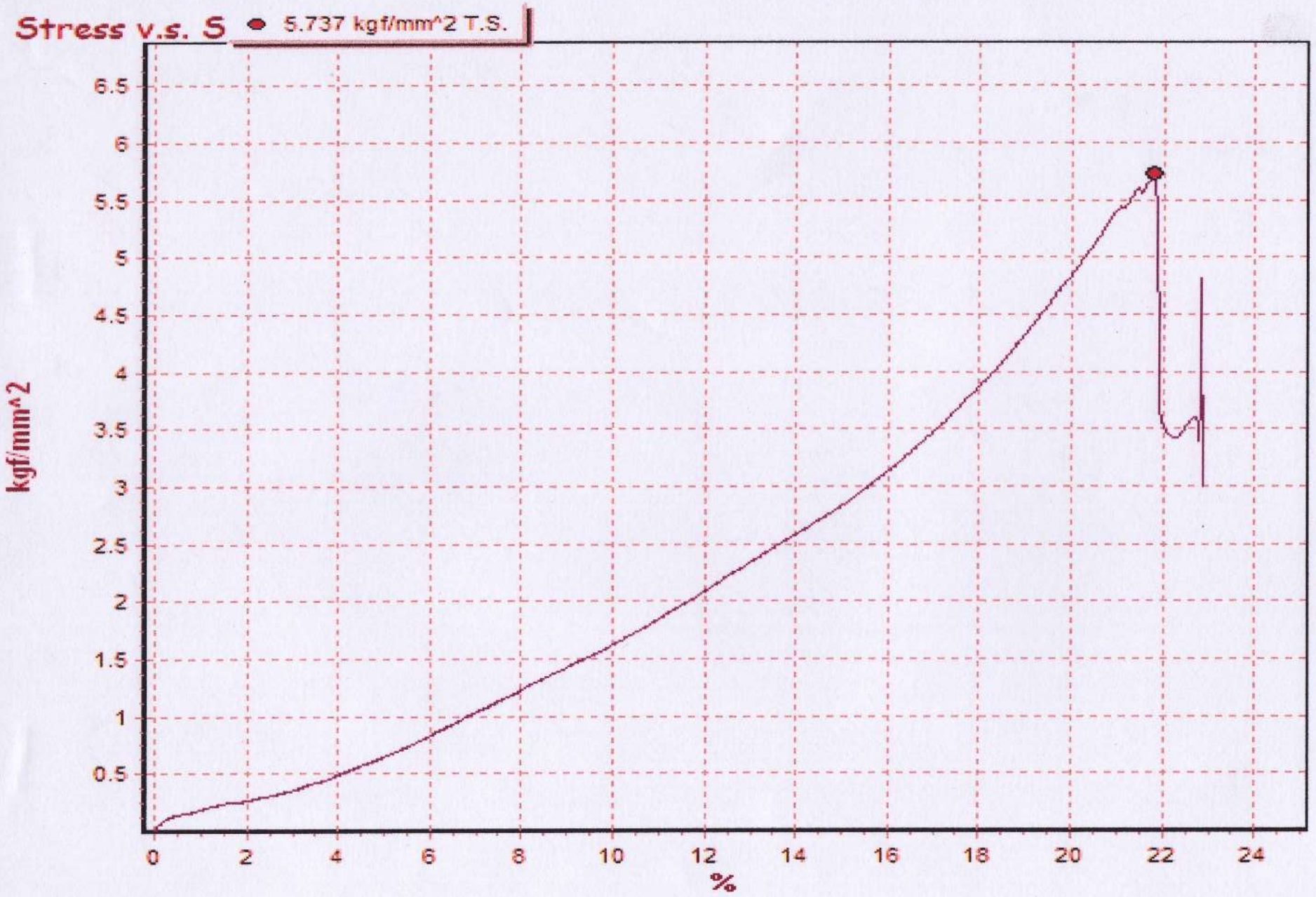
301-035

30% B


Stress v.s. S
6.389 kgf/mm^2 T.S.
kgf/mm^2
7.5
7
6.5
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
2
4
6
8
10
12
14
16
18
20
22
24
%

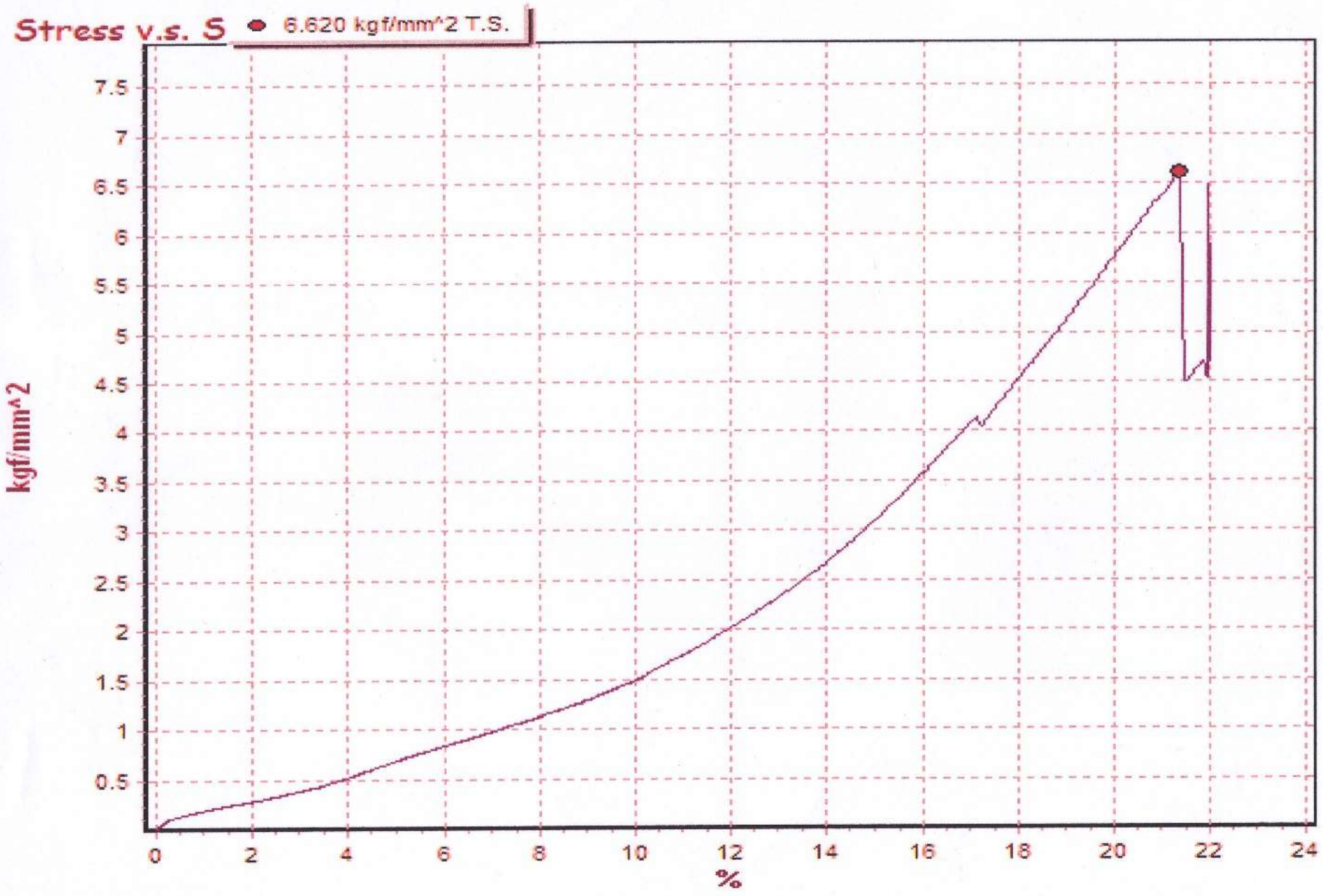
301-034

30% A


Stress v.s. S
5.737 kgf/mm^2 T.S.
kgf/mm^2
6.5
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
2
4
6
8
10
12
14
16
18
20
22
24
%

301-033

40% C


Stress v.s. S
6.620 kgf/mm^2 T.S.
kgf/mm^2
7.5
7
6.5
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
2
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6
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10
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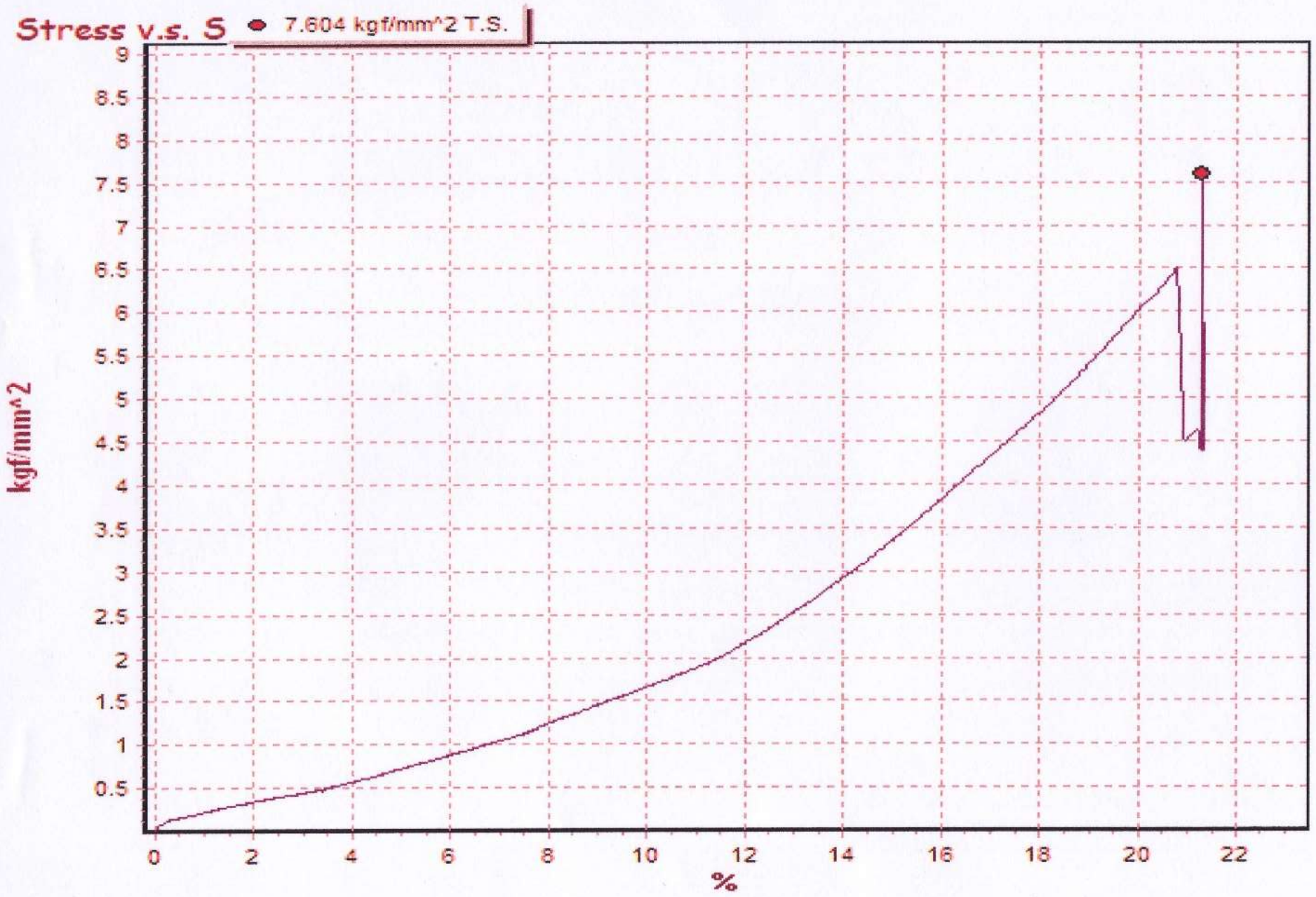
14
16
18
20
22
24
%

301-038

40 X B


Stress v.s. S
7.604 kgf/mm^2 T.S.
kgf/mm^2
9
8.5
8
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7
6.5
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5.5
5
4.5
4
3.5
3
2.5
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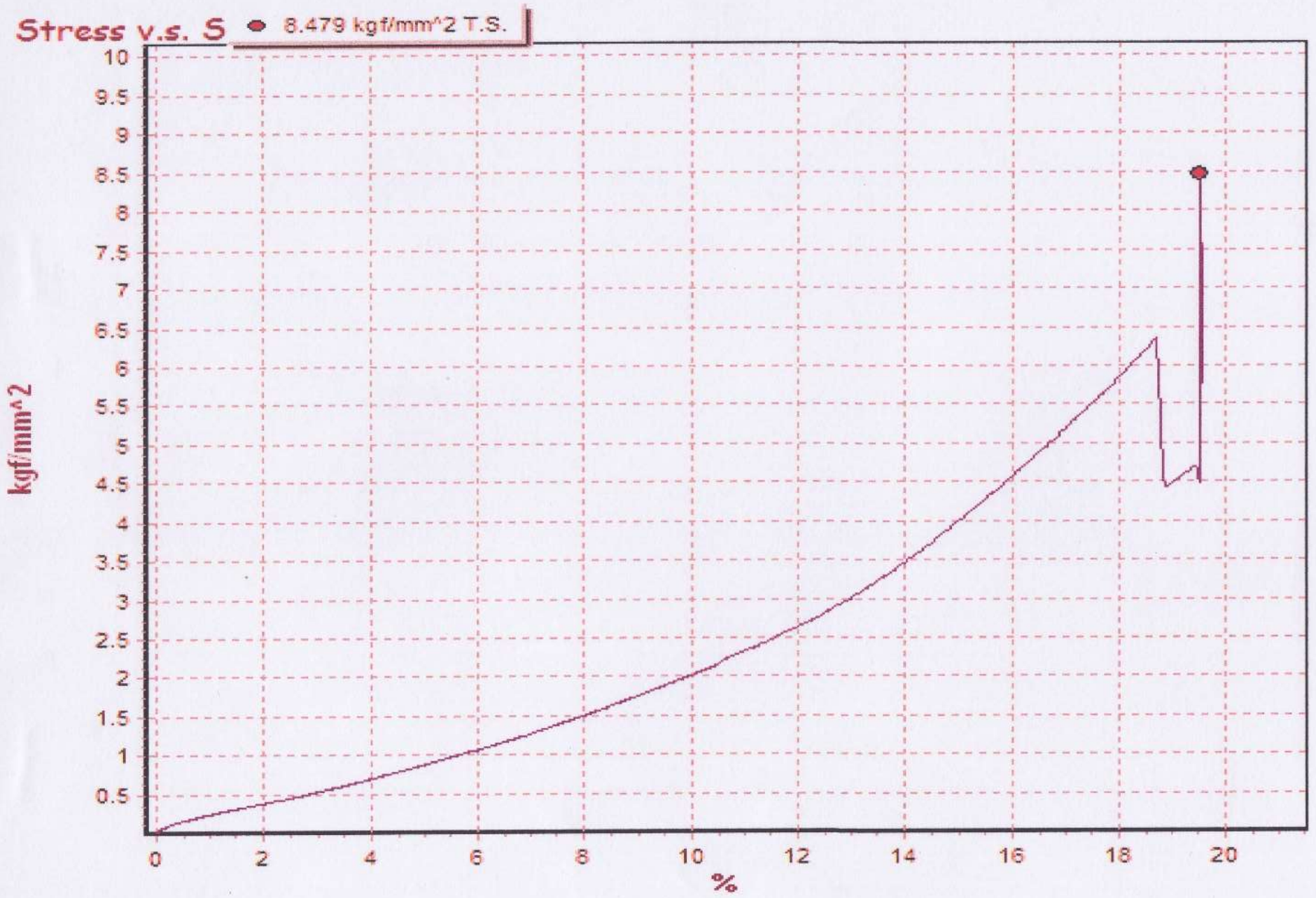
22
%

301-037

40 %. A


Stress v.s. S
8.479 kgf/mm^2 T.S.
kgf/mm^2
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9.5
9
8.5
8
7.5
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6
5.5
5
4.5
4
3.5
3
2.5
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1.5
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0.5
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2
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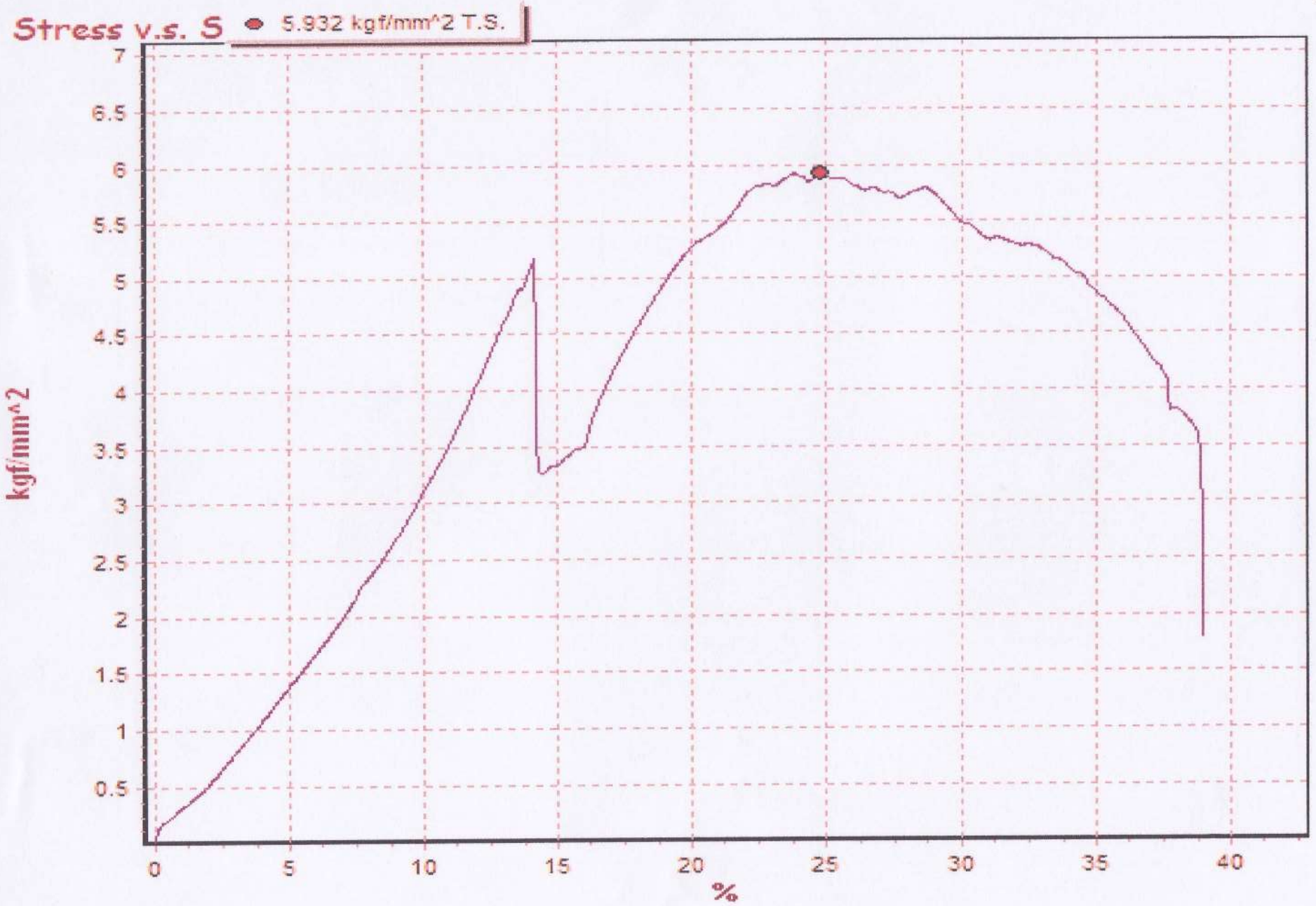
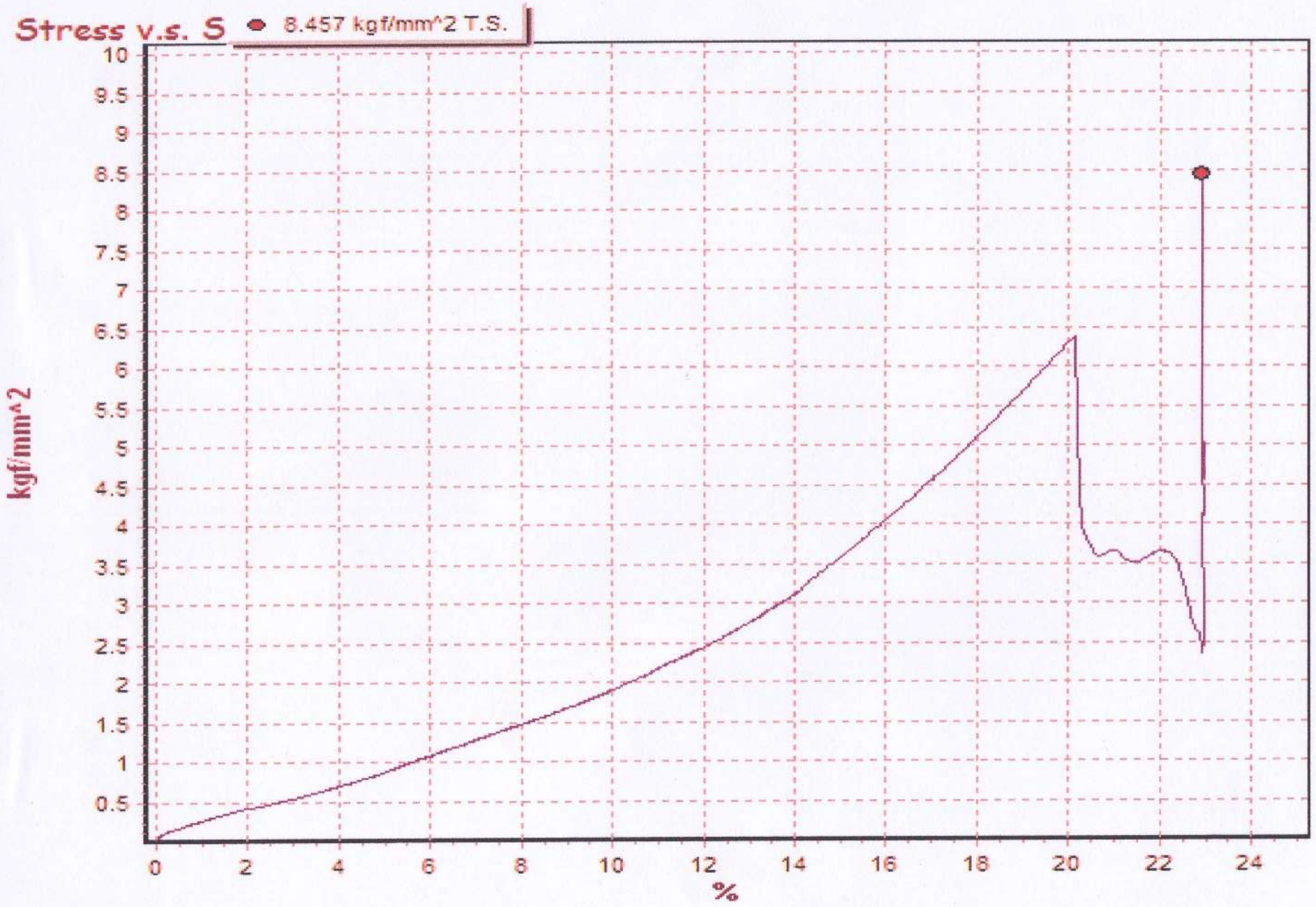
10
12
14
16
18
20
%

301-036


Stress v.s. S
5.932 kgf/mm^2 T.S.
kgf/mm^2
%
0
5
10
15
20
25
30
35
40
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
5.5
6
6.5
7

301-042

50% C


Stress v.s. S
8.457 kgf/mm^2 T.S.
kgf/mm^2
10
9.5
9
8.5
8
7.5
7
6.5
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
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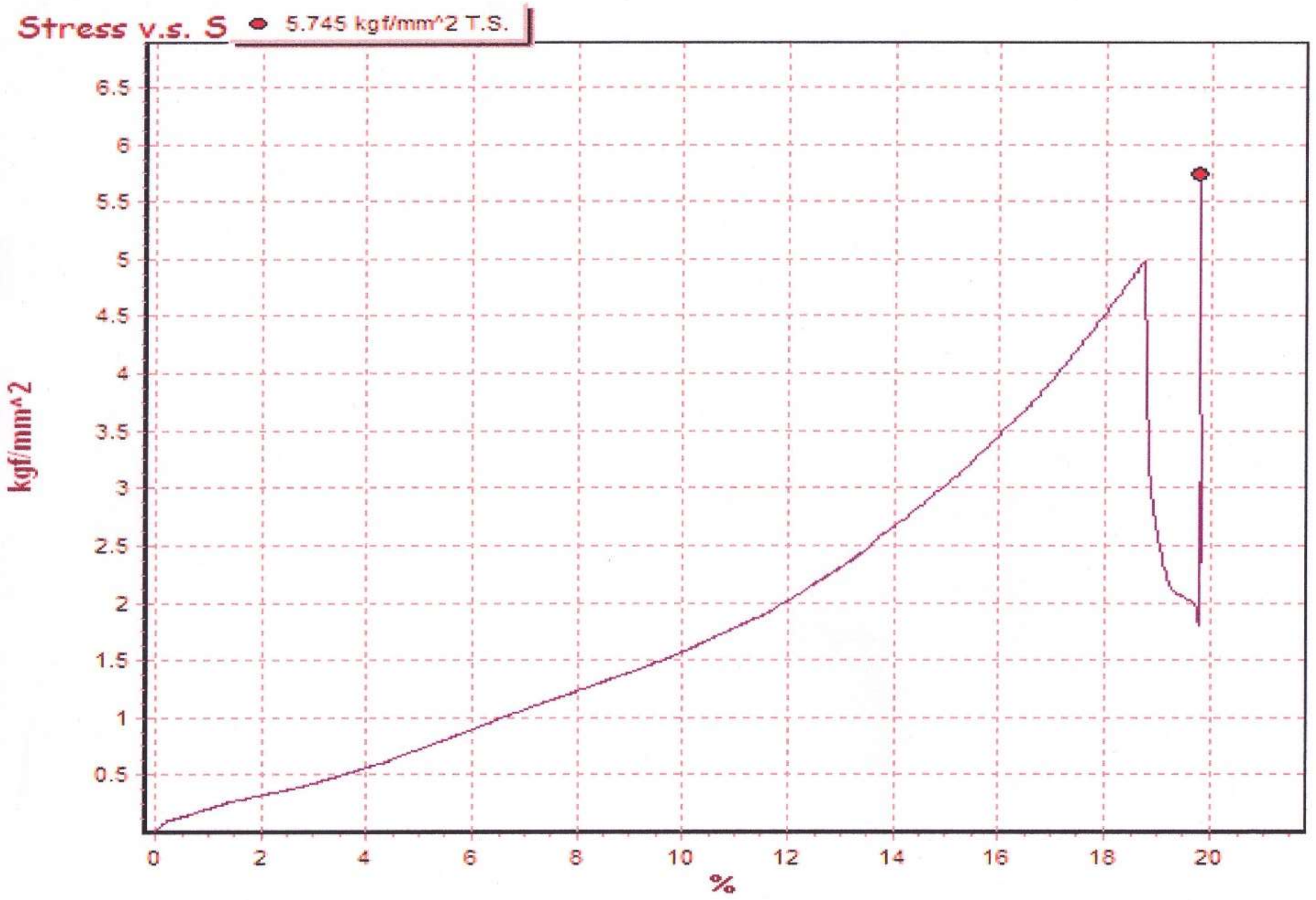
2
4
6
8
10
12
14
16
18
20
22
24
%

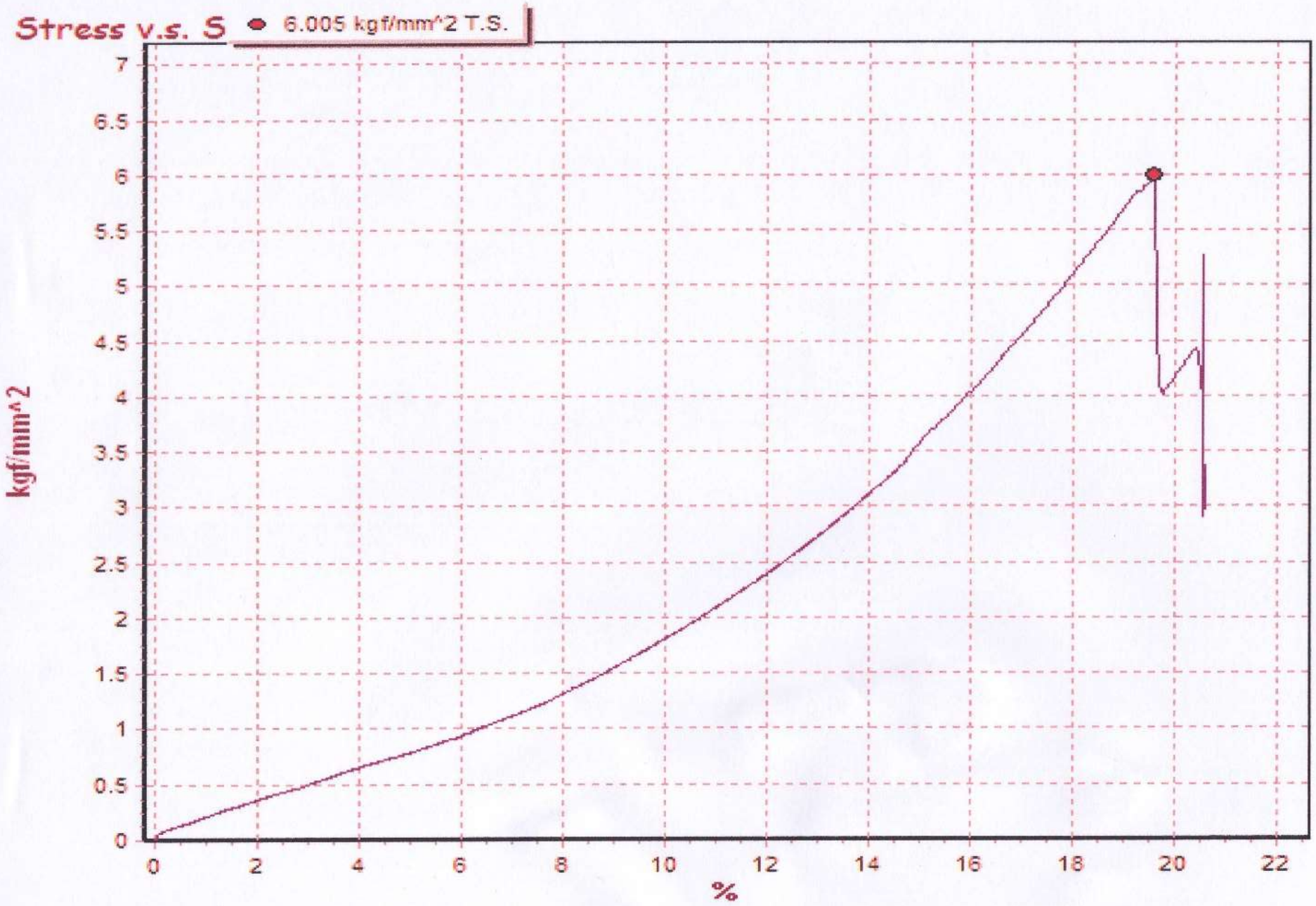
301-041

50% B


Stress v.s. S
5.745 kgf/mm^2 T.S.
kgf/mm^2
6.5
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
2
4
6
8
10
12
14
16
18
20
%

301-040

50 Y. A


Stress v.s. S
6.005 kgf/mm^2 T.S.
kgf/mm^2
%
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
5.5
6
6.5
7
0
2
4
6
8
10
12
14
16
18
20
22

301-039